## ABOUT THE BOOK

The book entitled "RASA ŚĀSTRA" is an unique combination of ancient and contemporary wisdom. At one side it is depicting ancient wisdom of 5th A.D. to 19th A.D. means (in other words) references of the subject content from Rasendra Mangal to Rasa Tarangini have been quoted as and when it has been considered necessary. However, 3-4 classical books have been referred frequently and prominently. On other side contents of contemporary sciences such as Geology and Metallurgy etc. have been cited in descriptions of this text, where it is found suitable, relatively.

All chapters of this book are written systematically and had followed one pattern. All the relevant details of Rasa, Maharasa, Uparasa, Sadharan rasa, Dhatu and Upadhatu, Ratna and Uparatna, Visha and Upavisha, Sudhavarg and Puta, yantra and Paribhasa have been described scientifically and elaborately. The unique pattern of this book will help undergraduate scholars, physicians and many stake holders of Ayurveda to understand Rasa Shastra.

The experiences gained by Prof. Damodar Joshiji at Banaras Hindu University and Gujrat Ayurved University are being conveyed to the learned readers in the form of this book. The essence of 40 year experience of teaching and research in Rasa Shastra of Prof. Joshiji has been preserved in this book. As, Prof. Joshiji has explained his views wherever he understood necessary in this book under the heading of author's note.

Preface of this book is self explanatory regarding many fundamentals of Rasa Shastra

ISBN : 978-81-7637-089-9

JAS 140

RASA ŚĀSTRA

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Dr. Damodar Joshi

CHAUKHAMBHA ORIENTALIA
VARANASI

JAIKRISHNADAS ĀYURVEDA SERIES
140

# RASA ŚĀSTRA

## (English Edition)

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**CHAUKHAMBHA ORIENTALIA**
A House of Oriental and Antiquarian Book
**VARANASI-1**

*Publishers :*

**CHAUKHAMBHA ORIENTALIA**

**Post Box No. 1032**

Gokul Bhawan, K. 37/109, Gopal Mandir Lane

Golghar, Maidagin

VARANASI - 221001 (U.P.)

**(India)**

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Reprint Edition : 2010

Price : Rs. 225.00

Also can be had From :

**CHAUKHAMBHA AYURVEDA PRATISHTHAN**

K. 37/109, Gopal Mandir Lane .

Golghar, Maidagin, Varanasi - 221001

Telephone No. : 0542-3243738



ISBN : 978-81-7637-089-9

Printed by : Charu Printers, Golghar, Varanasi

# PREFACE FOR THE TEXT OF RASA ŚĀSTRA

Rasa Śāstra is a most important and popular branch of Āyurveda developed in medieval period i.e. 8th/9th Cent. A.D. and onwards. It deals with the knowledge related to Alchemy (Lohavedha) and Āyurvedic Pharmaceutics specially connected to the drugs of mineral origin with a view to remove poverty from the world in general and from the Indian continent in particular and to strengthen the body tissues and the organs of the menkind and also to prevent their ageing process, onset of new diseases and the death so that these may live long and healthy life free from diseases, decay and death.

Historically though, the drugs of mineral origin are in use since ancient times in the therapeutics but during that period their numbers were very much limited probably on account of non-development of suitable and sophisticated pharmaceutical procedures, techniques and processes necessary for their conversion to suitable dosage forms. However since the time of Nāgarjuna (8th/9th Cent. A.D.) who was considered to be the father of Hindu Alchemy and metal related Ayurvedic pharmaceutical sciences) the use of mineral drugs have started to become more popular and frequent in Alchemy and pharmaceutico-therapeutics on account of the development of highly advanced Alchemical and pharmaceutical techniques, procedures, processes and also the equipments. As these greatly helped in rendering the metals/mineral and mercurials to change into Alchemically and pharmaceutically most suitable and useful compound forms which possess highly Superior Vedha (Transformation) powers for Loha (metals) and Deha (body) both and as such these have become suitable for transforming lower metals into higher or noble metals and body tissues into new and healthy tissues. In the same way the pharmaceutically suitable metallic compounds also changed into highly absorbable Rasa like form which is also least or non toxic for the body tissues and organs and therapeutically most effective.

It may also be noted here that the development of Pharmaceutical Technology had started from the time of Caraka Saṁhitā

as in this text a few important fundamentals of Āyurvedic pharmaceutics one found refered to viz. The 'Saṁskārohi Guṇāntarādhānam' is very important. It means the new or altered properties may be induced in the drugs through the Saṁskāra (Pharmaceutical process or/and operation). And for this following treatments and factors may be held responsible viz.–

1. Toya Sannikarṣa (Close contact of drugs with different liquids).
2. Agnisannikarṣa (Contact of drugs with various types of heat).
3. Toyāgni Sannikarṣa (Contact of drugs with both liquids and heat)
4. Śauca (Śuddhi karaṇa (Purification/Detoxication – External, internal and both)
5. Manthana/Mardana (Churning and/or Grinding, disintegration of particles)
6. Bhāvanā (Trituration/Grinding with the same or different types of liquids) extractives
7. Vāsana (Flavouring/making the drugs more agreeable)

In addition to the above treatments following factors are also claimed to influence the properties of the drugs during their pharmaceutical treatments, viz–

1. Deśa – (Place of collection and preparation of drugs)
2. Kāla – (Time/Season/duration of collection, preparation/treatment)
3. Bhājana (container/equipment/apparatus)
4. Kāla prakarṣa (Effect of long duration during preparation and storing)

Thus, on the basis of above description it may be said that the ancient scholars like – Caraka and Suśruta etc. have given due importance to the pharmaceutical aspect of drug preparation, their processing technologies and to certain influencing factors which are likely to play a very important role in the conversion and/or alteration or inducing their original or new properties in the drugs during their pharmaceutical processing treatment/operations.

All types of drugs need the application of these pharmaceutical procedures, operations and influencing factors for their conversion into a desired compound form or state to be suitable for internal use.

**Concepts of Rasa Śāstra–**

The initial concept of Rasa śāstra was to transform lower/base metals into noble/higher metals (loha vedha) and after words to make the body tissues strong and to maintain their healthy state with a view to remove poverty from the world first and then to remove senility, diseases and death of the menkind. Thus to achieve Lohavedha (Metallic transformations and Dehavedha (metabolic transformations of body tissues) Rasa śāstra was evolved and developed in medieval period. Further to achieve Dehavedha (prevention of ageing process and diseases and maintenance of positive health) Rasaśāstra has laid much more stress on 'Rasāyana' concept of Āyurveda as with this one can achieve best quality of Rasādi dhātus (body tissues) which are likely to provide positive health to the body tissues and prevent diseases and ageing process and as such our body always remains in healthy and yoothful state.

It may be pointed out here that though, Rasāyana concept was found prevalent during the time of Caraka Saṃhita and number of herbal drugs were recognised to possess Rasāvana properties still during that period it was in developing state only but historically it was the time of Rasa śāstra (8th Cent. A.D. and onwards) in which this Rasāyana concept was found to be highly developed and reached to its peak level. In this period number of metals, minerals, gems and a few poisonous drugs and their preparations were evolved and recognised to possess Rasāyana properties and which on internal use were found to maintain the body health, and the youthful state and to prevent ageing process and the onset of diseases. If required these may also be used as therapeutic agent to cure the severe and chronic diseases.

Here, it may be further mentioned that on account of their specific and quick effects in very small doses and their palatibility and long self life these metallic and mineral prepa-

rations became highly popular and most effective remedies in Āyurvedic therapeutics. It is also worth mentioning in this context that in Rasa Śāstra the metals and minerals are also termed as Dhātus and Updhātus because of their specific role in biological system i.e. these can sustain body tissues by supplimenting some of the most essential nutrient elements to the tissues, whose deficiency may cause many undesired problems/diseases in the body.

Thus, it can be said that on account of the above mentioned qualities and properties the use of the drugs of mineral origin as Rasāyana drugs became more frequent than the use of the drugs of herbal origin which helped to make the Rasāyana concept really very meaningful for the society and menkind.

**Historical Evolution–**

Though, the seeds of Rasāyana therapy could be seen since the time of 'Caraka Samhitā' (600-1000 B.C.). The systematic evolution took place during the time of Nāgārjuna, Nandi, Somadeva, Rasa Vāgbhaṭa and Ḍhunḍhuka Nātha etc. scholars who helped to evolve number of highly effective and stable Rasāyana drugs and took this therapy to reach its zenith in about 13th/14th Cent. A.D. and onwards. In this period number of most valuable Rasa preparations alongwith their pharmaceutical processing techniques of metals/minerals including Rasa (mercury) having best Rasāyana effects have been evolved which greatly revolutionised the Dehavedha aspect of Rasaśāstra through which the positive health of the body could be maintained for longer duration and ageing process could also be prevented and the user of Rasāyana drugs could be maintained in youthful state forever.

**Development of Important Pharmaceutical Processes–**

During the time of development of Rasa śāstra (Ayurvedic Pharmaceutics) a number of important Pharmaceutical processes, Treatments and Techniques necessary for conversion of metallic and mineral drugs into suitable dosage form have been evolved. The important processes are–

1. Śodhana (Purification/Detoxification) process

2. Jaraṇa (Conversion of molten metal into fine powder form) process.
3. Māraṇa (Incineration/conversion of metals, minerals into ashes form) process
4. Mūrcchanā (Conversion of mercury into therapeutically useful compound form) process
5. Jāraṇā (Digestion and Assimilation of Grāsa/metal content into mercury) process
6. Satva pātana (Extraction of metal content of minerals through strong heating) process
7. Druti (Stable liquification of metals with/without heat treatment) process.

**1. Śodhana Process–**

Historically Śodhana concept was in existance since the time of Caraka Saṃhita (600-1000 B.C.) as while enumerating the fundamentals of Ayurvedic pharmaceutics Śauca (Śudhi Karaṇa is found enumerated as one of the fundamentals necessary for 'Guṇāntarādhāna' (alteration and/or addition of properties in the drugs). This concept has further developed after the development of Rasaśāstra in the field of Ayurvedic medicine. As in Rasaśāstra generally the metals/minerals/mercury and some times a few drugs of poisonous nature are found used which are likely to contain some toxic effects also. Hence with a view to remove or minimise their toxicity or the toxic effects and to make these suitable for further process and for internal use a number of Śodhana procedures and techniques have been found evolved which proved greatly helpful in reducing or minimising the toxic effects of these drugs.

**Procedures used for Śodhana–**

The main procedures used for Śodhana are as follows–

1. Bhāvanā (Grinding/Trituration with Vegetable extractives acidic and alkaline liquids for prescribed times).
2. Tāpana and Nirvāpa (Heating to red hot and quenching into prescribed liquids for prescribed times).
3. Svedana (Heating in boiling acidic or alkaline liquids for prescribed times through Dolāyantra method).

4. Agni Tāpana (Roasting on direct heat to remove water of crystallisation or moisture content and make these light and Puffed).
5. Ūrdhvapātana/Upward and transverse sublimation or Distillation by Pātana and Damaru yantra.
6. Kṣālana (washing with hot water or Kāñjika)
7. Bharjana (Frying in ghee)
8. Sneha Niṣkāśana (Deoiling or absorption of oily content)

**Effects of these procedures–**

These procedures, measures applied for Śodhana help either in the disintegration of molecule or particles to make these to divide into finest divisions, or to expose their maximum surface areas for further chemical or physical reaction or to help in the impregnation of organic materials and their properties in the drugs (minerals/metals) to help these in making an organometallic forms compounds and thus to make these more acceptable by the body tissues and organs, these also help to remove washable, soluble and volatile impurities from the drugs, some times some organic or inorganic materials are dissolve in mercury or added to the drugs which either help in detoxification or in potentiation of their properties, some times the oily content of the drugs subjected to Śodhana is reduced, minimised or absorbed. In addition to above, some times, some materials are added with Śodhita materials which from chemical point of view may be considered as impurities but from therapeutic point of view may prove useful in potentiating their therapeutic effects and neutralise these toxic effects. Śodhana procedures also help to convert these materials into suitable forms for further pharmaceutical treatments like Jāraṇa, Māraṇa etc. processes.

**2. Jāraṇa Process–**

Jāraṇa is an intermediary and essential process in between the Śodhana and Māraṇa treatments, as through which low melting points metals (Puti lohas) like Lead, Tin and Zinc are first melted in an open iron pan and then added with prescribed herbs/Jāraṇa materials which start burning on account of heat. Now melted metals are rubbed with back side of iron laddle along with burn-

ing and burnt herbs and slowly convert into whitish black powder form (ash like) probably on account of Redox process. It is a slow process and needs 1/4th part to equal part of herbs to be added and allowed to burn with application of strong heat. On complete burning of herbs (Jāraṇa materials) rubbed melted metal mixes with the Carbon of herbs and turns into black ash like powder which at the end of the process is subjected to strong heating after being closed with an earthen dish to allow the total metal particles to be converted to ash like powder form.

Thus Jāraṇa is an essential prerequisite procedure of Māraṇa. As the metals subjected to this procedure are converted to ash like powder form and may tolerate more heat than their melting points hence these may be subjected to desired heat treatment during their Māraṇa process.

**3. Māraṇa Process–**

Māraṇa is another most important pharmaceutical process applicable to the drugs of mineral origin for their conversion into fine ash form (Bhasma form) which is described to be similar to Rasībhavana state in the texts. As it is considered suitable for absorption and assimilation bhasma into the biological system of the body on internal use.

To acheive this form the drugs of mineral origin are first mixed with Māraṇa drugs and when these are found mixed properly then the mixture is subjected to Bhavana (Trituration/Grinding) with some prescribed vegetable extractives/acidic or alkaline liquids, and then on drying, Puṭapāka (heat treatment through scheduled heating system) is applied repeating the Bhavana and Puṭāpāka for number of times or till the metal/mineral converts into desired compound form, suitable for internal use i.e. into an absorbable state which is therapeutically most effective and least or non-toxic form.

Historically the metals/minerals are used in the fine powder form since the time of 'Caraka Saṁhitā' and 'Susruta Saṁhitā' (600-1000 B.C.). During that time these are heated to red hot state and quenched/dipped into some prescribed vegetable extractives or in some other liquids several times or till these converts completely into fine powder form. As regards the limit

of their fineness the ancient scholars have mentioned that the metals/minerals should be as fine as Añjana Sadṛiśa Sūkṣma (fine like collyriums). But probably that state might have not been considered satisfactory for making metals/minerals suitable for internal use.

Hence during the saṃhitā period and till 7th Cent. A.D. the internal use of metals/minerals for Rasāyana and other purposes remained very much limited. The other reason for their limited internal use may be the non-development of Śodhana etc. treatments. Hence probably these drugs in ancient times might have not been found free from toxic effects and as such their internal use remained very much limited.

It may be pointed out here in this context that with the development of Rasa śāstra in the field of Āyurvedic medicine many more and advanced pharmaceutical processing techniques like Śodhana, Jāraṇa and Māraṇa etc. have been evolved and developed to such an extent that these greatly helped in making the metals/minerals to be converted into very very fine, absorbable and therapeutically most effective & least or non toxic forms and thus making these suitable for internal use.

Before starting the actual Māraṇa process the metals/minerals should be subjected to Śodhana and Jāraṇa treatments as these make the metals/minerals highly suitable for subjecting these to actual Māraṇa process. With these treatments their toxicity is reduced to minimum and these are made more acceptable to the body tissues and organs by adding some of the organic materials with them and also convert these into powder form.

In Māraṇa process these are first mixed with Māraṇa drugs which as per Rasa śāstra scholars have been categorised in following four categories, viz–

1. Best Māraṇa drugs– In this category Rasa and Rasa bhasma (mercuria compounds like Kajjalī, Hiṅgula and Rasa sindūra) are included. These are considered best because these greatly help in the disintegration of metal/mineral particles quickly as mercury is supposed to make amalgam (piṣṭi) with any metal and dis-integrate or disperse their particles to finest

sub-divisions. It is done by grinding the purified metal/mineral with mercury or mercurial compounds. Then the Bhavana of herbal extractives also help in this process. As during Bhavana trituration/grinding is done with prescribed liquids till drying. There after the mixture is made into pellets and subjected to heat treatment. Then after heat treatment it is observed that in remaining material mercury or mercurial compounds may not be found present in any form. And thus these are included in best category of māraṇa drugs as in short these may help in the māraṇa process by dispersing and disintegrating the metal/mineral particles and help these to divide into finest divisions and do not prove to adulterate final product in any way as these may completely get removed by heat treatment.

2. Second best category of Maraṇa drugs – In this category herbal drugs are included on account of their Amlīya or Kṣārīya nature. Substances exposed for puta is triturated with this herbal liquid media and dry pellets are incinerated. After incineration inorganic material of media exist there in the form of trace elements. However, on account of their presence in traces these are likely to affect the therapeutic effects of main drug. Thus, these herbs are included in second best category.

3. In third category of Māraṇa drugs Gandhaka and its compounds like Haritāla and Manaḥśilā etc. are included which on account of their own nature and effect may help in māraṇa process "However", these are likely to change the metal into some sulphide or other compounds which sometimes prove helpful in making the final bhasma product therapeutically more effective and useful and least toxic but some times toxic also. Hence these Gandhakādi drugs are put in Adhama (inferior) category of māraṇa drugs.

4. In fourth category of Māraṇa drugs Arilohas (Antimetals) are included. These are considered most inferior or even to produce bad/undesired effects in the final bhasma products, hence these are not recommended to be mixed while preparing bhasmas for therapeutic purposes. However Arilohas (Antimetals) may be used for preparing the bhasmas for 'Loha vedha' purposes. Regarding the drugs included in Arilohas the

ancient scholars were not very clear rather they were confused. These are considered most inferior or 'Durguṇa prada' on account of their adulteration character for the final product of bhasma of the metal or mineral. And thus, the therapeutic effects of such bhasmas are found altered, hence their use is not recommended by saying them as 'Durguṇa prada'.

In this way after discussing the four categories of Māraṇa drugs and their effects on the final product of bhasmas the other important points of Māraṇa process are Bhavana and Puṭapāka and their repeation for several times or till good quality of bhasma is produced.

**Bhāvanā–**

After mixing the bhāvanā extractives/liquids the māraṇa drugs mixture is subjected to trituration or grinding till bhavana liquids are dried. In this way bhavana to maraṇa mixture is given for several times or till it is prescribed in the texts. In Māraṇa process Bhavanas are given with following purposes, viz.–

1. It helps in mixing the Māraṇa drugs properly.

2. It helps to make the metal/mineral particles to become more and more fine.

3. By trituration every metal/mineral particle gets a coating of herbal extractives which contain some organic and inorganic matters though, in traces.

4. Probably because of these coatings when heat is applied different kinds of chemical compounds are formed in the bhasma mixture which imparts specific colour and therapeutic effects to the bhasmas.

5. Some times it is observed that by changing the Bhavana drugs/extractives the bhasma colour and properties also found changed accordingly.

6. Bhāwanā also help in making the metals/minerals to change into organo metallic compounds which in due course of time helps to make the bhasma product more and more acceptable by the body tissues and organs.

7. Trituration/Grinding done during the application of Bhavana also helps in removing the upper coatings of the

chemical compound formed during the puṭapāka and in exposing the unreacted metal or mineral particles for further chemical reaction to go on in next putapākas.

8. Some Bhāvanā extractives also help in removing some toxic effects of metals/minerals to some extent.

**Sarāva Saṁpuṭa and Puṭapāka–**

Bhāwita materials are then made into flat pellets of small size and dried in sun rays. These are then kept and closed in Sarāva Saṁpuṭa (an aṣsembly made of two eathen lids) and sealed properly. Śarāva saṁpuṭa making is necessary to protect Māraṇa materials from loss during puṭapāka and get it safe after puṭapāka is over.

**Putapāka–** After Bhavana and Saṃpuṭa making, the heat is applied to Māraṇa material by subjecting it to specific and suitable puṭa system of heating. Here puṭa is a technical term used to represent the quantum of heat required by the Māraṇa material depending upon its heat tolerance power. Because every metal or mineral can not tolerate same amount of heat. It differs from metal to metal & mineral to mineral considering their heat tolerance power. Ancient scholars of Rasa śāstra have described different kinds of putas, viz. – Mahāpuṭa, Gajapuṭa which give high temp., Varāha puṭa and Ardha Gajapuṭa, Kukutapuṭa which give medium range of heat (Temp.), while Kapota puṭa laghupuṭa and Lāvaka puṭa gives low Temp. heat.

Thus, during puṭapāka, first, one must ascertain that which type of puṭa is suitable for which metal/mineral for its Māraṇa (Bhasma making) process.

The another important point to be considered is about the quality and quantity of dung cakes used.

According to the texts Vanyopalas are recommended. But now a days it is difficult to get Vanyopalas always and every where. Hence it is necessary to standardize heating temp. of these dung cakes first and then to decide their quantity. And once it is decided the quantity of dung cakes may be fixed as per the tolerance power of the metal or mineral and apply puṭapāka with that quantity of dung cakes.

The third important point about Puṭapāka is how many times it has to be repeated. For this generally the texts have mentioned about their repeatition numbers and where it is not found mentioned we must find out it either through the tradition of that part of country or through our experience or discretion.

Here grinding during Bhavana also plays a very important role. If grinding is done properly after adding required māraṇa materials and then desired heat is applied through puṭapāka than more repeatitions of Bhavana and Puṭapāka than prescribed number is not needed. Hence, if proper care is taken with regards to the points mentioned above then the repeatition of Bhavana and Puṭapāka for prescribed times are sufficient otherwise these should be repeated for more number of times or till the desired properties of finished bhasma products are acheived.

**Properties of good quality bhasma–**

The final product of good quality bhasma should be very fine, smooth, desired colour, highly absorbable, therapeutically most effective, Niruttha or Apunarbhava and least or non-toxic.

The ancient scholars of Rasa śāstra have given more emphasis on their fineness. These have mentioned three tests for this purpose, viz.–

1. Vāritara (Floatable on still water surface) means the particle size should be so small that these when put on water surface should not dip/sink in water. Some scholars have gone beyond this also and they even advised to put Dhānya also over it and the water surface tension should not break if it is put on bhasma particle.

2. Rekhā pūrṇatva (bhasma particles should be so fine that these may even inter into the fine furrows of fingers).

3. Locanāñjana sannibha (should be applicable in the eyelids like Añjana (collyrium) means their fineness should be of that stage that if applied in the eye lids may not produce any kind of irritation to the highly sensitive mucus membrane of eyelids).

When the particles of the bhasma becomes so fine then naturally these become very smooth also.

Further, bhasmas should develop desired colour also as the development of colour depends on the formation of required type of chemical compounds i.e. sulphide, oxide, sulphate or carbonate etc. type of compounds. And till the required colour of bhasma is not found developed, the bhasma preparation process can not be considered complete.

**Acheivement of Rasībhawana State–**

The ancient scholars have also mentioned that mṛita lohas should be converted to 'Rasībhawana' state means these should be changed in absorbable form i.e. into organō metallic compound form as in that form only their absorption is possible and when the bhasmas are absorbed these must show their therapeutic effectiveness on diseases.

An other important property of the final product of bhasma should be its non-toxicity or least toxicity means these should be free from any kind of toxicity. The possible cause for the toxicity in the bhasmas may be the presence of the unreduced metal particles and probably for this reason ancient scholars have mentioned that the metallic bhasmas should be 'Niruttha' or 'Apunarbhava' means good quality of bhasma should not return to their metallic form even in smallest amount if heated with 'Mitra pañcaka' drugs or 'silver piece' on the same temprange given during Māraṇa process. The drugs of 'Mitra Pañcaka' group are Ghṛita, Madhu, Guggulu, Guñjā and Ṭaṅkaṇa. These drugs on account of organic and alkaline nature of materials allows the unreduced metal particles present in the bhasma to get melted at a low temp. then usual, which on cooling becomes hard and may be detected in the bhasma samples. And in case of silver the melted metal particles present in the bhasmas may get mixed with silver due to its high affinity towards metals and raise the weight of the silver.

Thus, the bhasmas of good quality should not contain unreduced metal particle to ashes even in traces. And if these are found to remain present in the bhasma then their presence could be detected with the help of 'Niruttha' and 'Apunarbhava' tests of bhasmas.

It is further advised by the ancient texts and scholars that good quality bhasmas could be used even for longer duration to make the body of the user very strong and as a result his immune system becomes very powerful and as such the onset of diseases and the ageing process of that person are prevented and such human beings may enjoy healthy and youthful state through out their life time.

**Satvapātana (Extraction of metal content from the minerals)–**

Ancient scholars of Rasa śāstra used to extract metal content from various minerals by this method. In this minerals are mixed with Amlas (acids), Kṣāras (alkalies), organic materials and Ṭaṅkaṇa etc. fusion materials, these are ground well and made into small balls which on drying are put in Mūṣās (heat resistant pots) and subjected to strong heat preferably in Koṣṭhī yantras attached with air blowers. These help in making the heat very strong so that the mineral mixture gets melted and maintained in the same state for $1^{1}/_{2}$-2 hour or till the metal content of the mineral gets separated and accumulate at one point. For this 'Bījāvarta' and 'Śuddhāvarta' states are specially mentioned. These indicate melting and boiling of molten metal and seperation of Satva (metal content of mineral). Here the duration of heat & heating temp. range is very high and the maintenance of that high temp. range for specified duration or till maximum material as 'Satva' is extracted from the mineral is very important.

The extraction of mercury from Hiṅgula may also come under 'Satvāpatana'. It is done through Damaru yantra or Kanduka yantra. Here strong heat for 1-2 yamas with condensation facility for mercury fumes to convert into mercury are required. From Hiṅgula at least 75-80% mercury should be extracted otherwise either the apparatus is defective or the sufficient heat is not given and maintained or condensation is not proper.

Generally the extraction of Abhraka satva and Mākṣika satva is difficult but these are highly essential and required for 'Pārada Jāraṇa Saṁskāra'. 'Abhraka Satva' is claimed as highly useful in the 'Paksacchedana' of Pārada (making mercury thermostable) which otherwise difficult to be made thermostable.

As per modern view mercury evaporates even at normal temp. but slowly. Its vaperisation point is $360^0$C means at this temp. it is lost quickly through evaporation.

'Mākṣika satva' is also very important, because without Mākṣika satva Abhraka satva can not be mixed with mercury and digested fully in Pārada and till these are not made Jārita in Pārada its non-vaporisation or Pakṣacchedana is not possible. And till mercury is not made thermostable 'Jāraṇa' and further Saṁskāras of mercury could not be performed.

Thus, Satvas of various minerals are very important and these may be extrated with the help of Satva pātana method.

**Drutics (Stable liquified state of metals/minerals)–**

'Druti' is a process in which metal/mineral or Gem is made into stable liquid form. Druties are different from the melting state of metal or mineral through heating at different range of temp. As in this (melting) state as soon as temp. goes down these start to solidify and on reaching to normal temp. These change to complete solid form. But in 'Druti process' the drugs of mineral origin once made in liquified state always remain in the same state. It has nothing to do with the rise and fall of temp.

In the present times the Druti process is not in the practice and in ancient times also though, the texts have mentioned about the preparation of Druties of various types of drugs but at the same time it is also mentioned that the Druties are not possible to be made without the blessings of Lord Śiva. And those who have the blessings of Lord Śiva only is expected to get success in their preparation.

The ancient texts have mentioned about Druties in the context of Eightteen Saṁskāras of Mercury and here two type of Druties are mentioned i.e. 'Garbha druti' and 'Bāhya druti'.

Of the two 'Garbha druti' is that which is made inside of mercury. When the Satvas (metal contents) of various minerals are added to mercury in different proportion for their Jāraṇa karma, these have to under go or pass through the Garbha druti state first means should be made to liquified state in side mercury with some specific procedures and specific type of drugs

(Biḍas). And once Garbha druti state of Grāsa is achieved their Jāraṇa (digestion and assimilation) in mercury becomes possible. Generally Garbha druti is difficult to achieve in the present time.

'Bāhya druti' is that in which the drugs of mineral origin are made Druta (to convert in liquified state) out side of mercury and then mixed or added to mercury if necessary. Number of procedure, methods and the drugs for both types of Druties are found mentioned in the texts but in the present times no success is achieved or observed in this respect.

It is important to mention here that ancient scholars have given following five lakṣaṇas (specific signs) of druties. And these are–

1. Nirlepatvam (Non sticking) 2. Drutatvam (liquification), 3. Tejastvam (shining or brightness), 4. Laghutā (lightness) and 5. Drutam yogaśca Sūtena (quick mixing with mercury).

Means when any metal or mineral is made into druti (liquified) form/state it should not stick to any where or any thing, should convert to liquified form, must have shining or brightness, should be very light in weight and should mix with mercury quickly.

Mercurial processes of therapeutic importance:–

**1. Mūrcchanā Process–**

'Mūrcchanā' is the most important process of mercury in which mercury is made to convert in such compound form which must possess disease destroying/curing property and as such these compounds are used internally in therapeutics.

Mūrcchanā compounds are of two types i.e. Sagandha murcchanā and Nirgandha murcchanā compounds. Those which are prepared with sulphur are called Sagandha compounds and those which are prepared without sulphur are called Nirgandha murcchanā compounds. Sagandha compounds of mercury are more in numbers, more commonly and frequently used in therapeutics as these are least toxic and more effective while Nirgandha murcchana compounds of mercury are less in numbers, less commonly used in therapeutics as these are comparatively more toxic and should be used wih care.

Both types of compounds are prepared with or without heat treatments. The compounds prepared without heat treatments are Kajjalī and other 'Khalvīya rasāyanas' and with heat treatments are 'Parpaties' and 'Kūpīpakva rasāyanas'.

**'Kajjalī'** is prepared by mixing Śuddha Pārada and Śuddha Gandhaka in different Proportions applying simple grinding procedure till a smooth and black coloured powder is prepared. There should not be any shining of mercury particles. And it may be tested by rubbing Kajjalī with water on palm and looking it in Sun-shine. If free mercury particles are seen in the mixture then grinding for some more time may be continued. In this process black mercurric sulphide is formed. According to the texts the sulphur may be mixed with mercury half to double proportion. It may be mixed even six times or even more.

**'Parpaṭi'** is prepared from Kajjalī by melting it on mild fire in an Iron Darvī (laddle) or pan with little ghee. Preferably heat should be applied through Vālukā yantra (Sand bath) to avoid catching of fire in Kajjalī on direct heat.

Its three Pākas are mentioned, viz– Mridu Pāka in which prepared Parpati will not break into two pieces ('Mridu pāke Na bhaṅgaḥśyāt')

In Madhyapāka it may break easily with simple pressure. (Tat Sāralyam Ca Madhyame')

In Kharapāka it may not convert in Parpatī form rather remains in Cūrṇa form due to burning of Sulphur in excess and the probably black sulphide turns into red sulphide compound ('Khare Cūrṇam Ca Lohitam').

Parpaṭī is used widely in therapeutics in Diarrhoea and Dysentry like condition. It is claimed Dīpana, Pācana and Grāhī.

In Chronic Grahaṇi like conditions Parpatī is used in Kalpa form for one Mandal (40) days duration with specified dietetic restrictions.

**Sindūra Kalpas/Kūpīpakva Rasāyanas–**

These are called Sindūra Kalpas because their final product is red in colour just like Sindūra. These are called Kūpīpakva Rasāyanas because these are prepared in Kūpies (bottles) with heating through Vālukā yantra methods.

For preparing 'Rasa Sindura' Kajjalī prepared with equal part of sulphur and mercury is used. It is filled in a specially prepared Kūpī up to 1/3rd part. For this simple white coloured bear bottle is wrapped at least seven times with cloth layers smeared in mud applying one by one layers with a view to make it more heat resistant. On complete drying of the wrapped layers the Kūpī may be used for pāka. Generally 200 gms of Kajjalī prepared with equal part of mercury and sulphur is used for filling the Kūpī. If prescribed-Bhāvanā may also be given to Kajjalī before filling in Kūpī.

Now Kūpī is fixed in Valuka yantra made of iron pot. In the base of the pot 1" (one inch) Valuka may be filled then Kūpī filled with Kajjalī is placed and the remaining part of the pot may be filled with Vālukā (Sand) upto the neck of the Kūpī.

Now apply heat to Valuka yantra from down, increasing the heat slowly and reaching to Mṛidu agni stage. In this stage Kajjalī should melt completely. Its temp. range may be 150°C-200°C. This Mṛidu agni stage temp. may be maintained for six hours. Then the temp. range of the Valuka yantra may be raised slowly to Madhyamāgni stage (350°C-400°C). In this stage profuse fumes of Sulphur may came out of the Kūpī mouth. These may block the Kūpī neck and the mouth hence in this stage red hot iron rod should be inserted in the Kūpī mouth frequently to clear the neck blokage if any. This temp. may also be maintained for six hours.

It may also be called profuse fuming state. The duration of this stage is about 6 hours to one day. After some times when burning sulphur fumes and boiling of Kajjali may get reduced then raise the temperature range slowly to Tībrāgni stage (550°C to 600°C). At this stage flame may start to appear at the Kūpī mouth on account of high temp. At this temp. burning sulphur catches flame which appears at the Kūpī mouth. Slowly its hight is raised and goes to $2\text{-}2^1/_2$" high. It indicates fast burning of sulphur present in extra amount in the compound than the required amount. After some time the flame comes down and slowly subsides/disappears. That is indicative of extra sulphur burning is completed. Now Śita Śalākā Test may be performed.

In this test cold iron rod is inserted in the Kūpī upto bottom and taken out to see that whether burning sulphur adheres or not. If it is found adhered it indicates that still the extra sulphur is present in the Kūpī and to wait for some time more and allow extra sulphur to burn completely. And if no burning sulphur is found adhered and the Śalākā is found completely clean that confirms the complete burning of extra sulphur in the Kūpī. And at this stage the bottle mouth should be corked and sealed properly and allow the same temp. to continue for 2-3 hours more to allow formation of red sulphide compound of mercury and to sublime it at the neck. Now stop heating and allow Vālukā yantra and furnace for self cooling. Next day take out the bottle, clean it from out side and break it by traditional method and collect Red sulphide of mercury (Rasa sindūra) from the neck and remaining (unsublimed part of Kajjali) from the bottom of the bottle, if left there.

In 'Makaradhwaja' also the same heating method (Valukā yantra method) is applied. The difference is in its formula i.e. Gold leaves 1 part, Mercury Saṁskārita 8 parts and Śuddha Gandhaka 16 parts (double to mercury) are taken. In this Gold leaves are first mixed with Saṁskārita mercury and made into amalgam (piṣṭi) by grinding along with lemon juice. When good quality piṣṭi of Gold leaves is made then sulphur is added to it and Kajjalī of good quality is made by grinding. It is then subjected to prescribed Bhāwanā. On drying it is filled in Kāca Kūpī just like Rasa sindūra and applied heat through Vālukā yantra or with vertical type muffle furnace applying Kramāgnipāka method. Here, sulphur is more hence it may need some more time for heating after completion of pāka process bottle is broken and Makaradhwaja is collected from the neck and Gold bhasma with shining Golden particles is obtained from the bottom of the bottle. It is generally processed further to prepare good quality red coloured Gold bhasma.

Some scholars advise to mix Makaradhwaja and Gold bhasma obtained from the bottom of the bottle together and use the mixture in the name of Candrodaya rasa.

Other Kūpīpakva rasāyanas containing Arsenic and its compounds like Haritāla and Manaḥśīlā are also prepared with the same methods.

Soma Nāthī Tāmra bhasma is also a Kūpīpakva rasāyana and prepared by Vālukā yantra heating method. It contains Tāmra, Pārada, Gandhaka, Haritāla and Manaḥ Śilā. With this formula if Tāmra bhasma is prepared it will be easy to prepare and may be free from its toxic effects.

**Important Processes of Rasa (Mercury)–**

**1. Rasa Śodhana (Purification/Detoxification of mercury)–**

As per the literature Rasa (mercury) contains following three types of doṣas i.e. 1. Naisargika doṣas, 2. Kañcuka doṣas and 3. Yaugika doṣas which are likely to produce various diseases and toxic effects if it is used without being subjected to Śodhana Process. And thus it is claimed in the texts that 'Doṣa yukto Raso Viṣam' means if mercury is allowed to remain associated with various types of doṣas it is considered to be just like Viṣa (Toxic substance) in its effects. Hence it is also said about mercury in the texts that 'Śodhita Rasarājastu Sudhātulya phalaḥ pradaḥ' means if it is made pure (Śodhita) it becomes similar to Sudhā (Amṛita-Nector) in effects and thus it may prove very much useful for the body tissues and organs.

**Śodhana Method–**

For Śodhana-mercury should first be treated (ground) with lime powder for 3 days then it is washed with hot water and collected.

In second method it is ground with Lahaśuna (Garlic) and Saindhava Lavaṇa in an iron mortar adding lemon juice and keeping mortar Tapta hot by applying heat (45°C to 50°C). Its grinding may be continued even for one month and then it is washed with hot water to collect pure mercury from the paste.

**Aṣṭa Saṁskāras of Mercury–**

These eight Saṁskāras of mercury are considered necessary to make it suitable for both (Loha vedha and Dehavedha)

purposes. Out the eight first five Saṁskāras (Swedana to Pātana) are meant to remove all the three types of doṣas (Toxic properties), i.e. **'Swedana'** (heating mercury with prescribed Kalka dravyas in boiling Kāñjika liquid using Dolayantra method) with a view to loosen its doṣas.

**'Mardana'** (Grinding of mercury with prescribed Kalka dravyas and Kāñjika using Tapta Khalva) to remove/destroy external doṣas (impurities) for 3 days. Then mercury is collected by washing with hot water.

**'Mūrcchana'**– Grinding of mercury with prescribed Kalka dravyas till it is made Naṣṭapiṣṭa (divides into finest globules and loses its form and appearance) using iron mortar. It destoyes Naisergika and Kañcuka doṣas.

**'Utthāpana'**– Regaining of Nastapista mercury into its original mercury form (either by washing with hot water, hot Āranala or Ātapa Śoṣaṇa or by Pātana process) with a view to remove its Naisargika and Kañcuka doṣas.

**'Pātana'**– Sublimation/Distillation after making its piṣṭi with 1/3rd part Copper sheets and lemon juice by grinding, and then it is subjected to heating using improved Pātana yantra to remove its Yaugika doṣas especially.

The remaining three Saṁskāras (Bodhana, Niyamana and Dipana) are meant to induce/potentiate its properties.

**'B(R)odhana' (Activation)–**

In this mercury is kept in 'Sāndra saindhava vāri' (Saturated saline solution) in glass Jara for 3 day without disturbing it, to remove its Klaivya doṣa (inactiveness) and to make its Āpyāyana (Potentiation).

**'Niyamana' (Restraining)–**

In this mercury is subjected to Swedana (heating with prescribed Kalka dravyas in boiling Kāñjika liquid using Dolāyantra method) to restrict/restrain its 'Cāñcalya' (hyper activeness) which is gained by Bodhana Saṁskāra. In the end mercury is collected by washing it with hot water.

**Dīpana (Grāsārthi/Mukha Karaṇa)–**

In this also mercury is subjected to Swedana as above with prescribed Kalka dravyas in boiling Kāñjika to improve its appetite (metal consuming power) and to make it 'grāsārthī' (desirous of consuming grāsa (metal content).

In these eight Saṁskāras following procedures are involved, viz.– Swedana, Mardana, Kṣālana, Pātana and Saindhava vāri sthāpana.

**Classification of Rasa dravya (Drugs of Mineral Origin)–**

In Rasa śāstra rasa (mercury and a few drugs of mineral origin are found used and these are classified either on the basis of their utility towards mercury on preference basis or on the basis of their specific physical and therapeutic characteristics.

As regards their utility towards Rasa (mercury) these are classified on the basis of their very high, medium and ordinary utility point of view. Those which are highly useful for mercury are grouped as 'Mahārasa' or 'Rasas'. Those which are useful in medium way these are 'Uparasas' means these are comparatively less useful than 'Mahārasas' and those which are found useful in ordinary way are grouped as 'Sādhāraṇa rasas'. Means these are still less useful then 'Mahārasas' and 'Uparasas'. There are other scholars which consider Rasa (mercury) as a main drug in Rasa śāstra and all other drugs which are found useful for mercury in some way or other way or which are inferior to Rasa are grouped in 'Uparasa' group only.

**'Lohas'** (Metals) are those which are extracted from the minerals in the form of their Satva content and also possess metallic characters. These are known as 'Lohas' and their sub groups are 'Sāra lohas' (Gold and silver), 'Sādhāraṇa lohas'– Tāmra (Copper) and Loha (iron) and 'Pūti lohas'– Nāga (Lead), Vaṅga (Tin) and Yaśada (Zinc). These have low melting points than the above two groups. There are some mixed types of lohas like Pittala (Brass), Kāṁsya (Bell metal) and Varta loha/Pañca loha (alloy made of five metals). These are known as 'Miśra lohas' or 'Upalohas'.

**'Ratnas'–** There are some drugs of stony nature and possess very superior qualities like more brightness, more shining, more hardness and high cost and as such considered best of all other drugs hence are known as 'Ratnas' (precious stones or gems). In this group some drugs are slightly inferior in their characters hencc these are known as 'Uparatnas' (Semiprecious stones).

In addition to the above drugs of mineral or mine origin, there are some herbal origin drugs which are also found mentioned in Ras Śastra texts. These possess very virulent toxic effects and as such these are grouped in 'Viṣa' and 'Upaviṣa' groups on the basis of their virulent or very virulent toxic effects.

All the above mentioned groups of drugs are found useful in the potentiation of mercury either making it thermostable or doing its Mukha, Karaṇa, Dhātujarana, Bandhana or even Māraṇa.

**Concept of 'Rasa Śalā' (Pharmaceutical factory)–**

A very beautiful and vivid description with regards to the Site and the building of 'Rasa Śālā' (Pharmaceutical factory) is found mentioned in the Rasa literature along with its working arrangements, various divisions, spiritual rituals, qualities of its employees and the types of equipments to be collected for complition of various Rasa operations and Pharmaceutical processes and procedures. Here the different types of Pharmaceutical operations have been found divided on the basis of different directions to achieve highest success in these operations on account of the blessings of Gods ruling these directions. The working arrangements of 'Rasa Śālā' have been divided in eight divisions. viz. The statue of 'Rasa Bhairava' should be installed in the 'Eastern direction' of the factory. Probably considering the most auspiciousness of this direction. It is the starting and entering point of this building hence here as soon as worker and supervising staff enters he must offer his prayer to Lord 'Rasabhairava' first and get his blessings for acheiving grand success in their Rasa and Pharmaceutical operations. The operations related to the use of fire are advised to be carried

out in 'Agnikoṇa' (South east direction) which is considered to be ruled by 'God Agni' who by virtue of his being the God of fire keeps control on fire related works (operations) thus the success in such operation is always expected if such works are performed in this direction.

The Yāmyabhāga (Southern part) is recommended for 'Pāṣāṇa Karma' which means (the grinding etc. works involving the use of stone made equipments) should be carried out in this direction. The God of this direction is Lord 'Yama' who is considered to be the God controlling death. And if any operations related to grinding etc. are done in this direction which are considered responsible for the destruction of forms of drugs/materials, if carried out in this direction are expected to be completed safely with the blessings of Lord 'Yama' who is considered to be the God controlling this direction.

The 'Nairitya Koṇa' (South west direction) is advised for performing 'Śastra Karmas' like cutting, slicing etc. As this direction is ruled by Rākṣasas (Demons) who are cruel in nature and keeps the control on sharp weapons/instruments. Hence the cutting, slicing etc. operations involving the use of sharp instruments if done in this direction may likely to be completed safely and successfully with the blessing of the Demons.

The 'Vāruṇa bhāga' (the western part of the factory) is advised for washing, cleaning etc. works involving the use of water. As this direction is ruled by God 'Varuṇa' who is considered to be the God of water resources, hence the operations involving the use of water if done in this direction may never face water shortage and get completed successfully with the blessings of Lord/God 'Varuṇa'.

The 'Vāyavya Koṇa' (North west directions) is ruled by the God Vāyu (wind) who is supposed to control wind blowing. Hence the drying operations of the drugs/materials/and the preparations if done in this direction will never face blowing wind shortage and get dried easily with the blessings of God 'Vāyu'.

The 'Uttara digbhāga' (The northern part of the factory) is governed by God 'Kuvera' who is considered to be the God of

'wealth and finances'. Hence the Vedha Kurmas (Transformation operations of lower metals into higher metals) are advised to be done in this direction. Hence if the operations concerning to mercurial operations involving Vedha process is done in this direction the success in these operations is certain with the blessing of God 'Kuvera'.

The 'Iśāṇa koṇa' (North eastern direction) is ruled by Lord 'Śiva'/Rudra who is considered to be the creator of mercurial operations (specially concerning to Vedhanakarma). Hence the transformed mercurial products and the other finished products if stored in this direction then their potency and effectiveness will be preserved for long time and there self life will be very prolonged one.

**Text details–**

The present text on Rasa śāstra contains 10 chapters. Which deals all the important aspects of Rasaśāstra (Ayurvedic Pharmaceutics). The first chapter deals with the historical back ground of Rasaśāstra. In second chapter philosophical background of Rasa (mercury) is dealt with. The third chapter is devolped to deal with various important points concerning to Rasa/Pārada (mercury) i.e. its Saṁskāras, Doṣas, Processes and Prayogas. In fourth chapter Lohas (Metals of medicinal importance) and their processing techniques are dealt in details. In fifth chapter various minerals useful for mercurial processes and potentiation are dealt with along with their classification in various groups i.e. Mahārasa group, Uparasa group and Sādhāraṇa rasa groups. In this chapter their processing techniques are also dealt with. In sixth chapter Ratnas and Upratnas (precious and semiprecious stones of medicinal values) are dealt with in detail. In seventh chapter Sudhāvarga (Calcium group) materials/drugs of medicinal importance are dealt with along with their processing techniques. In 8th chapter Viṣopaviṣa group of materials (Poisonous and subpoisonous group of drugs having medicinal importance) are dealt with along with their important śodhana methods. In 9th Chapter various equipments like– Mūṣās, Puṭas, Koṣṭhies and Yantras are dealt with. In 10th chapter Pāribhāṣika Śabdas (Technical terms) used in Rāsaśāstra are dealt with along

with their explanations. In this way the text contains all the important aspects of Rasaśāstra necessary to be known to the students and the scholars.

In the end I express my sincere and heart felt thanks to my students and collegues who helped me in this great task. Last but not the least I can not forget to express my gratitude and also my sincere thanks to Shri Atul Bhai ji of Chaukhambha Orientalia, Varanasi who has always inspired me and pressed me greatly to write the script and to send them for printing. During printing the proofs have been sent several times for correction and making these ready for final printing. I also thank to the proof readers and other concerned persons who greatly helped me and took pains in this regard.

I also offer my sincere thanks to my family members who are kind enough to allow me to work on this project and for supplying me, the necessary materials and other items whenever required.

Makara Sankranti- 15th
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# CHAPTER-1
# HISTORICAL BACKGROUND OF RASAŚĀSTRA

Rasa śāstra or Rasa cikitsā are the part and Parcel of Āyurvedic Medicine. This Āyurveda (The life science) has came on the earth through a tradition – i.e. from Brahmā to Indra, Bharadwāja, Ātreya and so on with a view to remove the sufferings and the miseries of the hole universe. Our great sages (Risies) then took most active part in spreading this knowledge of life science (Āyurveda) on the earth in general and on Indian soil in particular.

Initially the knowledge of Āyurveda was utilised for the goodness of living beings in general and the mankind in particular. According to classical texts its main objective was to prolong the life span of human subjects and also to maintain and promote their positive health. The cure of diseases was the secondary objective of Āyurveda.

It is also evident from the concerned literature that since ancient times though, all the three kinds of drugs (herbal, mineral and animal origin) were found used for acheiving the above mentioned objectives. However the use of herbal drugs was found to be more common in ancient times than the other type of drugs, probably on account of their easy availability and easy processing techniques. The use of metallic and mineral drugs including Rasa (mercury) came into medicinal use at a later date i.e. from 8th/9th Cent. A.D. and onwards. Though, the pre-historic texts like-Rigveda and Atharvaveda have mentioned some of the medicinal values of the metals like Gold, Silver etc. still the regular use in the Āyurvedic therapeutics has started only from Buddhistic era or from 8th/9th Cent. A.D.

The great Indian alchemist – 'Nāgārjuna' who flourished in India in about 8th Cent. A.D. may be credited for starting the use of metals, minerals and mercury etc. drugs in Āyurvedic therapeutics (Rasa Cikitsā). It was again his time when Rasa Cikitsā (Mineral therapy) was recognised as a 'Diavīcikitsā' (Devine therapy or the therapy of choice) in the history of Indian medicine considering its superiority over the other types of therapies (Treatments i.e. Mānuṣī and Āsurī type of cikitsā) prevalent in Indian soil since ancient times.

It is important to mention here that not only Rasa-cikitsā but the physicians who are experts in this type of knowledge/ medicine and in its practice are also considered superior to their counter-parts because of their high recognition in the society. Historically the metallic, mineral and mercurial compounds have been found to be included in the texts of Āyurvedic therapeutics little later on the basis of their quick therapeutic effectiveness, lesser dose schedule and many other superior qualities. The 'Carakradatta' (11th A.D.) Text of Āyurvedic Therapeutics deserves mention in this context.

The term Rasaśāstra is composed of two words i.e. Rasa and Śāstra. Here the term 'Rasa' is used to denote metal or mineral in general and Pārada (mercury) in particular. Thus, the term Rasaśāstra means the knowledge concerning to mercury, metals and minerals and their processing techniques and uses. It may be pointed out here that the metals/minerals, though, found used in therapeutics since ancient times but to the limited extent only. The possible reason for this may be their non-conversion to suitable pharmaceutical forms due to non-development of more sophisticated and and suitable pharmaceutical processing techniques. And as such on internal use these may not be found absorbed into the system properly and if absorbed may prove harmful or toxic to the body tissues and organs and thus, their use in therapeutics remained very much limitted in ancient times.

But historically it is clear that after the development of Rasaśāstra in about 8th/9th Cent. A.D. when many new and sophisticated pharmaceutical processing techniques, like–Śodhana, Jāraṇa, Māraṇa, Mūrcchanā and the Rasa Saṁskāras were found developed, these metallic/mineral/mercurial drugs were properly processed and found included in Āyu. therapeutics frequently. Because of the availability of their proper proeessing techniques which greatly helped to change these to a most suitable pharmaceutical forms i.e. to a Rasa like form which is highly absorbable, therapeutically most effective and also least or non-toxic to the body tissues and the organs. And as such their use in Āyurvedic therapeutics has been made very frequent since 11th Cent. A.D. and onwards.

Another important meaning of the term Rasaśāstra is that it is the science or the knowledge of changing the drugs, irre-

spective of their origin, into a form which is very similar to Rasa like (highly absorbable) form. This meaning is presumed on the basis of the statement made in the context of 'Mrita loha' i.e. 'Mṛitāni Lohāni Rasībhavanti' means the lohas (metals) having been converted into Mritā form (reduced to ashes form) change to Rasa like form means a colloidal form in which these could be absorbed properly into the blood and reach to their target tissue or organ easily and immediately through a circulating blood. It is also said in the context of 'Puṭapāka' that the application of Puṭa (application of desired quantum of heat repeatedly) applied during Māraṇa process is likely to induce 'Vicitra guṇa dīpti' (many wordurful therapeutic properties) in the Mṛita loha. Thus the application of repeated Bhāvanā and Puṭapāka for the preparation of metallic bhasmas greatly help to make these metallic formulations to be converted into highly absorbable, therapeutically most effective and least or non toxic forms to the body tissues and the organs.

It is also important to mention in the context of Rasa śāstra that initially it was developed to acheive Loha siddhi or Lohavedha means Metallic transformations i.e. transformation of lower metals like- Lead, Tin, Copper etc. into noble (higher) metals like Gold and Silver etc. with a view to remove poverty from the world. And for this ancient scholars of Rasa śāstra have done comandable work to potentiate mercury in such a way that it could develop Vedha (transformation) power for the lower metals so that these may produce as much amount of Gold and Silver as they wish. And for this these scholars have developed number of new processes, techniques and compounds and got good success also in this field. But here (in Lohasiddhi) much patience, time and labour is required and even though, the chances of success are very much limited. Hence in due course of time our ancient scholars diverted their attention and effort towords 'Deha-Vedha' or Rasāyana aspect with a view to strengthen the parishable body to a strong, long living and healthy body and to acheive Jīvanmukti (liberation from wordly affairs during their life time only) as the same is considered their primary objective. And to acheive such objectives the ancient scholars have started to use mercurial and metallic products produced for lohavedha and got good success in this respect. As a result of this a new concept of Deha vedha/Rasāyana vāda has started to develop in the field of Rasa śāstra and Āyurveda in the end of

12th Century A.D. Inspired with the good success acheived by these scholar many other scholars like 'Nandi', 'Somadeva' and Nitya Nāth Siddha etc. who were working in the field of Lohavedha have also developed their interest in this new concept of Dehavedha/Rasāyanavāda and have also started to use mercurial and metallic compounds for this purpose. And thus, in due course of time this new concept of 'Dehavedha' gained much popularity and prominance than Lohaveda in the field of Rasa śāstra. These scholars then developed many new processes like 'Mūrcchanā, and Gandhaka jāraṇā etc. and new compounds like – Kūpīpakva Rasāyanas, Poṭṭalīkalpas and the Bhasmas of almost all the metals and minerals and used these for Rasāyana and vyādhi nāśana purposes and got very good success. Thus, a new branch known as Rasa cikitsā was started to flourish in about 13th/14th Cent. A.D. and onwards. And almost all the texts of Rasa śāstra have started to include Rasa formulations and Rasa Cikitsa as majer part of the texts. In this way the Dehavedha concept which is aimed for making the human body very strong, healthy, long living and imparishable along with prevention of sanile changes and the diseases in the body. These Rasa formulations were also found highly effective in curing the severe and chronic diseases quickly. And as such the Dehavedha and Rasāyana concepts have become highly popular in the field Āyurvedic Rasa śāstra and made the Lohavedha concept as a matter of historical value. And the later scholars of Rasa śāstra have started to give less importance to Loha vedha concept and in the texts of 20th Cent. it has been found completely negalected.

In the present times also the prominance of Dehavedha concept continues and the mercurial and metallic compounds stands on the top of the list of Āyurvedic formulations on the basis of their very superior qualities. It is highly important to mention here that Āyurvedic method of processing these mercurial, metallic and mineral compounds may be held responsible to make these compounds highly absorbable into the system, therapeutically most effective and least or non toxic to the human tissues and organs. The Āyurvedic methods for Śodhan, Jāraṇa, Māraṇa and Mūrcchanā etc. processes deserves mention in this context and would be discussed in details in this texts.

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# CHAPTER-2
# PHILOSOPHICAL BACKGROUND OF RASA (MERCURY)

According to ancient concept Haraja (mercury) and Hari (Viṣṇu) the all nieghly God' both are considered equal in all respects.

While describing the qualities of Haraja[1] (mercury) the Rasa Hṛidaya Tantra Kāra has said that Haraja is claimed as to be Pītāṁbhara, Balijit, Guruḍacara, Bahala rāgayuta and Bhava Dainya-duḥkhahara just like Hari. It has further been explained in this context that Rasa after having gone through Suvarṇādi Jāraṇa saṁskāra its outer appearance looks yellowish just like Hari who always bears Pītāṁbara. Mercury is also claimed as Balijit just like Hari which means the toxic effects of mercury could be conquered or venished after it is being treated with Bali (Sulphur) and also it gets Pakṣacchinnatva (made thermostability) means becomes potentiated, and after having made solidified develops the power to move in the sky like that of Garuḍa (the devine bird). After having been treated with eighteen (18) Saṁskāras it (mercury) develops the Vedha (Transformation) power of lower metals into higher metals and as such may remove poverty and mesureis of the men- kind of the world just like Hari who destroys the Dainya and duḥkhas (poverty and sorrows) of the menkind in the world.

**Auspiciousness of Rasa (Mercury)–**

As per ancient Philosophical concept Rasa is considered to be Pavitra[2] tara (highly auspicious) material.

It has been claimed in Rasa Hṛidaya Trantra that by the Darśana of Raseśwara the sins caused due to the murder of Gods, Teachers, Cows and Dwijas (Brāhmins) which are considered to be

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1. पीतम्बरोऽथ बलिजिन्नागक्षयबहलरागगरुडचरः ।
   जयतिसहरिरिव हरजो विदलितभवदुःखदैन्यहरः ॥ (र.ह.त. १/२)
2. सुरगुरुगोद्विजहिंसापापकलापोद्भवं किलासाध्यम् ।
   तदपिचशमयनतियस्मात्कोऽन्यस्तस्मात्पवित्रतरः ॥ (र.ह.त. १/४)

Asādhya (undestroyable), are destroyed vanished hence there is no better Pavitra tara (highly auspicious material) than Rasa.

It is also said in Rasa Ratna Samuccaya[1] that on account of the sins caused due to the murder of Gods, Teachers, cows, and Brāhmins the uncurable Świtra (white leprotic patches) is produced and that too may be cured by this Rasa (mercury) hence there is no-better highly auspicious material than Rasa.

**Rasa Darśanaphala–**

It has been further[2] said in 'R.R.S.' that by mere Darśana (perception) of Rasa the persons get Puṇya (Propitiousness) similar to those who have performed hundreds of Aśwamedha yajnas (oblations), donated thousands of Gold coins, crores of cows and also like those who have taken the dips in all the places of Piligrimages.

**Effects of Rasaliṅga Adoration[3]–**

One who prepare and adors Rasaliṅga with devotion gets the benefits of the adoration of the lingas/iodols/epithets of Lord Śiva of all the three worlds.

**Types and effects of Rasa[4] Puja–**

There are five types of Rasa Pūjā (worship of Rasaliṅga) such as 1. Bhakṣaṇa (Injestion), 2. Sparsana (Touch), 3. Dāna (Donation), 4. Dhyāna (Meditation) and 5. Paripūjana (worship with prescribed method). All the above five types of Rasa Pūjā is claimed to destroy Mahāpātakas (Great/sever sins) of the persons.

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1. सुरगुरुगोद्विजहिंसापापकलापोद्भवं किलासाध्यम् ।
श्वित्रं तदपि च शमयति यस्तस्मात्कः पवित्रतरः ॥ (र.र.स. १/३४)
2. शताश्वमेधेनकृतेनपुण्ये गोकोटिभिःस्वर्णसहस्रदानात् नृणांभवेत्सूतकदर्शनेन यत्सर्व-तीर्थेषुकृतभिषेकात् । (र.र.स. १/२२)
3. विधाय रसलिङ्गंयो भक्तियुक्तः समर्चयेत् । जगलितयलिङ्गानां स पूजाफलमवाप्नुयात् ॥ (र.र.स. १/२३)
4. भक्षणंस्पर्शमं दानं ध्यानं च परिपूजनम् । पञ्चधा रसपूजोक्ता महापातकनाशिनी ॥ (र.र.स. १/२४)

**Details of each Types–**

**1. Bhakṣaṇa[1]–** Internal ingestion of mercury certainly destroyes various diseases of all the persons caused on account of the sins done in previous life.

**2. Sparśana[2] (Application of mercury paste)–** If the epithet of Lord Śiva is pasted/anointed with the paste made with mercury and sulphur then the sins done in Pūrva janma (previous life) are destroyed immidiately.

**3. Rasa Dāna[3] (Internal administration) phala–** One who administers mercury internally after doing its Sodhana and Pāka (heat treatment) to the patients definitely gets the benefits like that of Tulādāna and Aśwamedha yajnas (oblations).

**4. Rasa Nindā phala[4]–** One who abuses/Criticises Rasa (mercury) which is claimed to be the per excillence of Lord Śiva goes to the deepest hell for indefinite period.

**5. Rasa Dhyāna[5]–** Ancient Sages have thought that if they get success in Rasa Karmas these can make the world free from poverty. It is said as 'Rasa dhyāna' and by this thought the sins caused by Brahma hatyā (Brahmins murder) are destroyed.

**6. Rasa Paripūjana (Adoration of mercury)[6]–** Abhra grāsa (addition of Abhraka Satva as grāsa to mercury) is considered as the Naivedya (eatable offering of mercury). In this way if adoration of mercury is done then the persons gets the benefits of doing yajnas.

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1. हन्ति भक्षणमात्रेण पूर्वजन्मौधसम्भवम्। रोगसंघमशेषाणां नराणां नात्र संशय: ॥
(र.र.स. १/२५)
2. पूर्वजन्मकृतंपापं सद्योनश्यति देहिनाम्। सुगन्धपिष्टसूतेन यदि शम्भुर्विलेपित: ॥
(र.र.स. १/२६)
3. रोगिभ्यो यो रसदत्ते शुद्धिपाकसमन्वितम्। तुलादानाश्वमेधानां फलं प्राप्नोति निश्चितम् ॥
(र.र.स. १/२९)
4. यश्चनिन्दति सूतेन्द्रं शम्भोस्तेज: परात्परम्। सपतेन्नरके घोरे यावत्कल्प विकल्पनम् ॥
(र.र.स. १/२८)
5. सिद्धे रसे करिष्यामि निर्दारिद्रयमिदं जगत्। रसध्यानमिदं प्रोक्तं ब्रह्महत्यादिपापनुत् ॥
(र.र.स. १/३०)
6. अभ्रग्रासो हि नैवेद्यं रसस्य परिकीर्त्तितम्। रसस्येत्यर्चनं कृत्वा प्राप्नुयात्क्रतुजं फलम् ॥
(र.र.स. १/३१)

**Parama Pada Prāpti (Acheivement of Parama Pada)[1]–**

At last Rasācāryas have mentioned that if a person dies as a result of ingestion of mercury he gets rid of sever sins and acheives Parama Pada – Mokṣa (liberation from worldly affairs).

**Forms of Mercury Advised for Internal Use[2]–**

Mercury on having been made Mūrcchita in (Compound form) destroys diseases. On having been made solidified/ Baddha/fixed provides Mukti/Mokṣa (emencipation) and on having been made Mṛita/Mārita (converted to ashes) makes the persons Amara (immortal). Hence, there is no better compassinate substance other than mercury.

**Importance of Rasa Siddhi[3]–**

Solidification of mercury (Rasabandha) is the only opulent process, at the onset of which, one who is optimistic, may claim to acheive Siddhi (success) in mercurial operations and when it is acheived the whole world/earth could be made free from the senelity and mortality.

**Importance of Sthira deha[4] (Stable body)–**

All the worldly affairs like Dhana (wealth), Śarīra (body) and Bhoga (enjoyments) are considered unstable hence one should always endeavour to acheive Mokṣa (Liberation from the worldly affairs) and that is possible only by continuous learning of sacred scriptures and the same is possible to acheive only by Sthira deha (sound physique).

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1. उदरे संस्थिते सूते यस्योत्क्रामतिजीवितम् । स मुक्तो दुष्कृताद्घोरात् प्राप्नोतिपरमंपदम् ॥ (र.र.स. १/३२)
2. मूर्च्छित्वा हरतिरुजं बन्धनमनुभूयमुक्तिदो भवति ।
   अमरीकरोति हि मृतः कोऽन्यः करुणाकरःसूतात् ॥ (र.र.स. १/३३)
3. रसबन्धएवधन्यः प्रारम्भेयस्यसततंमिहकरुणा । सेत्स्यति रसे करिष्ये महीमहं निर्जरामरणाम् ॥ (र.र.स. १/३५)
4. इति धनशरीरभोगान् मत्वानित्यान् सदैव यतनीयम् । मुक्तौतच्चाभ्यासात् स च स्थिरे देहे ॥ (र.र.स. १/३८)

It is important to mention here that ancient Rasācāryas have observed that no Rasāyana[1] either of Vegetable origin or of metallic origin is capable of making the body Sthira (stable) as these themselves are unstable means could be burnt, moistioned and dried.

**Amṛitatva of Rasarāja[2] like that of Yogins–**

It has been mentioned in Rasa Ratna Samuccaya that Rasarāja having consumed Abhraka Satva if consumes Gold and other metals becomes like an Ambrosia like that of Yogins who when contemplate them selves in the idols of Lord Śīva get Amṛitatva (Non perishability).

**Ajaramara Kāritva of Rasarāja–**

It has been further claimed in this context that Rasarāja[3], which has consumed and digested all the satvas and metal contents become like that of Paramātmā in which all the Satvas (living beings) became lina (contemplate) and so processed mercury alone could make the body Ajara and Amara (free from sanile changes and the death).

**How Tatva (Brahma) Can be Acheived[4]–**

It is realy a fact that by the unstable, Kṣaṇabhangura (perishable with in moment) and distressed body on account of the onset Jarā (ageing process), Vyādhi (diseases) and Duḥkhas (various kinds of sorrows) it can never be possible to worship that sublle supreme Brahma.

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1. तत्स्थैर्ये न समर्थं किमपि रसायनं मूललोहादि । स्वयमस्थिर स्वभावं दाह्यं क्लेघं च शोष्यं च ।। (र.र.स. १/३९)
2. अमृतत्वं भजन्ते हरमूर्त्तौ योगिनो यथा लीना: । तद्वत्कवलितगगने रसराजे हेमलोहाद्या: ।। (र.र.स. १/४१)
3. परमात्मनीव सततंलयो भवति यत्रसर्वसत्वानाम् । एकोऽसौरसराज: शरीरमजरामरं कुरुते ।। (र.र.स. १/४२)
4. न हि देहेनकथंचिज्जराव्याधि दु:ख विधुरेण । क्षणभंगुरेण सूक्ष्मं तद्ब्रह्मोपासितुं शक्यम् ।। (र.र.स. १/४५)

**Nothing is Superior than Ajarāmara body[1]–**

There is nothing superior than Ajara and Amara body as it is a body of all the Vidyas (knowledges), it is the root cause/ base of all the four Puruṣārthas (Principal objects of human life). (i.e. Dharma, Artha, Kāma and Mokṣa).

**Importance of Jīvan-mukti–**

It is said in this context that even Brahmā etc. Gods also used to Try to acheive Divya Tanu (strong, non-perishable and healthy body) because those who acheived Jīvanmukti (such sages) may live very long or indefinite period (Kalpānta sthāyinaḥ) mean live for number of Kalpas.

**Acheivement of Jīvanmukti[2]–**

Yogees always desire to acheive Jīvanmukti (Mokṣa/liberation from the worldly affairs during their life time) and for that they should first endeavour to acheive Divya Tanu (Stable or non perishable body) and that may be acheived by the use of 'Hara Gaurī Sṛiṣṭi' (mercury and sulphur compounds).

Thus acheivement of Divya Tanu (devine body) is considered very essential for perceiving Brahma Jyāna and Jīvanmukti (liberation from worldly affairs in this life time only) and such Divya Tanu is possible to be acheived only by contindlous use of mercury & sulphur compounds internally.

Thus acheivement of Jīvanmukti is very important and the Yogees who want to acheive Jīvanmukti they should first try to acheive Divya Tanu (Non perishable, strong and healthy body) and this Divya Tanu can be acheived by the continuous use of Hara Gauri Sṛisti (mercury and sulphur compounds).

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1. आयतनं विधानां मूलं धर्मार्थकाममोक्षाणाम् । श्रेयःपरकिमन्यच्छरीरमजरामर विहायैकम् ॥ (र.र.स. १/५३)
2. ब्रह्मादयोयतन्ते तस्मिन्दिव्यांतनुं समाश्रित्य । जीवन्मुक्ताश्चान्ये कल्पान्तस्थामिनोमुनयः ॥ (र.र.स. १/५८)
3. तस्माज्जीवन्मुक्तिं समीहमानेन योगिना प्रथमम् । दिव्यातनुर्विधेया हरगौरीसृष्टिसंयोगात् ॥ (र.र.स. १/५९)

# CHAPTER- 3
# DESCRIPTION OF RASA/PĀRADA (MERCURY) Hg

As per ancient Rasa literature Rasa (Mercury) is described to be of divine origin as it is claimed to be related to Lord Śiva/ Hara. Its mythological origin[1] is found described in 'Rasa Ratna Samuccaya' (13th A.D.). And according to this it was the product of 'Śivaśakti Samāgama' and it has been said to be a 'Carama Dhātu' (End metabolic product) of Lord Śiva and Śakti. As during that time a 'Trilokī-Kṣobha Kārī Saṅkoca' took place- that means when temperature rises in side the earth, Volcanic explosions causing earth-quakes occur, which in due course causes various liquids to come out with fumes. These liquids contain mercury along with other molten metals. Owing to its heaviness mercury moved down deep into the earth and get deposited. Thus, occasionally it is obtained in native form too in the mines of cinnabar in small amounts as globules. Generally mercury is obtained in the form of ores (i.e. As Cinnabar or Meta Cinnabar). In these ores it is in Sulphide form (HgS). The other important ore is 'Calomal' in which it is in Chloride form ($HgCl_2$). Mercury is also found mixed with Antimony and Sulphur and the important ores of this group are 'living stonite' and 'warsenite'. Its oxide form is also found in nature as 'Montriodite' (HgO).

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1. **रसोत्पत्ति–**

शैलेऽस्मिन् शिवयोः प्रीत्या परस्पर जिगीषया । सम्प्रवृत्ते च सम्भोगे त्रिलोकी क्षोभकारिणी ।।
विनिवारयितुं बह्निः सम्भोगं प्रेषितः सुरैः । कांक्ष्यमाणौस्तयोः पुत्रं तारकासुरमारकम् ।।
कपोतरूपिणं प्राप्तं हिमवत्कन्दरेऽनलम् । अपक्षिभावसंक्षुब्धं स्मरलीलाविलोकिनम् ।।
तंदृष्ट्वा लज्जितः शम्भुर्विरतः सुरतात्तदा । प्रच्युतश्चरमोधातुर्गृहीतः शूलपाणिना ।।
प्रक्षिप्तो वदने बहनेर्गगायामपिसोऽपतत् । बहिःक्षिप्तस्तया सोऽपि परिदंदह्यमानया ।।
संजातास्तन्मलाधानाद्धातवाः सिद्धिहेतवः । यावदग्निमुखाद्रेतो न्यपतद्भूरिभारतः ।।
शतयोजननिम्नांस्तान् कृत्वाकूपांस्तु पञ्च च । तदाप्रभृति कूपस्थं तद्रेतः पञ्चधाऽभवत् ।।
(र.र.स. १/६०-६६)

**Important Localities[1]–**

According to Āyurvedic texts mercury is mainly found in Darada Deśa and also in Himālayas in small amounts. But at present neither native mercury nor its ores are found in any part of India except in the sands of river 'Citrāla', where a few granules of Hiṅgula are available. Now a days it is obtained mainly from the mines of Spain, America (California, Taxas) Italy, Australia, British Borneo, China, Russia, Japan & Africa.

**Test for the Presence of Mercury–**

The presence of mercury in the mineral ores may be tested as follow–

For this powdered mineral should be mixed with lime powder (Calcium oxide) or with washing soda (Sodium carbonate) and heated in a test tube. If mercury is present in the mineral/ore the particles of mercury may be seen adhared to the cool portion of the test tube. But if Sulphur is also present in the mineral/ore a red coloured sublimate is seen in the upper portion of the tube along with a few shining particles of free mercury. A pungent smell of Sulphur-dioxide may also be detected from the tube.

**Extraction of Mercury from Its Mineral[2]–**

It is said in Ayurvedic texts that mercury extracted from

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1. **रसोत्पत्तिस्थान–**
   हिमालयात्पश्चिमदिग्विभागे गिरीन्द्रनामारुचिरोऽस्तिभूधरः ।
   तत्सन्निधानेऽतिसुवृत्तकूपे साक्षाद्रसेन्द्रोनिवसत्ययं हि ॥ (र.प्र.सु. १/१३)
   परितः पर्वतेसम्यक् क्षेत्रं द्वादशयोजनम् ।
   विस्तीर्णं च सुवृत्तं च सूतकस्य समीरितम् ॥ (र.प्र.सु. १/१५)
   तन्मृदः पातनेयन्त्रे पातितः खलु रोगहा ।

2. **दरदाकृष्ट सूतगुणाः–**
   जायते रुचिरःसाक्षादुच्यते पारदः स्वयम् । (र.प्र.सु. १/१६)
   अथवा ग्रायेत्सूतं दरदात्सनिगद्यते । कञ्चुकैर्नागवङ्गाधैर्विरक्तो रसकर्मणि ।
   हिङ्गुलाकृष्टसूतस्तुजीर्णगन्धसमोगुणैः । निम्बपत्ररसैः पिष्ट्वा हिङ्गुलंयाममात्रकम् ।
   जम्बीराणां द्रवैर्वाऽथ पात्यं पातनयन्त्रके । त सूतं योजयेत्पश्चात्सप्तकञ्चुकवर्जितम् ॥
   (आ.प्र. १/१६६-१६८)
   निम्बूरसेन संपिष्टात्प्रहरं दारदादृढम् । ऊर्ध्वपातनयन्त्रेण संग्राह्यो निर्मलो रसः ॥
   (आ.प्र. १/१७१)

'Hiṅgula' is considered best for the therapeutic uses hence, the ancient methods recommended for its extraction are being described as follows–

It may be extracted either by 'Damaruyantra' or by 'Kanduka yantra' method.

**1. Damaru Yantra Method[1]–**

In this method powdered 'Hiṅgula' triturated with 'Lemon' or 'Ārdraka' juice and divided into small, flat, round pieces, dried in sun rays may be kept in earthen pot wrapped with cloth smeared in mud. The pot containing Hiṅgula pieces should be closed with another bigger pot. The mouth of lower pot should be inserted in the mouth of upper pot and the joint should be sealed with cloth smeared in mud in such a way as to make the apparatus air-tight. Now keep the apparatus on furnace and apply strong heat to the lower pot for continuously six hours. The upper pot should be cooled by keeping wet cloth over its back portion to condense mercury fumes inside the upper pot. In the end the apparatus is allowed to be cooled by it self. Next day it is opened and condensed mercury fumes may be collected from the upper pot and convert it in mercury form by rubbing. If the required amount of mercury is not obtained, repeat the process once more.

**2. Kanduka Yantra Method–**

In this method the powdered Hiṅgula is spread over the cloth piece and the same is rolled like a ball and put on fire. It should be covered with a hollow big earthen pot from all sides except lowerpart to allow the air to enter and allow the burning to continue. By this method mercury is evaporated through heat and its vapours are condensed on the top of earthen pot due to

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1. अखिलशोधवरेण च वैयथा सकलकञ्चुकदोषवर्जित:।
बहुलदोषहरोऽपि भवेत्तदा भवतिशुद्धतमोदरदोद्भव: ॥ (र.प्र.सु. ३/५)
पतितो दरदेदेशे गौरवाद्बह्निवक्त्रत: । सरसोभूतलेलीनस्तत्रद्देशनिवासिन: ।
तां मृदं पातनायन्त्रे क्षिप्त्वा सूतं हरन्ति च ॥ (र.र.स. १/८८)
दरदं पातने यन्त्रे पातयेत् सलिलाशये । सत्वं सूतकसंकाशं जायते नात्र संशय: ॥
(रसार्णव)
तं सूतं योजयेद्योगे सप्तकञ्चुकवर्जितम् । (रसदर्पण)

coolness. In the end condensed mercury vapours may be collected from the upper portion of the earthen pot. In this method artificial cooling is not required for condensation.

It is also claimed in the texts that mercury extracted from Hiṅgula does not require any further Śodhana or other processes and it is considered free from Kañcuka and Yougika doṣas and equal to 'Ṣaḍguṇa balijārita mercury' in properties.

**Note–** With the above mentioned ancient methods only 60-70% of mercury could be obtained from Hiṅgula (Cinnabar) as these methods are crude so with these great loss in yeild is possible. But if advanced modern chemical methods are used 83% yeild is possible. The yield may also depends on the purity of mineral sample used.

The another point mentioned in Āyurvedic literature is about the superiority of this mercury sample than ordinary mercury. It is a purest mercury and also equal to 'Ṣaḍguṇa gandhakajārita' mercury. As Hiṅgula is a sulphide compound of mercury (HgS) which when heated its sulphur content burns and pure mercury is extracted.

**Synonyms of Mercury and Their Significance–**

It was a tradition in ancient times that the various aspects of drugs are delt through synonyms and as such the synonyms hold very high importance in ancient times. In the context of mercury also it is true. The synonyms of mercury either indicate its mythological origin, form, appearance or physical/therapeutic properties.

The synonyms like– 'Rudraretus', 'Śivabīja', 'Hara Tejas', and Rudraja indicate its mythological origin.

Śiva or Rudra is considered to be the most powerful God of Hindus. Bīja, Tejas and Retas are again considered highly essential and powerful substance of the living body. Thus the metal/substance refered to by these terms must possess high potency and efficacy and by virtue of this potency and efficacy it has occupied an important place and c in Alchemy and therapeutics.

'Capala', 'Cancala' and 'Khecara' are to indicate its physical properties to move quickly or to evaporate at a low temperature i.e. its non-thermostable nature.

'Śaśi-hemanibha', Galadrūpyanibha', 'Kālikārahita' are to indicate its form or colour i.e. it is just like liquid silver (in colour).

'Rasa', 'Rasendra', 'Sūta', 'Miśraka', 'Sūkṣma', 'Sarvadhātu Pati' are to indicate its physical and Alchemical properties.

'Rasa', 'Sūta', 'Pārada', 'Rasāyana', 'Mahābahni', 'Sūkṣma' are to indicate its pharmacological and therapeutical properties.

**Varieties[1]–**

Ancient texts have described the varieties of mercury on the basis of its colour and source of origin.

**Varieties Described by 'Rasa Prakāśa Sudhākara'–**

1. Śveta – White – Brāhmaṇa – Useful in Śvetakarma.
2. Rakta – Red – Kṣatriya – Useful for therapeutic uses.
3. Pīta–Yellow–Vaiśya–Useful in Alchemy/Gold making.
4. Kṛiṣṇa – Black – Śūdra – Useful for the maintainance of health.

**Varieties Described by 'Rasa Ratna Samuccaya' etc.[2]–**

1. Rasa – Rakta – Without impurities – Useful as Rasāyana.
2. Rasendra–Śyāva–Without impurities – Useful as Rasāyana.
3. Sūta– Iṣat-Pīta – Associated with impurities – Dehalohakara.
4. Pārada – Śveta – Associated with impurities –Sarvarogahara.
5. Miśraka – Mayūra Kaṇṭhasacchāya – Associated with impurities – Sarvasiddhiprada.

The properties of these varieties mainly depend on the place or source of origin and some times on the combination or the contact of mercury with other metals and minerals in side the mines.

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1. **रसभेदाः–**

कूपाद्विनिसृतश्चतुर्दिक्षुगतो द्विजः । क्षत्रियो वैश्यशूद्रौ च चतुर्धा जायते खलु ॥
(र.प्र.सु. १/१७)

श्वेता कृष्णा तथा पीता रक्ता वै जायते छविः ।
प्राच्यां याम्यां प्रतीच्यां च कौवेर्य्यां च दिशिक्रमात् ॥
श्वेतः श्वेतविधानेस्यात्कृष्णो देहकरस्तथा । पीतवर्णःस्वर्णकर्त्ता रक्तोरोगविनाशकृत् ॥
सर्वएकीकृता एव सर्वकार्यकराः सदा । सेविताः सर्वरोगघ्नाः सर्वसिद्धिविधायकाः ॥
(र.प्र.सु. १/१८-२०)

2. **रसभेदाः–**

रसो रसेन्द्रः सूतश्च पारदो मिश्रकस्तथा । इति पञ्चविधोजातः क्षेत्रभेदेन शुम्भुजः ॥
रसोरक्तो विनिर्मुक्तः सर्वदोषै रसायनः । सञ्जातास्त्रिदिशास्त्रेन नीरुजानिर्जरामराः ॥
(र.र.स. १/६७-६८)

**Properties of Each Variety–**

**1. Rasa–** is 'Rakta' (red) in colour, free from all types of 'doṣas' (impurities). Possess Rasāyana properties and by virtue of this it is capable of keeping the body free from all types of diseases, Jarā (old age) and Mṛityu (death). It not only shows its effects on human beings rather even Devas (Gods) are also made free from all evils. From alchemical point of view all the metals and the minerals are dissolved in it if these come in its contact.

**2. Rasendra**[1]**–** is Śyāva (blackish) in colour, Rukṣa (rough) in appearance, Aticañcala (highly movable) and free from all the doṣas (impurities). Possesses Rasāyana (rejuvenating) property and by virtue of this even Nāgas (snakes) are made free from Jarā (old age) and Mṛityu (death). It is considered a king or best of all the metals and minerals hence, the name Rasendra is given to it. Rasa and Rasendra varieties of mercury are claimed as rare according to the texts.

**3. Sūta**[2]**–** is Iṣatpīta (light yellow) in colour, Rūkṣa (rough) in appearance and mixed with doṣas (impurities). It needs Aṣṭasaṁskāras (eight special processes) before being used internally to get rid of its doṣas (impurities) and then only it becomes suitable for internal use to make the body strong and free from diseases. It can transform lower metals into higher metals. It is capable of giving 'Dehasiddhi' and "Lohasiddhi" both hence, the name suta is given to this variety.

**4. Pārada**[3]**–** is Śveta (white) in colour, obtained from Kūpas (mines) and Cañcala (highly movable). It is capable of curing all the diseases if it is used in combination with other drugs/Yogas

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1. **रसेन्द्रः–**
रसेन्द्रोदोषनिर्मुक्तः श्यावोरूक्षोऽति चञ्चलः । रसायनोऽभवंस्त्रेन नागा मृत्युजरोज्झिताः।।
दैवैर्नागैश्चतौ कूपौ पूरितौमृद्धिरश्मिभिः । तदाप्रभृतिलोकानां तौ जातावति दुर्लभौ ।।
2. **सूतः–**
ईषत्पीतश्च रूक्षाङ्गो दोष युक्तश्च सूतकः । दशाष्टसंस्कृतैः शुद्धो देहं लोहं करोति सः ।।
3. **पारदः–**
अथान्य कूपजः सोऽपि चञ्चलःश्वेतवर्णवान् । पारदो विविधैर्योगैः सर्वरोगहरः स हि ।।
(र.र.स. १/६९-७२)

(preparations). As it can save persons dying from diseases hence, the name Pārada is given to this variety.

**5. Miśraka**[1]**–** is associated with shades of different colours just like a Peacock's quill. These different shades of colours are due to the mixture of different metals/minerals in it. It possesses a capacity or power to dessolve or amalgamate metals which come in its contact. As the metals could be dessolved in mercury the name Miśraka is given to it. As it is an impure variety due the admixture of different metals from nature it needs to be processed with 18 Saṁskāras before its internal use. And if treated with various Saṁskāras it is made capable to give all types of Siddhies to the mankind.

Thus, it may be said here that the last three varieties of mercury i.e. (Sūta, Pārada and Miśraka) which are commonly available need to be processed with various (8 or 18) Saṁskāras before their internal administration as these are claimed to be associated with doṣas (impurities).

It is said[2] further in the texts that mercury which is said to have divine origin possess a power of making the man free from the diseases, very strong and Dīrghāyu (long lived) like Devas (Gods). And the Indra (King of Gods) did not liked it and prayed to Rudra to add it with some doṣas (impurities) so that its power and potency could be reduced to the great extent. In this way vari-

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1. **मिश्रकः–**

मयूरचन्द्रिकच्छायः स रसो मिश्रको मतः। सोऽप्यष्टादशसंस्कारयुक्तश्चातीव सिद्धिदः ॥
त्रयः सूतादयःसूताः सर्वसिद्धिकरा अपि। निजकर्मविनिर्माणैः शक्तिमन्तोऽतिमात्रया ॥
(र.र.स. १/७३-७४)

**रसादीनां निरुक्ति–**

रसनात्सर्वधातूनां रस इत्यीमधीयतो। जरारुङ्मृत्युनाशाय रस्यते वा रसोमतः ॥
रसोपरसराजत्वाद्रसेन्द्रइतिकीर्त्तितः। देहलोहमयीसिद्धिसूतेसूतस्ततःस्मृतः ॥
रोगपंकाब्धिमग्नानां पारदानाच्च पारदः। सर्वधातुगतं तेजो मिश्रितं यत्र तिष्ठति।
तस्मात्स मिश्रकः प्रोक्तो नानारुपफलप्रदः।

2. **देवतुल्यबलायुप्रदः–**

एवं भूतस्यसूतस्य मर्त्यमृत्युगदच्छिदः। प्रभावान्मानुषा जाता देवतुल्यबलायुषः।
तान् दृष्ट्वाऽभ्यर्थितो रुद्रःशक्रेणतदनन्तरम्। दोषैश्चकञ्चुकाभिश्चरसराजोनियोजितः।
तदा प्रभृति सूतोऽसौ नैवसिद्धत्यसंस्कृतः ॥ (र.र.स. १/७६-८०)

ous doṣas (Naisargika, Kañcuka and Yaugika) have been added to mercury by Lord 'Rudra' to reduce its power or potency.

**Doṣas (Impurities) of Mercury–**

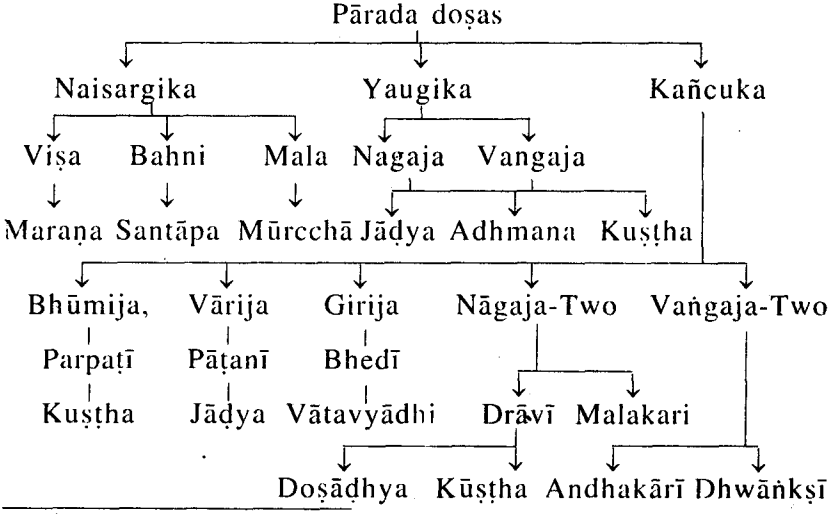
According to ancient texts following three groups of doṣas of mercury are found described–

**1. Naisargika doṣas[1] (Natural impurities)–** These are three, five or nine.

**2. Yaugikà doṣas[2] (Artificial or Physical impurities)–** These are two.

**3. Kañcuka/Aupādhika doṣas[3] (Covering/chemical impurities)–** These are seven.

**Table showing the various type of Doṣas of mercury and their effects–**




1. **नैसर्गिक दोषाः–**
   विषंबह्निर्मलश्चेति दोषा नैसर्गिकास्त्रयः । रसे मरण सन्ताप मूर्च्छानां हेतवः क्रमात् ॥
   (र.र.स. ११/२०)
   दोषाः पञ्च समुद्दिष्टाः पारदानां भिषग्वरैः । मलोविषंतथा बह्निर्मदोदर्पश्च वै क्रमात् ।
   मूर्च्छां मृत्युं मदं चैव स्फोटं कुर्युच्छिरोभ्रमम् ॥ (र.प्र.सु. १/२६)
2. **यौगिक दोषाः–**
   यौगिकौ नागवङ्गौ द्वौ तौ जाड्याध्मान कुष्ठदौ । (र.र.स. ११/२१)
3. **कञ्चुक दोषाः–**
   कञ्चुकाः सप्तसूतस्य कथयामि यथार्थतः। नामानिकथयाम्येषां देवीशास्त्रानुसारतः ॥

**Naisargika doṣas–** are those which come from nature or natural sources. As per most of the texts these are three in numbers which have been shown in the table along with their effects. As per R.P.S., R. Maṅgala and R. Kāma Dhenu these are five in numbers.

In case of Yaugika doṣas and Kañcuka doṣas no difference of opinion is seen. As regards their numbers, these are two and seven respectively.

**Table Showing the Naisargika Doṣas as per different Texts–**

| Name of Text | Name of dosa | Their Effects |
|---|---|---|
| R.R.S. 11/20 | 1. Viṣa | Maraṇa |
| | 2. Bahni | Santāpa |
| | 3. Mala | Mūrcchā |
| R.M. | 1. Mala | Mūrcchā |
| | 2. Viṣa | Mṛityu |
| | 3. Bahni | Dāha |
| | 4. Gurutva | Śūla |
| | 5. Capalatwa | Asthiratva |
| R.P.S. 1/26 | 1. Mala | Mūrcchā |
| | 2. Viṣa | Mritya |
| | 3. Bahni | Mada |
| | 4. Mada | Sphoṭa |
| | 5. Darpa | Śirobhrama |
| R.K.D. | 1.Viṣa | |
| | 2. Bahni | |
| | 3. Mala | |
| | 4. Gurutwa | |
| | 5. Ūḍḍīnatva | These are new additions |
| | 6. Kauṭilya | |
| | 7. Anāvarta | |
| | 8. Śaṅkara | |
| | 9. Ṣaṇḍhatva | |

मृच्छैलजलशुल्वायोनागवङ्गसमुद्भवा: । सूतकेकञ्चुका: सप्ततश्चैव विषोपमा: ।।
द्वादशैव हिदोषा: स्युर्यैश्चनिष्कासिताद्विजै: । तेषांहि रससिद्धि: स्यादपरेयमसन्निभा:।
तस्माद्दोषापहरणं कर्त्तव्यंभिषगुत्तमै: ।। (र.प्र.सु. १/२७-२९)
औपाधिका: पुनश्चान्यकीर्त्तिता: सप्तकञ्चुका: । भूमिजा गिरीजा वार्जा:
तेच द्वौ नागवंगजौ द्वादशैतेरसेदोषा: प्रोक्तारसविशारदै: । (र.र.स. ११/२२-२३)

**Yaugika doṣas–** are those which have been mixed in mercury from out side the mines by the traders from commercial point of view. These are mixed in it to increase its weight. These are commonly Lead and Tin and Lead being the commonest. Only Rasendra Maṅgala has named it as Aupādika doṣa otherwise no difference of opinion about this variety:

**Kañcuka doṣas–** are seven in numbers. But some difference of opinion is seen with regards to their names and sources. Kañcuka doṣas means these form a covering on mercury like a layer. These doṣas (impurities) come in mercury either from Bhūmi (earth) Giri (mountains), Vāri (water) or from the metallic ores which are found associated within mines. The lead and Tin ores are the commonest to form Kañcuka like impurities in mercury. As per Rasa Prakāśa Sudhākara Copper and Iron ores are also contribute such impurities in mercury.

From modern point of view 'Kañcuka doṣas' of mercury are the result of chemical reaction taking place in between mercury and other associated metallic ores inside or out side the earth. Even the trace elements present in mercury are sufficient to produce such chemical reactions hence it is seen that if mercury is kept open for some times in the atmosphare, a thin blackish layer is formed over its surface. This is probably due to a slow oxidation reaction taking place continuously even at normal temperature. Ancient scholars watched it constantly and considered it as Kañcuka type doṣa (impurity) of mercury. Ancient scholars have not only observed these Kañcuka doṣas but noted their toxic effects also and described as follows–

**Table Showing Kañcuka Doṣas Their Sources and Effects–**

| S.N. | Name of dosa | Sources | Toxic effects |
|---|---|---|---|
| 1. | Parpaṭī | Mṛinmayaja (from earth/soil) | Kuṣṭha |
| 2. | Pāṭanī | Pāṣāṇaja (from mountains) | Jāḍya |
| 3. | Bhedī | Jalaja (from water) | Balī, Palita, Khālitya, Vāta Saṅghāta |
| 4. | Drāvī | Nāgaja (Kāpālika) | Dadru, Gaja carma. |
| 5. | Malakarī | Nāgaja (Śyāmā) | Mahā Śveta Kuṣṭha, |

| S.N. | Name of dosa | Sources | Toxic effects |
|---|---|---|---|
| | | | Udara, Kāmalā, Pāṇḍu, Prameha. |
| 6. | Dhvāṅkṣī | Vaṅgaja (Kālikā) | Marmaccheda, Vasti rujā. |
| 7. | Andhakārī | Vaṅgaja (Kapāli) | Vīryahānī |

Thus[1] it may be said in short that mercury possess twelve doṣas (impurities) which either come from nature, mixed artificially or produced due to some chemical reaction/interaction taking place either inside the earth or outside in atmosphare. These impurities of mercury which come from either sources are likely to produce some toxic effects or diseases in the body if not removed properly before using it internally.

In medieval period mercury was recognised as the most powerful Rasāyana and also a highly effective therapeutic agent and proved most useful in achieving Dehasiddhi (proper metabolic functioning of the body) hence, ancient Ācāryas diverted their attention on reducing or minimising its toxic or bad effects on the body so that it may be used safely for making the body strong, healthy and free from diseases. They worked hard for this purpose and got success in this direction. It is evident from the statements made by different scholars in their respective texts, such as[2] 'Mercury with impurities is poison while without impurities it is an Amṛita (nectar) i.e. highly effective against diseases, decay and death. Thus, it is stated in the texts that it should be purified properly.

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1. **कञ्चुक दोषाणां वर्णनम्–**
धातवो रससंश्लिष्टा यदा विष्णुपदामृतम्। गृह्णन्ति हितदा तेषां कश्चिद् भागोऽवशीर्यते ॥
तश्चूर्णत्वमापन्नारसमाच्छादयन्ति ते। तेनावरणं साम्येन धातवःसूतसंगताः ॥
कञ्चुकाख्यां भजन्तीति प्राच्यपाश्चात्यसंम्मतिः। कैश्चिदेते कञ्चुकाख्या दोषा औपाधिकाःस्मृताः ॥
(रस तरिङ्गिणी)

2. **दोषशोधनम्–**
अतोदोष निवृत्यर्थं रसः शोध्यः प्रयलतः। शोधितो रसराजस्तु सुधातुल्य फलप्रदः।
दोषहीनो यदा सूतस्तदामृत्युजरापहः। साक्षादमृतमप्येष दोषयुक्तो रसो विषम् ॥
तस्माद्दोषनिवृत्यर्थं सहायैर्निपुणैर्भिषिक्। सर्वोपस्करमादाय रसकर्मसमाचरेत् ॥
(आ.प्र. १/२२-२४)
अष्टादशैव संस्कारा ऊनविंशतिका क्वचिद्। संप्रोक्ता रसराजस्य वसु संख्याःक्वचिन्मता ॥
(आ.प्र. १/३२)

Further these scholars were not satisfied with its purification and moved a step forward i.e. these tried for its potentiation by describing its eight or eighteen Saṁskāras.

In addition[1] to general purification ancient scholars have specifically mentioned specific drugs for removing specific type of impurities and the specific drugs are– shown as follows:

| **Impurities** | **Drugs** |
|---|---|
| 1. Mala doṣa | Kumārī, Aṅkola, Āragvadhamūla. |
| 2. Bahni doṣa | Triphalā, Āragvadha. |
| 3. Viṣa doṣa | Citraka |
| 4. Kauṭilya doṣa | Kṣāra dvaya, Kṛiṣṇa Dhattūra |
| 5. Anāvarta doṣa | Lavaṇas |
| 6. Śaṅkara doṣa | Navasāra |
| 7. Ūḍḍīnatva doṣa | Dhattūra |
| 8. Gurutva doṣa | Trikaṭu |
| 9. Ṣaṇḍhatva doṣa | Rajanī, Guḍa, Sarṣapa |
| 10. Sapta Kañcuka doṣa | Kumārī, Kārpāsa Patra, Trikaṭu |
| 11. Nāga doṣa | Vāsaka |
| 12. Vaṅga doṣa | Bibhītaka |
| 13. Giridoṣa | Kākamācī, Trikaṭu, Kumārī rasa. |
| 14. Kṣetra doṣa | Palāśa rasa |
| 15. Vaṅgaja Kapālī doṣa | Taṅkaṇa + Citraka |
| 16. Vaṅgaja Kālikā doṣa | Navasāra + Vajra Kanda rasa |
| 17. Nāgaja Syāmā doṣa | Taṅkana + Katutumbī rasa |
| 18. Nāgaja Kapālī doṣa | Vījaka Kvātha + Nimbu rasa |
| 19. Jalaja Kañcuka doṣa | Snuhī dugdha |
| 20. Sarva doṣa | Rasona rasa, Kākamācī rasa<br>Uṣṇa Āranāla |

1. **दोषाष्टक निवारणम्–**

काञ्जिकै: क्षालयेत्सूतं नागदोषं विमुञ्चति । विशालाङ्कोलचूर्णेनवंगदोषं विनाशयेत् ।।
राजवृक्षो मलंहन्ति चित्रको बह्निदूषणम् । चाञ्चल्यंकृष्णधत्तूरास्त्रिफलाविषनाशिनी ।।
कटुत्रयं गिरिहंन्ति ह्यसह्याग्निं त्रिकण्टक: । प्रतिदोषं कलांशेन तच्चूर्णं सकन्यकम् ।
सुवस्त्रगालितं खल्वेसूतं क्षिप्त्वायथाक्रमम् ।। प्रत्येकं प्रत्यहंयत्नात् सप्तरात्रं विमर्दयेत् ।
उद्धृत्यचारनाले च । मृद्भाण्डे क्षालयेत्सुधी: । सर्वदोष विनिर्मक्त: सप्तकंचुकवर्जित: ।
जायते शुद्धसूतोऽयं योजयेद्रसकर्मणि ।। (आ.प्र. १/१५५-१५९½)

**Effect of Impure Mercury[1]–**

It is said in the Text that if impure mercury is used internally it is likely to produce following bad effects/diseases in the body, viz. Vidāha (burning sensation), Krimi (worms), Kuṣṭha (leprotic leasons), Agnimāndya (digestive disturbances), Aruci (Anrelish-ness), Vami (vomiting), Jāḍya (stiffness) and even death. Thus instead of doing good it may do harm to the body hence, should be used after purification only. In modern science also mercury is claimed highly toxic also i.e. continuous and prolonged use of mercury may produce increased salivation, stomatitis, colitis, irri-tability, tremours, headache and dermatitis, ventricular arrhythamia, marked renal impairment and skin rashes are also reported.

**Method of Śodhana (General purification)[2]–**

There are number of methods for the Śodhana (general purification) of mercury. of these 'Pātana Process (i.e. sublimation or distillation) is the commonest recommended procedure in almost all the texts. In some texts only filtration through double or four fold cloth is recommended for its purification. According to some texts such filtration should be done several times i.e. 7-21 times. Washing with hot Āranāla or Kāñjika is also recommended for this purpose.

As per Rasa Taraṅginī mercury should be rubbed with equal part of lime powder for 3 days and then should be filtered through a cloth.

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1. **अशुद्धपारद दोषाः–**
नागोवङ्गोमलोवह्निश्चापल्यं च विषंगिरिः। असह्याग्निर्महादोषा निसर्गात्पारदे स्थिताः।
जाड्यगण्डौतनौ नागात्कुष्ठंवंगद्वुजोमलात्। दाहोवह्नेश्च चापल्याद् वीर्यनाशोमृतिर्विषात्।
गिरैःस्फाटोऽह्यसह्याग्निदोषान्मोहोऽभिजायते॥ (आ.प्र. १/१६-१८)

2. **शोधन प्रकाराः–**
ऊर्ध्वपातन यन्त्रेण पातनीयं पुनः पुनः। पटसारणतोवापि क्षालनादारनालतः॥
(आ.प्र. १/५३)
प्रक्षाल्य काञ्जिकैः साम्लै स्तमादायविमर्दयेत्। प्रक्षाल्यकाञ्जिकेनैव तमादाय विमूर्च्छयेत्॥
(आ.प्र. १/६६)
जलैः सोष्णारनालैर्वाक्षालनादुत्थितो भवेत्। अथवा पातनायन्त्रेपातनादुत्थितो भवेत्॥
(आ.प्र. १/६७)

It is[1] also purified by grinding it with equal part of Laśuna (garlic). It should be triturated till the paste becomes black. As per 'Āyurveda Prakāśa' Lavaṇa in equal part should also be mixed with Laśuna and mercury and grinding should be done in Taptakhalva for about a month. Then it should be washed with hot water to regain mercury from paste.

A few scholars recommended to use Hiṅgulottha mercury instead of purifying ordinary mercury as in their view Hiṅgulottha mercury does not require any purification before internal use for therapeutic purposes. Further the Hiṅgulottha mercury is considered as good as Gandhakajārita mercury.

**Physical Properties of Mercury[2]–**

Some of its physical properties are described through its synonyms i.e. Rasa (liquid), Capala (movable), Galad rūpyanibha (as white as melted silver), Mayūrakaṇṭha Sadricchāya (containing shades of different colours). It is Antaḥ Sunīlaḥ (bluish from in side), Bahirujjwalaḥ (white from outside), Madhyāhna Sūrya Pratima Prakāśaḥ (when pure, shines like mid day sun). These are the physical properties of pure mercury. The mercury which is impure looks Dhūmra (smoky), Pari Pāṇḍura (slightly yellowish) and Citra (having different shades of colours).

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1. **रसशोधनम्–**
एकेन लशुनापि शुद्धो भवति पारदः । पिष्टोलवणसंयुक्तो मासैकंतप्तखल्वके ॥
अथवाग्राह्येत्सूतं दरदात्सनिगद्यते । कञ्चुकैर्नागवङ्गाद्यैर्विरक्तो रसकर्मणि ॥
हिङ्गुलाकृष्टसूतस्तु जीर्णगन्धसमोगुणैः । (आ.प्र. १/१६५-१६६)

2. **पारदस्वरूपम्–**
अन्तःसुनीलोबहिरुज्वलो यो मध्याह्नसूर्यप्रतिमप्रकाशः ।
शस्तोऽथ धूम्रः परिपाण्डुरश्चित्रो न योज्यों रसकर्मसिद्धयै ॥ (र.सा.स.–आ.प्र. १/१३८)

**पारदग्रहण विधि–**
ऊर्ध्वपातनयन्त्रेण गृह्णीयाच्च पुनः पुनः । पटसारणतो वापि क्षालनादारनालतः ॥
(आ.प्र. १/५३)

**दोषहीन सूत गुणा–**
दोषहीनोयदा सूतस्तदा मृत्युजरापहः । साक्षाद्मृतमप्येष दोषयुक्तो रसो विषम् ॥
(आ.प्र. १/२३)

Thus, mercury, as per ancient texts, should be quick moving, silvery white, shining like mid-day sun, liquid at normal temperature, may swallow/consume or dissolve all the metals except iron, can make alloy or amalgam with other metals, which looks bright from out side and bluish from inside. But if it is mixed with impurities looks smoky, grayish, slightly yellowish and may have various shades. It is considered inferior and not recommended for use.

**Gaties (motility) of Mercury[1]–**

In 'Rasa Ratna Samuccaya' five *'gaties'* of mercury have been mentioned, viz– Jalagati, Haṁsa gati, Mala gati, Dhūma gati and Jīva gati. Mercury gets lost in following ways i.e. if it is washed with water goes along with water on account of fineness and lightness. When it is made Mūrcchita (divided to finest globules) it floats on water surface like a Haṁsa (swan) and escaps with water without being noticed. It is known as Haṁsa gati. When it is mixed with metals and minerals converts into some compounds like oxide, sulphides etc. which are considered as its malas then it can go in the form of malas and it is known as Malagati. When it is heated on fire it is converted in Gas/vapours form and goes along with fumes, which is known as Dhūmagati. Its last gati is Jīva gati which is considered as divine. Its all the four former gaties are visible or invisible while its last Jīva gati is Adriśya (imperceptible). It goes like Jiva (soul) from the body. If it remains in the body it helps to make the living beings to live long. It can be made perceptible or visible by chanting of sacred texts/hymns and by meditation etc. practices. Because of its varient mobilities the samskaras of mercury are considered most difficult to be performed. Hence only a skilled person/physician can safe gaurd/safely handle mercury during its processes.

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1. **रसगतयः–**
जलगोजलरूपेण तरितो हंसगोभवेत् । मलगोमलरूपेण सधूमोधूमगो भवेत् ।
अन्याजीवगतिर्देवीजीवोऽण्डादिवनिष्क्रमेत् । स तांश्चजीवयेज्जीवान् तेन जीवो रसः स्मृतः ॥
चतस्त्रोगतयोदृश्या अदृश्या पंचमी गतिः । मन्त्रध्यानादिना तस्य दृश्यते पञ्चमी गतिः ॥
(र.र.स. १/८३)

**Pharmacological[1] and Therapeutic Properties–**

As per Āyurvedic Rasaśāstra texts mercury possess following pharmacological and therapeutic properties–

**Rasa–** Ṣaḍrasa

**Guṇa–** Guru, Snigdha, Sara

**Vīrya–** X

**Vipāka–** X

**Karma–** Yogavāhī, Rasāyana, Ativṛiṣya, Balya, Vājīkara, Vayastambhakara, Puṣṭikara, Dīpana, Agnikārī, Āyuṣkara, Kāmāgni-Sandīpana, Dṛiṣṭibalaprada, Sarvāmayahara, Bhukti-Muktikara, Dehasiddhikara, Lohasiddhikara, Khegatiprada, Puruṣārtha-Catuṣṭayaprada. Śodhana, Ropaṇa Krimighna.

**Doṣa Prabhāva–** Tridoṣaghna, Samīrajit

**Vyādhi Prabhāva–** Kṛimi, Kuṣṭha, Sarva vidhakuṣṭha, Akṣi-roga, Vāta-roga, Tridoṣaja roga, Balīpalita, Tāpatrayajanya roga, Pāpajaroga Sarvaroga.

**Modern Description–**

In modern scientific terminology mercury is called Hydrargyrum or quick silver which means it is like a liquid silver which moves quickly. In astrology mercury is one of the stār which is white and movable. Thus this metal, which have the above properties, is also named as mercury. Its symbol is Hg, Atomic weight is 200.6, Sp.Gr. 13.6, Boiling point 357°C. It solidifies at--39°C. Either in lead like mass or crystalizes in octahedrons having a cubic cleavage. It does not undergo oxidation in air at ordinary temp. but turnishes in air containing traces of hydrogen sulphide owing to the formation of a superficial thin film of sulphide. It is not acted upon by dilute or concentrated HCl, but dissolve in hot

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1. **पारदगुणाः–**
सम्यम्सूतवरः शुद्धो देहलोहकरः सदा । सेवितः सर्वरोगघ्नः सर्वसिद्धिकरोभवेत् ॥
(र.प्र.सु. १/१६३)
सर्वसिद्धिकरःसोऽयं पारदः पारदः स्वयम् । सर्वरोगान्निहन्त्याशु वयस्तम्भयते ध्रुवम् ।
रसायनं त्रिदोषघ्नं योगवाह्यतिशुक्रलः ॥ सर्वसिद्धिकरःसाक्षाज्जरादारिद्र्यनाशनः ॥
(र.प्र.सु.)

concentrated sulphuric acid with formation of sulphur di-oxide and mercuric sulphate. It also dissolves in fairly dilute cold nitric acid to form mercurous nitrate ($HgNO_3$) but with hot concentrated nitric acid a mercuric nitrate is formed. Mercury alloys with many other metals to form liquid or solid amalgams.

The cheif source of mercury is mercury sulphide (HgS) Cinnabar, but mercury is also found as small silvery globules in the veins of Cinnabar. This is known as native mercury. It also possesses same properties as those of mercury.

Mercury which usually contains metallic impurities turnishes in air owing to the formation of their oxides or sulphides. On being poured from a glass vessel it leaves behind a trail of oxide or dross, hence should be strained through chamois leather to remove dross, dust and other impurities and then either distilled in an iron retord or shaken with 5% nitric acid to remove traces of metallic impurities like Lead, Tin and Copper etc.

Mercury and its compounds are used in the pharmaceutical products as catalyst, in chemical warfare, in medicine, in thermometers, in explosives and in several chemical industries. It is used in the form of oxide, sub or perchloride, sulphide and organo-metallic compounds.

**Saṁskāras (Special processes) of Mercury[1]–**

According to Rasa texts there are 18/19 Saṁskāras[1] of mercury which are advised to be performed either to remove its dosas (impurities) or to potentiate it from Loha vedha (Alchemical) or Dehavedha (Rasāyana/therapeutic) purposes. These have been divided in two groups i.e. eight or ten Saṁskāras. The first-eight

1. अष्टादशैव संस्कारा ऊनविंशतिका: क्वचित् । संप्रोक्ता रसराजस्य वसुसंख्या:क्वचिन्मता: ॥ (आ.प्र. १/३२)

स्यात्स्वेदनं तदनु मर्दन मूर्च्छने च स्यादुत्थिति: पतनरोधनियमनानि ।
संदीपनं गगनभक्षणमानमत्र संचारणंतदनुगर्भगता द्रुतिश्च ॥
वाह्या द्रुति: सूतकजारणास्याद्रागस्तथासारणकर्मपश्चात् ।
संक्रामणं वेध विधि:शरीर योगस्तथाऽष्टादशधाऽत्र कर्म ॥ (आ.प्र. १/३३-३४)
इत्यष्टौ सूतसंस्कारा: समाद्रव्ये रसायने । कार्यास्ते प्रथमं शेषा: नोक्ता द्रव्योपयोगिन: ॥ (आ.प्र. १/३६)

Saṁskāras (Svedana to Dīpana) are commonly useful for Dravya karma (Alchemical purposes) and Rasāyana karma (for maintainance of health and for removing/treating/curing diseases). While remaining Ten or Eleven Saṁskāras are mainly advised for Dravya karma (Alchemical purposes).

In 'Rasendra Cintāmaṇi' by 'Ḍhuṇḍhuka Nātha' 19 Saṁskāras were found mentioned instead of 18 and it has added 'Ānuvāsana' Saṁskāra' as an additional Saṁskāra for the first time in the list of Rasa Saṁskāras. Then later workers like 'Nityanātha siddha' and 'Mādhava upādhyaya' have also included 'Anuvāsana' Saṁskāra in the list of Rasa Saṁskāras in their respective texts like- 'Rasa Ratnākara' and 'Āyurveda Prakāśa'. Of the eighteen Saṁskāras the first eight are the most important and popular. As these are equally useful for the Dravya karmas (Alchemical purposes) and Rasāyana karmas (internal uses) whereas the remaining ten (10) Saṁskāras are mainly useful, for Lohavedha (Alchemical purposes) only.

Thus, it is observed that later scholars who follow Dehavedha aspect mainly gave main importance to first eight (8) Saṁskāras as these help in removing the all types (natural, external and internal) doṣas (impurities) and also help in the potentiation of mercury in many ways and as such have been found described in detail in almost all the texts. In addition to literary claims the experimental work done by various scholars at various centres also support that mercury processed with first eight Saṁskāras become less toxic, more thermostable and therapeutically more potent and effective. Its metal consuming properties are also found raised. Ancient[1] scholars have further claimed that mercury processed with eight or nine Saṁskāras remain only $^1/_8$th part which means in ancient times it contained so much impurities that after processing all these are removed, but now a days we are getting chemically more pure mercury and more sophisticated equipments and apparatuses and also better heating techniques, hence, if we process mercury carefully with these Saṁskāras the loss in the wt. of mercury will be much less i.e. maximum loss will be 8% or even less.

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1. स्वेदनादि नवकर्मसंस्कृत: सप्तकञ्चुकदोषविवर्जित: ।
अष्टमांश इहशिष्यते तदा शुद्धसूत इति कथ्यते बुधै: ॥ (आ.प्र. १/१०६)

**Description of Eight Saṁskāras–**

Table showing the names of eight Saṁskāras and their explanation.

| S.N. | Name of Saṁskāra | English explanation |
|---|---|---|
| 1. | Svedana[1] | Heating in boiling acidic or alkaline liquid bath for three days |
| 2. | Mardana[2] | Grinding with prescribed drugs preferably in Tapta Khalva |
| 3. | Mūrcchana[3] | Grinding with prescribed drugs till Naṣṭapiṣṭatva state is acheived (means dividing the mercury globules into very fine state of sub devisions till its form disappears). |
| 4. | Utthāpana[4] | Regaining of its original mercury form by washing with hot liquid (acidic/alkaline) or by sublimation or distilation. |
| 5. | Pātana[5]–A. Ūrdhwa | Upward sublimation ) with |
| | B. Adhaḥ | Downward sublimation ) prescribed |
| | C. Tiryak | Distillation (Transverse sublimation) ) drugs |

1. **स्वेदनम्–**
क्षाराम्लै रौषधैर्वापि दोलायन्त्रे स्थितस्यहि । पचनं स्वेदनाख्यंस्याद्बहिर्मलविनाशनम् ॥
(र.र.स. ६/६२)

2. **मर्दनम्–**
उदितैरौषधैः सार्धं सर्वाम्लैः काञ्जिकैरपि । पेषणं मर्दनाख्यंस्याद् बहिर्मलविनाशनम् ॥
(र.र.स. ८/६३)

3. **मूर्च्छनम्–**
मर्दना (मूर्च्छना)दिष्टभैषज्यैर्नष्टपिष्टत्वकारकम् । तन्मूर्च्छनं हि वङ्गाहि मलादि दोषनाशनम् ॥
(र.र.स. ८/६४)

4. **उत्थापनम्–**
स्वेदातपादि योगेन स्वरूपापादनं हियत् । तदुत्थापनमित्युक्तं मूर्च्छाव्यापत्तिनाशनम् ॥
(र.र.स. ८/६५)

5. **पातनम्–**
उक्तौषधैमर्दित् पारदस्य यन्त्रस्थितस्योर्ध्वमधश्च तिर्यक् ।
निर्यातनं पातनसंज्ञमुक्तं वङ्गाहिसम्पर्कजकञ्चुकघ्नम् ॥ (र.र.स. ८/६७)

| S.N. | Name of Saṁskāra | English explanation |
|---|---|---|
| 6. | R(B)odhana[1] | Revitalisation/Regaining its potentiation |
| 7. | Niyamana[2] | Restraining its Cāñcalyatva/over mobility by heating through boiling liquid bath. |
| 8. | Dīpana[3] | Appatisation of mercury for consuming metal grāsa by heating through boiling liquid bath. |
| 9. | Anuvāsana[4] Saṁskāra | To improve the digestive power of mercury just like Bahni (Bahnisama Prabhāva). Its metal consumption power is increased to great extent. |

For performing these Saṁskāras different types of drugs, apparatuses, procedurs and purposes have been found mentioned in different texts. But we have followed the descriptions of Rasa Hṛidaya Tantra, Rasa Ratna Samuccaya and Āyurveda Prakāśa which have been considered as the most authentic works in the field.

The purposes, procedures, apparatuses and duration required for each Saṁskāra along with their names are shown in the following table to present all details at a glance.

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1. **रोधनम्–**
   जलसैन्धवयुक्तस्य रसस्यदिवसत्रयम् । स्थितिराप्यामनीकुम्भेयाऽसौरोधनमुच्यते ॥
2. **नियमनम्–**
   रोधनाल्लन्धवीर्यस्य चपलत्व निवृत्तये क्रियतेपारदेस्वेदः प्रोक्तं नियमनंहितत् ॥
3. **दीपनम्–**
   धातुपाषाण मूलाधैः संयुक्तोघटमध्यगः । ग्रासांर्थ त्रिदिनस्वदो दीपनंतन्मतं बुधैः ॥
   (८/७०)
4. **अनुवासनम्–**
   सहस्रनिम्बूफलतोयघृष्टो रसो भवेत् वह्निसमप्रभावः ।
   सव्योषराजीलवणः सचित्रः सराभठो विंशतिवासराणि ॥ (आ.प्र. १/१०५)
   दीपितं रसराजंतु जम्बीररससंयुतम् । दिनैकंजारयेद्धर्मे मृत्पात्रे वा शिलोद्भवे ॥
   (आ.प्र. १/१०४)

**The Details of Eight/Nine Saṁskāras at a Glance–**

| S. N. | Name of Samskara | Purpose | Procedures | Yantras | Duration |
|---|---|---|---|---|---|
| 1. | Svedana | Doṣa Śthilya Karaṇa | Svedana | Dolāyantra | 3 days |
| 2. | Mardana | Bahirma-vināśana | Mardana | Tapta khalva | 3 days |
| 3. | Mūrcchana | Naisargika, Kañcuka doṣa nāśana | Mardana till Naṣṭa-piṣṭatva | Khalva-yantra | 5-7 days or Till Naṣṭa-piṣṭatva |
| 4. | Utthāpana | Swarūpā-pādanā | Prakṣālana Ātapa Śoṣaṇa & Pātāna | Khalva Trays Pātana-yantra | Till rega-ining of mercury. |
| 5. | Pātāna Traya | Yaugika or Sarvadoṣa-naśana | Ūrdhwa, Adhah or Tiryak-pātana | Ūrdhwa-patana yantra or modified Pātana yantra | About 2 weeks Patana is repeated for 3 times |
| 6. | R(B) odhana | Saṇdhatva doṣa nāśana Āpyāyana | Ghaṭa-Madhya or Kācakūpī-madhya sthāpana | Ghaṭayantra Kācakūpī | 3 day |
| 7. | Niyamana | Capalatva nivṛitti | Svedana | Dolāyantra | 3 days |
| 8. | Dīpana | Bubhukṣīta or Grasarthi-Karaṇa | Svedana | Dolāyantra | 3 days |
| 9. | Anuvāsana | Bahnisama-prabhāva-janana | Mardana | Tapta-khalva yantra | 20-40 days. |

It is evident from this table that first five Saṁskāras are done to remove various types of doṣas of mercury and remaining Saṁskāras are done to change in its undesired properties and to

improve its Bubhukṣā (appetite/metal consumption power i.e. Mukhotpādana or Grāsārthī Karaṇa or Bahni mitratva Karaṇa). As regards procedures Svedana/Mardan, Prakṣālana, Pātana and Ghata or Kūpīmadhyasthāpana are to be followed in all the eight or nine saṁskāras. In Rodhana saṁskāra mercury is kept in a bottle filled with saturated saline water for three days. As regards yantras Dolā-yantra, Taptakhalva yantra, Khalvayantra, modified Tiryak-pātana yantra and Kācakūpīyantras are needed for these Saṁskāras. As regards duration in most of the Saṁkāras 3 days are required, in Mūrcchana grinding is continued till Naṣṭapiṣṭatva state is acheived. In Pātana Tāmra Piṣṭi is to be prepared and process may be repeated for 3 times. In Anuvāsana at least 40 days grinding is required to consume the juice of 1000 lemons.

**Description of Each Saṁskāra–**

**1. Svedana Saṁskāra[1]–**

**(1) Purpose–** Mala Śaithilya Karaṇa (Loosening of impurities)

**(2) Drugs and their Proportion[2]–**

1. Mercury– One part
2. Kalka dravyas – $^{1}/_{16}$th part each

Āsurī, Paṭu (Saindhava lavaṇa), Kaṭūka traya (Śuṇṭhī, Marica, Pippali), Citraka, Ārdraka, Mūlaka (all made into fine paste (in Khalva yantra).

3. Kāñjī-liquid– sufficient for 3 days svedana
4. Kadalīpatra– As required for binding the bundle
5. Cloth piece– Sufficient to tie a bundle.

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1. **स्वेदन परिभाषा–**
क्षाराम्लैरौषधैः सार्धं दोलायन्त्रे स्थितस्य हि । पचनं स्वेदनाख्यं स्यान्मलशैथिल्यकारकम् ॥
(र.र.स. ८/६२)

2. **द्रव्यानि-विधिश्च–**
**स्वेदनद्रव्य–**
आसुरिपटुकटुकत्रयचित्रकार्द्रकमूलकैः कालांशैश्च । सूतस्यकाञ्जिकेनमृदुबह्निनास्वेदयेस्त्रिदिनम् ॥
(र.ह.त. २/३)
रसस्य षोऽशांशेन सर्वं युञ्ज्यात् पृथक्पृथक् । एतद्व्यस्तं समस्तंवा पूर्वाम्लेनैव पेषयेत् ॥
(आ.प्र. १/४२$^{1}/_{2}$)

6. Steel pot/(Earthen pot) for preparing Dolā-yantra

7. Glass rod

8. Gas stove/burner

**(3) Procedure–** Prepare a smooth paste of all the Kalka dravyas in a Khalva adding Kāñjī liquid. Keep the paste over Kadalī patra kept on cloth piece. Put mercury in the paste and tie a bundle with thread. Keep the bundle suspended in a steel pot filled with Kāñjika and tie it on glass rod. Keep the steel pot over the Gas burner and apply heat sufficient for boiling the liquid. Continue heating for three days. If required add Kāñjī liquid during heating. On 4th day take out poṭṭalī from Dolāyantra. Open it and collect mercury from Kalka by washing it with hot water and filter it through a cloth piece and ascertain loss or gain in the wt. of mercury.

**2. Mardana Saṁskāra[1]–**

**(1) Purpose–** Bahirmala Vināśanam (To destroy external impurities)

**(2) Drugs and their Proportion[2]–**

1. Svedita mercury– 1 part

2. Kalka dravyas– $^{1}/_{16}$th part

(Guḍa, Dagdhorṇā, Lavaṇa (Saindhava), Gṛiha dhūma, Iṣṭikā-cūrṇa, Āsurī cūrna)

3. Kāñjika– Sufficient for three days grinding

4. Khalva yantra made of iron preferably Taptakhalva.

5. Hot plate for keeping Khalva hot during grinding

**(3) Procedure–** Prepare a powder of Kalka dravyas, mix these with mercury in an iron mortar, add Kāñjika liquid. Mardana (Grinding) should be done in Taptā Khalva maintaining the Temp. of

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1. **मर्दनम्–**
उदितैरौषधैः सार्धं सर्वाम्लैः काञ्जिकैरपि । पेषणं मर्दनाख्यं स्याद् बहिर्मलविनाशनम् ॥
(र.र.स. ८/६३)

2. **द्रव्याणि विधिश्च–**
गुड़दग्धोर्णालवणैर्मन्दिरधूमेष्टिकासुरी सहितैः । रसषोशांशमानैः सकाञ्जिकैर्मर्दनं त्रिदिनम् ॥
(र.ह.त. २/४)

Khalva between 45°C to 50°C for three days continuously. On 4th day mercury may be collected from the Khalva mixed with paste and then wash it with hot water and collect mercury carefully and filter it with cloth piece.Ascertain the wt. of mercury for loss or gain.

**4.** Duration of Mardana– Three days.

### 3. Mūrcchana Saṁskāra[1]–

**(1) Purpose–** Naisargika/Kañcuka doṣa nāśanam

**(2) Drugs and their proportion–**(A) Mardita mercury–I part

(B) Kalka dravyas $^1/_{16}$th part

(Triphalā cūrṇa, Citraka cūrṇa and Ghrita kumārī palpa)

**(3)** Khalva yantra (made of iron)

**(4) Procedure–** Prepare a powder of Triphalā and Citraka mula, mix these with mardita mercury and Kumārī pulpa grind these forcefully till mercury disappears by getting devided into finest globules i.e. achieves Naṣṭapiṣṭatva state. Here, days for grinding are not mentioned rather Naṣṭapiṣṭatva state of mercury is mentioned as regards limit for grinding it may take 5-7 days time.

### 4. Utthāpana Saṁskāra[2]–

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1. **मूर्च्छनम संस्कार–**
मूर्च्छनोद्दिष्टभैषज्यैर्नष्टपिष्टत्वकारकम् । तन्मूर्च्छनं हि वङ्गादि मलादिदोषनाशनम् ॥
(र.र.स. ८/६४)
गृहकन्या हरतिमलं त्रिफलाग्निंचित्रकश्चविषम् । तस्मादेभिर्मिश्रैर्वारासंन्मूर्च्छयेत् सप्त ॥
(र.ह.त. २/६)

2. **उत्थापनम्–**
सूर्यातपे मर्दितोऽसौ दिनमेकं शिलातले । उत्थापनं भवेत्सम्यक् मूर्च्छादोषविनाशनम् ॥
(र.प्र.सु. १/४६)
अमुना विमर्दनेन हि संशुद्धो नागवंगनिर्मुक्तः । सूतः पातनयन्त्रेसमुत्थितः काञ्जिकक्काथात् ॥
(र.ह.त. २/७)
तत उत्थापयेत् सूतमातपे निम्बुकार्दितम् । उत्थापनावशिष्टं तु चूर्णं पातनयन्त्रके ॥
धृत्वाऽग्नावूर्ध्वभाण्ड़ाप्तं संग्रहेत्पारदंभिषक् ।
संशुद्धोऽस्माद्विरेकात्तु रसः पात्यस्ततः परम् । उत्थितकाञ्जिकक्काथैः क्षालनीयस्ततः परम् ॥
(आ.प्र. १/६५)
जलैः सोष्णारनालैर्वा क्षालनादुत्थितो भवेत् । अथवा पातनायन्त्रे पातनादुत्थितो भवेत् ।
(आ.प्र. १/६७)

**(1) Purpose–** Mūrcchā vyāpattināśanam and Swarūpāpādanam. i.e. by this Saṁskāra mercury should return to its original state or form.

**(2) Drugs and theír Proportion–**

A. Mūrcchita mercury mixture in Naṣṭapiṣṭa form.

B. Ūṣṇodaka or uṣṇa Āranāla or Kāñjika (Hot simple water or hot acidic liquid).

C. Pātana yantra with heating and condensing arrangment.

**(3) Procedure–** Mūrcchita mercury mixture is mixed with hot water and hot Kāñjika (acidic) liquid. Keep it for some time, wash it gently, remove water mixed with Kalka dravyas and add fresh hot water or hot acidic liquid till maximum amount of mercury is regained or returns into its original form. If complete mercury is not regained by washing, dry the remaining paste in sun rays and try to regain as much mercury as possible. In the last the remaining paste is again subjected to Pātana process in Pātana yantra and heated to regain remaining portion of mercury by sublimation.

**(4) Time required–** No specific time limit is mentioned for this Saṁskāra. It should be continued till complete or as much as possible mercury is regained. Generally washing with hot water or hot Kāñjika is considered sufficient to regain almost mercury, but when this procedure does not found sufficient in yielding most of mercury the Pātana yantra or Damaru yantra method may be used to regain remaining mercury, Through these yantras mercury is regained by sublimation process. The advantage of the use of Pātana yantra method is to completely remove the Pūti doṣas (Nāga, Vaṅga doṣas) of mercury which if present in mercury may not be removed only by washing.

**5. Pātana Saṁskāra[1]–**

1. **पातन संस्कार–**

पातनं हि महत्कर्म कथयामि सुविस्तरम् । त्रिधापातनमित्युक्तं रसदोषविनाशनम् ॥
ऊर्ध्वपातस्त्वधःपातस्त्रिर्यक्पातः क्रमेणहि ॥ (र.प्र.सु: १/४७)
कृत्वातु शुल्वपिष्टिं निपात्यते नागवंगशंकातः । तस्मिन्दोषान्मुक्त्वानिपततिशुद्धस्तथासूतः ॥
(र.ह.त. २/८)

**(1) Purpose–** To remove Kañcuka doṣas (derived from Nāga and Vaṅg), Yaugika doṣas or Kṛitrima doṣas or to remove any kind of metallic impurity from mercury obtained from any source.

**(2) Drugs and their Proportion–**

1. Utthāpita mercury– One part
2. Copper foils (Gomūtra Śodhita) $^1/_3$rd part
3. Nimbu swaras required to make the piṣṭi of mercury with copper.
4. Other requirements – Khalva yantra made of Iron, Pāṭana yantra modified and specially prepared with condensing facility, conical flask to recieve mercury.

**(3) Procedure–** Purified copper-foils, cut into small pieces, are mixed with Utthāpita mercury and ground well adding lemon juice in sufficient quantity. Grinding should be continued till mercury and copper are made into paste or piṣṭi form. This piṣṭi is then put into Pātana yantra specially made for this purpose. Seal it properly at the joints and apply strong heat from down so as to sublime or distil mercury as vapours. These vapours are then condensed through a condensor fitted to Pātana yantra. Mercury condensed as above is collected in a conical flask attached tocondenser. In this way mercury is collected from sulvapiṣṭi through modified Pātana yantra.

Here, instead of doing three types of Pātanas i.e. Ūrdhwa, Adhaḥ and Tiryak we have done (repeated) the Pātana three times through the same modified Pātana yantra to remove the above mentioned Kañcuka or Yaugika doṣas from mercury.

**(4) Time required–** According to the texts no time limit is mentioned for Pātana Saṁskāra, however for this process making of Śulva piṣṭi is an essential pre-requisit and it needs sufficient time i.e. at least 5-7 days depending upon the force and method of grinding. The Pātana process through improved and modified

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भागास्त्रयो रसस्यार्कचूर्णस्यैकोऽथनिम्बुकैः । एतत्संमर्दयेत्तावद्यावदायाति पिण्डताम् ॥
तत्पिण्डं तलभाण्डस्थमूर्ध्वमाण्डेजलंक्षिपेत् । कृत्वालवालंकेनापिदत्वा चार्द्र हिप्लोतकम् ।
समुद्र्याग्निमधस्तस्य चतुर्यामंप्रबोधयेत् । युर्क्त्योर्ध्वभाण्डसंलग्नं गृह्णीयात् पारदं ततः ॥
ससूतभाण्डरन्ध्रेतु ह्यन्यद्विशतिभाण्डकं तथासन्धिर्द्वयोःकार्यः पातनत्रययन्त्रकें ॥

(आ.प्र. १/६८-७२)

Pātana yantra takes less than one hour. Only making of Śulvapiṣṭi takes much time. Hence repetition of the whole procedure for three times needs at least three (3) weeks time.

It is important to mention here that in 'Rasa Hṛidaya Tantra' nothing has been said about the repetition of 'Pātana process' which means during his time only one time Pātana was considered sufficient to remove various doṣas (impurities) of mercury. But later text like 'Rasa Sāra' has recommended two types of Pātanas i.e. Ūrdhwa and Adhaḥ, which means according to him one Pātana was not considered sufficient for the above purpose, so it has introduced the idia of double Pātana (sublimation). But still later workers like 'Somadeva' Yaśodhara, Vāgbhaṭa and Mādhava Upādhyaya have adopted three types of Patanas (ūrdhwa, Adhaḥ and Tiryak) in the respective texts, which means in later period the idea of Tiryak pātana was also developed as on the basis of their experiences only upward and downward sublimation was not considered sufficient to remove the doṣas of mercury hence Distillation in addition to sublimation or only Distillation twice or thrice is considered necessary for the same. Modern scientists also recommended the use of double or triple distilled mercury.

As regards the time period the ancient scholars have recommended it in about 12th Cent. A.D. and made it necessary by including three pātanas in eight Saṁskāras of mercury to get it completely free from impurities. Āyurveda Prakāśakāra[1] has clearly mentioned that if Lead or Tin metals have been mixed by traders for commercial benefits then mercury gets artificial impurities with lead and Tin and these are removed with three pātanas (Triple distillation) only.

Not only this it is further mentioned in 'Āyurveda Prakāśa'[2] that mercury subjected to first five Saṁskāras (Svedana to Pātana) definetely becomes free from all the doṣas (impurities).

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1. मिश्रितौ चेद्रसेनागवङ्गौ विक्रयहेतुना । ताभ्यांस्यात्कृत्रिमों दोषस्तन्मुक्तिःपातनत्रयात् ॥
(आ.प्र. १/८२)

2. एवं सुसंस्कृतः सूतः पातनावधि यत्नतः । सर्वदोषविनिर्मुक्तो जायते नात्र संशयः ॥
(आ.प्र. १/८३)

### 6. R(B)odhana Saṁskāra[1]–

**(1) Purpose–** Removal of 'Manda Vīryatva' or Ṣaṇḍhatva of mercury obtained from the treatments of Mardana, Mūrcchana and Pātana Saṁskāras. In other words it lessens the sickned stage of mercury or to produce more activeness in mercury. According to some texts its purpose is 'Mukhīkaraṇa' i.e. to improve its amalgamation or metal consuming power. The terms 'Vīryānayana' or Āpyāyana' are also used in this contex which means to regain its lost potency or to improve its lost potency and properties.

**(2) Drugs and their proportion–**

1. Pātita Pārada 1 part
2. Saindhava lavana – $^{1}/_{16}$th part or sufficient to make saturated solution.
3. Sufficient water to make a saturated solution
4. Kācakūpī or Ghata.

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1. **रो(बो)धन संस्कार–**

मर्दनमूर्च्छनपातैः कदर्थितोभवतिमन्दवीर्यश्च । सृष्ट्यम्बुजैर्निरोधाल्लब्धाप्यायो न षण्ढःस्यात् ॥
(र.हृ.त. २/१६)

लवणेनाम्बु पिष्टेन हण्डिकान्तर्गतं रसम् । आच्छाद्याथ जलं किंचित्क्षिप्त्वा श्रावेणरोधयेत् ॥
ऊर्ध्वंलघुपुटं देयं लब्धाप्यायो भवेद्रसः ॥ (र.रत्नाकर १२/३०)

जलसैन्धवसंयुक्तो घटस्थोहि रसोत्तमः । दिनत्रयं स्वेदितश्च (धारितश्च) वीर्यवानपि जायते ॥
(र.प्र.सु. १/६५)

सिन्धूद्भवं दशपलं जलप्रस्थत्रयंतथा । धारयेद् घटमध्ये च सूतकं दोषवर्जितम् ॥
पिधानेनपिधायाथमुद्रितं मृत्स्नयाखलु । निर्वातेनिर्जनेदेशे धारयेद्दिवसत्रयम् ।

**बोधन संस्कार–**

एवं कदर्थितः सूतः षण्ढ़त्वमधिगच्छति । मुक्तयेक्रियते तस्य बोधनं कथ्यते हि तत् ॥
मर्दनमूर्च्छनपातैर्मरणान्तो भवेद्रसः । शक्त्युत्कर्षाय बोध्योऽसौ गुरुदर्शितवर्त्मना ॥

**विधि–**

विश्वांमित्रकपाले वा काचकूप्यामथापि वा । सृष्ट्यम्बुजं विनिक्षिप्य तत्र तन्मज्जनावधि ।
पूरयेत्त्रिनदिनं भूम्यां राजहस्तप्रमाणतः । अनेन सूतराजोऽयं षण्ढ़भावं विमुञ्चति ॥
(आ.प्र. १/८६-८९)

सृष्ट्यम्बुजं=सैन्धवादि ।

वीर्यप्रकर्षायतु भूर्जपत्रे स्वेद्योजले सैन्धवचूर्णगर्भे । बह्वौषधि कषायेण स्वेदितः सबलोभवेत् ॥
(आ.प्र. १/९०-९३)

**(3) Procedure–** Prepare a saturated solution of 'Saindhava-lavaṇa' in water, fill it in a Kācakūpī, put Pātita mercury in Kācakpī and keep it undisturbed in calm and cool place for 3 days and collect mercury from Kācakūpī on 4th day and wash it with water.

**(4) Time required–** Three (3) days.

**Note–** The term 'Sṛiṣṭyaṁbuja' used in this context is to refer for 'Saindhava vāri : And for preparing its solution Saindhava and water should be used in 1:5 ratio.

**7. Niyamana Saṁskāra[1]–**

**(1) Purpose–** Niyamana samskāra is ment for restricting its Capalatva doṣa which is obtained from Bodhana saṁskāra. As per text it is done for 'Capalatwa Nivritti'. As per 'Rasendera Maṅgala' Niyamana saṁskāra is done to make mercury Nirmala (clear), 'Tejovān' (more bright) and also Agnisaha (thermoslable).

**(2) Drugs and their proportion–**

1. Rodhita (Bodhita) mercury – one part.

2. Kalka dravyas $^{1}/_{16}$th part each

(Kalka dravyas– Faṇi (Tāṁbūla Patra), Lāśuna (garlika), Saindhava lavaṇa (rock salt), Mārkava (Bhriṅga rāja– Eclipta alva), Karkoti kanda Ciñcā Patra/phala (Tamarindus indica linn.).

3. Drava drava (Kāñjika) sufficient for three days svedana and to make paste.

4. Dolāyantra and Gas burner.

**(3) Procedure–** Prepare a smooth paste of powdered Kalka-dravyas with Kāñjika, place Kadalī patra on cloth piece, place mercury into smooth paste of Kalka dravyas kept on Kadalī patra. Tie its bundle, suspend it in boiling Kāñjī liquid filled in Dolāyantra. Apply heat to the apparatus sufficient for boiling

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1. **नियामनम्–**
इति लब्धवीर्यःसम्यक् चपलोऽसौनियम्यते तदनु । अतः परं प्रवक्ष्यामि पारदस्य नियामनम् ।
यत्कृते चपलत्वंहि रसरजस्यशाम्यति । (र.प्र.सु. १/६४)
**कल्क द्रव्याणि–**
फणिलशुनाम्बुजमार्कवकर्कोटीचिञ्चिकास्वेदात् । (र.ह.त. २/१७)

the liquid. Maintain the boiling of liquid continuously for 3 days. On 4th day remove the bundle from Dolāyantra, open it and collect mercury from Kalka and wash it with hot water carefully. At last filter mercury with cloth.

**(4) Duration–** Svedana is done for three (3) days.

**8. Dīpana Saṁskāra[1]–**

**(1) Purpose–** To make mercury 'Grāsārthī' and/or Bubhakṣita

**(2) Drugs and their proportion–**

1. Niyamita mercury– one part

2. Kalka dravyas – $^{1}/_{16}$th part each

Kalka dravyas– Sphaṭikā, Kasīsa, Ṭaṅkana, Marica, Saindhava Lavaṇa, Rājikā, Śigrutvak.

3. Drava dravyas– Kāñjika sufficient for 3 days Svedana in Dolāyantra.

4. Dolāyantra, Gas stove. Kadalīpatra, cloth piece.

**(3) Procedure–** Prepare a smooth paste of Kalka dravyas with Kāñjika. Place mercury into Kalka paste gently kept on Kadalī patra and cloth piece. Tie it in a bundle and suspend it in a Kāñjī liquid filled in Dolāyantra-apply heat slowly to maintain boiling of the liquid continuously for 3 days. If necessary add Kāñjika repeatedly. On 4th day remove the pottalī (bundle) from yantra, open it and collect mercury from Kalka paste and wash it with hot water carefully. In the end filter mercury with cloth to make it clean.

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1. **दीपनम्–**

बुभुक्षा व्यापकत्वं च दीपनेन प्रजायते । तीव्रत्वं वेगकारित्वं व्यापकत्वं बुभुक्षता ।
बलवत्त्वं विशेषेण कृते सम्यक् प्रजायते ॥ (र.प्र.सु. १/६६, ६९)

**विधि–**

भूखग टंकण मरिचैर्लवणासुरि शिग्रुकांजिकैस्त्रिदिनम् । स्वेदेन दीपितोऽसौ ग्रासार्थीजायतेसूतः ॥
(र.ह.त. २/१८)

कासीसं राजिका पञ्चलवणं मरिचानि च । द्विशिग्रुबीजमेकत्र टंकणेन समन्वितम् ।
आलोड्य कञ्जिके दोलायन्त्रे पाच्यो दिनेस्त्रिभिः । दीपनं जायते सम्यक् सूतराजस्य जारणे ॥
अथवा चित्रकद्रावैः काञ्जिकैस्त्रिदिनं पचेत् । दीपनं जायते तस्य रसराजस्य चोत्तमम् ॥
(आ.प्र. १/१०१-१०३)

**(4) Duration–** 3 days.

**Note–** As the name indicates the main objective of this Saṁskāra is to stimulate its appetite (metal consuming power) and thus to make it Grāsārthī (desirous of consuming more grāsa (metal content as satva) or Bubhukṣīta. As per 'Rasa Ratna Samuccaya' its objective is Vīrya-Tejovivṛiddhi' which means mercury is made more active/potent and bright, i.e. Nirmala (clear) and free from Kañcuka etc. doṣas.

It is important to mention here that Svedana process is common in three Saṁskāras i.e. Svedana, Niyamana and Dīpana. However the drugs used in these 3 Saṁskāras differ and therefore their purposes are different. The other processes involved are Mardana (Grinding) and Patana (Sublimation or Distillation) which remove various impurities (doṣas) of mercury and till these doṣas (impurities) are not removed from mercury its potentiation is not possible. Hence first five Saṁskāras are exclusively ment to remove various doṣas (impurities/toxic effects) and Niyamana Saṁskāra is also ment for restraining its excessive Capalatva (mobile nature or thermalabile nature). The last Dīpana saṁskāra is totally devoted for the potentiation of mercury. And through this Saṁskāra number of properties[1] of mercury are potentiated. The author of 'Rasa Prakāśa Sudhākara' has clearly mentioned that by subjecting mercury through Dīpana Saṁskāra five properties of mercury are potentiated i.e. Tivratva (Sharpness), Vega Kāritva (quick effectiveness), Vyāpakatva (assimilation in all the tissues of the body), Bubhukṣatā (appetization/raising of metal consuming power), Balavatva (high activeness).

The other important point with regards to Eight Saṁskāras is about the amount of mercury to be obtained after compieting these Saṁskāras. As per 'Āyurveda Prakāśa' mercury after being treated with these 8/9 Saṁskāras remains only $^{1}/_{8}$th part i.e. out of 8 parts only one part remains and 7 parts are lost during

1. **दीपन फलम्–**
   इतिदीपितो विशुद्धः प्रचलितविद्युल्लता सहस्राभः ।
   भवति यदा रसराजश्चार्यो सत्वादि तथा बीजम् ॥ (र.ह.त. १/१९)
   अष्टमांशमवशिष्यते तदा शुद्धसूत इति कथ्यते वुधैः । (आ.प्र. १/)

these processes but late Prof. V.M. Dvivedi, who repeatedly processed these Saṁskāras for five times, has claimed that only $^{1}/_{8}$th part of mercury should be lost in all the eight processes. He is of the opinion that careful handling of mercury during processing, the use of Iron/Glass and other metallic apparatuses, and the percentage purity of the original sample of mercury may be held responsible for minimizing the loss of mercury to $^{1}/_{8}$th part only. It may be said here that in ancient times the original sample of mercury which was used by these scholars may not be so pure as we get now and the ancient scholars are using earthen vessels for preparing Pātana and other Yantras and that may be the reasons for greater loss during processing besides various doṣas of mercury. In my experiments also the loss of mercury was much less than the ancient claims.

**9. Anuvāsana Saṁskāra[1]–**

**(1) Purpose–** To make mercury as having 'Bahnisama-Prabhāva' means to improve its metal consuming power to great extent or to make it as effective and powerful as Bahni (fire).

**(2) Drugs and their proportion–**

1. Dipita Parada– one part
2. Nimbūphala toya (rasa)– 1000 Nimbū fruits.
3. Tapta Khalva – for mardana.
4. Trikaṭu Cūrṇa – $^{1}/_{16}$th part
5. Rājikā cūrṇa– $^{1}/_{16}$th part
6. Saindhava lavaṇa– $^{1}/_{16}$th part
7. Citraka cūrṇa– $^{1}/_{16}$th part
8. Śuddha Hiṅgu– $^{1}/_{16}$th part.

**(3) Procedure–** Mix Aṣṭa Saṁskārita mercury with drugs prescribed, add thousand lemon's juice slowly and ground all in Tapta Khalva. Continue the grinding till complete juice of 1000 lemons is consumed. As per the texts grinding should be continued for 20 days, but as per our experience about 40-45 days time is needed for completing this process if Tapta Khalva is used for

1. **अनुवासनम्–**
सहस्रनिम्बूफलतोयघृष्टोरसो भवेत्बह्निसमप्रभाव: ।
सव्योषराजीलवण:सव्रित्र:सप्तमठोविंशतिवासराणि ॥ (आ.प्र. १/१०५)

grinding. In the end the paste should be washed carefully with hot water and mercury may be collected and filtered.

**Note–** It is observed that 'Anuvāsana Saṁskāra' is not found mentioned in all the Texts. Only a few texts like–'Rasa Ratnākara', 'Rasendra Cintāmaṇi, 'Ananda Kanda' and 'Āyurveda Prakāśa'. Some texts suggest that 'Anuvāsana' is a type of 'Rodhana Saṁskāra' while others are of the opinion that it is a part of 'Dīpana Saṁskāra' as the purpose of this Saṁskāra is the same i.e. the purpose of this is to make mercury more active, potent or to increase its digestive power (Bubhukṣā/Hunger) or to develop 'Bahnisama Prabhāva' so that it may consume or amalgamate more amount of metals if mixed with it. It has been proved experimentaly also.

**Forms of Mercury Recommended for Use[1]–**

After going through eight or eighteen Saṁskāras it has been observed that mercury becomes suitable for 'Dehasiddhi' purposes i.e. for internal use in the body for obtaining Rasāyana karmas (maintainance of healthy state) and Vyādhināśana (therapeutic purposes). And also for Loha Siddhipurposes (Alchemical purposes i.e. for the transformation of lower metals into higher/precious metals i.e. Gold and Silver.

For Deha Siddhi purposes mercury is advised to be used in following forms[1]. 'Rasendra Sāra Saṅgraha' has advised to use mercury in the body after Māraṇa (being reduced/converted to ashes), after Mūrcchanā (being converted into some compound form) or Bandhana (being fixed or converted into solid form). It has been said further in the texts that when it is used after 'Māraṇa' it is likely to destroy Jarā (Senile changes) and Vyādhies (diseases). When it is used after 'Mūrcchanā' it develops Vyādhināśana Śakti (disease curing capacity) and when it is used after 'Bandhana' (fixed or converted to solid form) produces Khecaratva (Navigation power) in the body. Hence it is said in the texts that there is no other substance on the earth other than mercury from its utility point of view in various forms.

1. **रसप्रयोगस्वरूपम्–**

मूर्च्छित्वा हरति रुजम् बन्धनमनुभूयमुक्तिदो भवति । अगदीकरोतिमृतः .....।

(र.र.स. १/३३)

The Māraṇa or 'Bhasmikaraṇa' process of mercury is very difficult as it could not stand to strong heating, hence Rasa Māraṇa is not common now a days. Though, in the texts there are number of māraṇa methods but due to non-thermostable nature of mercury its Māraṇa formulae are generally not found successful. Thus, in place of Rasabhasma, Rasa Sindūra prepared with Mūrcchanā and Gandhaka jāraṇā process is being used by almost all the Ayurvedic Physicians. The reason for this may be their specific method of preparation which help to make this preparation to convert into red sulphide of mercury and also make these least toxic and therapeutically most effective. And probably for this reason various forms of mercury prepared through Mūrcchanā process become more popular in therapeutics of Ayurvedic medicine.

**Concept of Mūrcchanā[1]–**

'Murcchanā' and 'Jāraṇā' are two other important processes of mercury through which its toxic effects are minimised and its Rasāyana and therapeutic effects are raised to the great extent. As per 'Āyurveda Prakāśa' in certain context both the terms are used as synonyms also otherwise both are different from each other, only in the context of 'Gandhaka Jāṛaṇa' both are used as synonyms and for same objective.

The main difference between Mūrcchanā and Jāraṇā is as follows– i.e. in 'Mūrcchanā' mercury is converted into some compound form of therapeutic importance and it may be used internally in body as such. And these develop a definite disease destroying power or potency while in Jāraṇā mercury does not convert in any form rather remain in its original (mercury) form. It consumes and digest some satvas (metal contents of some minerals) and Bijas (Gold-Silver etc. metals) in specified amounts and returns to its Pūrvāvasthā (original form). It may not be used as it is after Jāraṇā like Mūrcchanā nor it develops a definite disease destroying power/potency.

The detailed description of each process is given as follows–

1. **मूर्च्छना–**
अव्यभिचरितव्याधिगातकत्वं मूर्च्छना ।
मूर्च्छनायां तु गालनपातनव्यतिरेकेण न पूर्वावस्थाप्रतिपन्नत्वम् ।
मूर्च्छना द्विविधा– सगन्धमूर्च्छना, निर्गन्धमूर्च्छना

**1. Mūrcchanā[1]–**

Mūrcchanā is a process in which mercurial compounds develop 'Avyabhicarita Vyādhighātakatva' poperty or potency. In this mercury with or without sulphur converts in such a suitable compound form which could be used internally in the body for curing diseases even without being reduced/converted to ashes. Through this process mercury and mercurial compounds should develop a definite diseases curing capacity and after Mūrcchanā mercury may not return to its original form (Pūrvāvasthā). As per the texts Mūrcchanā may broadly be divided in two types, viz.

(A) Sagandha Mūrcchanā and (B) Nirgandha Mūrcchanā

In Sagandha Mūrcchanā mercury is made into Murcchita form by adding sulphur in different amounts. It is more common and popular in day to day practice as it is very easy to prepare and very safe to use. When used internally it does not produce any toxic effects in the body. Where as in seçond type (Nirgandha Mūrcchanā) in which no sulphur is used with mercury. In this mercury is made mūrcchita with other drugs like - Tuttha, Kasisa, Sphaṭikā and Lavaṇa etc. This type of Mūrcchanā is not common and highly toxic hence should be used with care.

Of the two Sagandha Mūrcchanā may be divided in the following subdivisions on the basis of the presence or absence of fumes during their preparation, viz.

1. Nirdhūma 2. Bahirdhūma and 3. Antardhūma

On the basis of forms it may again be divided in the following types, viz.

A) Gandha piṣṭi, B) Gandha baddha, C) Gandha Jīrṇa, D) Gandha Kajjalī and E) Dhātupiṣṭi. of the above Dhātupiṣṭi is again divided in the following types, viz.

1. Kanaka piṣṭi, 2. Rajata piṣṭi, 3. Śulva piṣṭi, 4. Abhra piṣṭi and 5. Kriṣṇa lohapiṣṭi.

The most common forms of Sagandha Mūrcchana are 'Kajjalī', 'Parpaṭī', 'Rasasindūra', and 'Makaradhwaja etc. preparations. From the heat treatment point of view these may be Nirdhuma (No heat treatment), Bahirdhūma and Antardhūma (needs heat treatment).

The example of Nirdhūma Mūrcchanā is Kajjalī in which only grinding is done till good quality Kajjalī is made. No heat treatment is given here, while in Antardhūma and Bahirdhūma heat treatment is given. Only difference between these is in their corking from the begining and coeerking after burning extra sulphur. Both these are prepared in Kācakūpī (Glass bottle wrapped several times with cloth smeared in mud) through Bālukā yantra method.

In first case bottle is corked from the begining of heat treatment while in later case the sulphur fumes are allowed to go out till extra sulphur burns and in the end it is corked. Now a days Bahirdhūma type of Sagandha Mūrcchanā is in common use. Generally Rasa sindūra, Makaradhwaja and other Kupipakva rasāyanas are prepared with Bahirdhūma method. Parpati is another preparation of Sagandha mūrcchanā in which mild heat treatment is given to make the Kajjalī melted properly then it is transfered on the Kadalī patra and pressed with another leaf to convert it into thin flakes. The details of these preparations will be discussed at a later stage.

The examples of Nirgandha Mūrcchanā are also of two types i.e. prepared without heat treatment and prepared with heat treatment. The example of first type is 'Mugdha rasa' and 'Saptaśāli vaṭī' where as the examples of second type are 'Rasa Karpūra' and 'Rasapuṣpa'. Both these are prepared in Kācakūpī with Bālukā yantra method. The details of these will also be discussed at a later stage.

**Jāraṇā–**

Jāraṇā is also an important process of mercury in which mercury is made to consume/ingest and digest various Satvas obtained from minerals and some of the metals in different proportions to make the mercury highly potentiated from both Rasāyana and Lohavedha point of view.

Mercury treated with Jāraṇā process should return to its original form and appearance without being subjected to any Gālana (filtration) and/or Pātana (distillation) process. It is important to mention here that after completion of Jāraṇā process mercury not only regains its original form and appearance rather after consuming prescribed amount of Grāsa (metal content of minerals and a few metals) followed with Garbha druti and Jāraṇa it should not gain any weight, means there should not be

any increase in the weight of mercury then only Jāraṇa process is considered completed. Thus it may be said that the returning of mercury to its original form and weight is essential in Jāraṇa process. Whereas in Mūrcchanā it is not so i.e. in Mūrcchanā it changes in some compound form and that could be used for curing or destroying diseased state.

It has been further clearified that in Jāraṇā mercury does not essentially acquire disease curing property rather it is done to prepare mercury suitable for further Saṁskāras means for Dhātuvāda (transformation) purposes. It is also mentioned in the texts that Jārita mercury may develop 'Rasāyana property' in due course of time. Another important point about Jāraṇā process is application of heat in some way or other during its process, while in Mūrcchanā it is not essential. There are some examples of Niragni Mūrcchanā like Kajjalī, Mugdha Rasa etc. where no heat treatment is given.

Thus, in short, it could be said that 'Mūrcchanā and Jāraṇā are two different processes of mercury and are done for different purposes. Only in some context i.e. in context of Gandhaka Jāraṇā (in case of Rasa sindūra and Makaradhwaja etc. preparations) these may be taken as synonyms. Otherwise both differ from each other.

**Gandhaka Jāraṇa and Its Importance–**

Gandhaka Jāraṇa is also an important process of mercury in which sulphur is added with mercury in different proportions and allowed to burn in it with fire. It is claimed in the texts that mercury treated with Gandhaka Jāraṇa becomes highly potentiated i.e. acquires many pharmacological, therapeutical and Rasāyana type properties. It is further said in this context that the potentiation of mercury depends on the proportion of sulphur to be added and burnt with it. In other words it may be said that the potency and efficacy of mercury increases in proportion to the amount of sulphur burnt during 'Jāraṇa process'. The textual references also supports the above statement and according to these 'Ṣaḍguṇabali Jārita-pārada' is claimed much more superior, powerful and effective than ordinary, Samaguṇa or Dviguṇabalijārita-Pārada. It is also said in the texts that the potency and effectiveness of Śataguṇa and Sahasraguṇabalijārita-Pārada increases hundred or thousand times more than

the ordinary one (Pārada). Not only this 'Rasendra Cintāmaṇi' claims that without 'Ṣaḍguna gandhaka jāraṇa pārada does not acquire the power of removing or curing diseases i.e. Baljāraṇa is considered essential for making mercury capable of destroying diseases. As such it may be claimed that from therapeutic point of view Gandhaka-jārana is highly essential and also considered a pre requisit condition to the actual Mūrcchanā process as without Gandhaka jāraṇa mare 'Mūrcchanā' may not be able to induce 'Avyabhicarita-vyādhighatakatā' (a definite disease curing capacity) in mercury. Not only this the Gandhaka Jāraṇa also reduces the doṣas (toxic effects) of mercury to the great extent as it has been said that mercury obtained or extracted from Hiṅgula is Śuddha (very pure) and does not need any further Śodhana and may be used for all purposes. And because of Gandha jāraṇa its doṣas are destroyed hence it is claimed śuddha.

It is further said in 'Āyurveda Prakāśa' that by doing Gandhaka[1] jāraṇa again and again upto Ṣaḍguṇa (Six times) mercury acquires the power/potency similar to Tīkṣṇāgni means its metal consuming power or capacity increases greatly and as a result it may ingest and digest greater amount of Satvas and metals and thus acquires greater Vedha (transformation) power. And probably because of this it is said in 'Rasendra Cintāmaṇi' that without doing Gandhaka jāraṇa if some one proceeds for Dhātu jāraṇā he is not supposed to get success in Dhātujāraṇā as without Gandhaka Jāraṇa the appetite in mercury is not likely to be stimulated and as such Dhātus (metals added as Grāsa) may not get properly digested or become Jirṇa and complete jāraṇa of Dhātus may not take place, hence to improve and stimulate the digestive (metal consumption) power of mercury it should be

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जीर्णेशतगुणेगन्धेशतवेधी भवेद्रसः । सहस्रगुणितेजीर्णे: सहस्रांशेनवोधयेत् ।
(भा.प्र. १/१९८)

एव पुनःपुनर्गन्धंषड्गुणंजारयेद्बुधः । गन्धे जीर्णे भवेत्सूतस्तीक्ष्णाग्निः सर्वकार्यकृत् ॥
(आ.प्र. १/२०८-२०८½)

ऊर्ध्व पातन युक्त्यातुडमरुयन्त्रपाचितम् । हिङ्गुलं तस्य सूतं तु शुद्धमेव न शोधयेत् ॥
(आ.प्र. २/८३)

षड्गुणे गन्धके जीर्णे मूर्च्छितो रोगहाभवेत् । (आ.प्र. १/३९४)

बिना गन्धेन ये मर्त्या कुरुते धातुजारणा । न क्षुधाजायते सूते जरयन्ति न धातवः ॥
तस्माद्गन्धः पुरजार्यः सूते बहिनविवृद्धये ॥ (र.चि. (आ.प्र. टीका ११५)

subjected to Gandhaka jāraṇa first to improve its metal amalgamation and metal digestion power. In this way if some one proceeds with Śataguṇa[1] (hundred times) Gandhaka jāraṇa then mercury acquire Śatavedhī power (hundred times metal transformation power) and if thousand times Gandhaka is made jīrṇa then it acquires the Sahasravedi power (thousand times metal transformation power) Not only this mercury used for Mūrcchanā after Gandhaka Jāraṇa in different proportions develops different type of efficacy in curing different types of diseases. This is clear from the references of 'Śivāgama'[2], 'Rasendra cintāmaṇi and Āyurveda Prakāśa. In these the properties of 'Samaguṇa' to 'Ṣaḍguṇa Balijāraṇa' have been described. According to this 'Samaguṇa Gandhaka jārita mercury is hundred times more powerful in curing diseases than simply purified pārada. Dviguṇa Gandhaka jārita mercury develops the power of curing all types of Kuṣṭha rogas. Triguṇa Gandhaka jārita mercury' cures all types of Jāḍyatva (stiffnesses). Caturguṇa Gandhaka jārita mercury' cures all types 'Vātika and Paithika type' diseases, and 'Bali and Palita rogas'. Pañcaguṇa Gandhaka jārita mercury' vanishes all types of 'Kṣayaja rogas', while 'Ṣaḍguṇa Gandhaka jārita mercury' acquires the power of destroying or curing all types of diseases. This has been said by Sri Bhairava to Devī (Godess).

Thus in short it may be said that Gandhaka jāraṇa in different proportion is highly important and essential in making mercury potentiated in different ways. Specially for improving the therapeutic effectiveness, in destroying toxic effects, in improving bubhukṣā/Agni/digestive/metal consuming power) and Vedha (transformation) powers proportionate to Gandhaka jāraṇa.

**Methods and Apparatuses for Gandhaka Jāraṇa–**

According to the texts number of methods and yantras are found mentioned for 'Gandhaka jāraṇa in different proportions.

1. जीर्णेतु शतगुणे गन्धे शतवेधी भवेद्रसः । सहस्रगुणितेजीर्णे सहस्रांशेन बेधयेत् ॥
(आ.प्र. १/१९८)

2. तुल्ये तु गन्धकेजीर्णे शुद्धाच्छतगुणो रसः । द्वि गुणे गन्धके जीर्णे सर्वथा सर्वकुष्ठहा ॥
त्रिगुणे गन्धके जीर्णे सर्वजाड्यविनाशनः । चतुर्गुणे तथा जीर्णे बली पलितनाशनः ॥
गन्धे पञ्चगुणे जीर्णे क्षयक्षयकरो रसः । षड्गुणे गन्धकेजीर्णे सर्वरोगहरो रसः ।
अवेश्यमित्युवाचेदं देवी श्रीभैरवः स्वयम् ॥
(शिवागम/रसेन्द्र चिन्तामणि) आ.प्र. १/११८-१२०

For this purpose twenty (20) types of yantras have been mentioned in Rasa Paddhati. Of these following are common and popular hence, deserve mention. Viz– 'Garbha yantra', 'Mūṣā yantra', 'Bhūdhara yantra', 'Gaurī yantra', 'Bālukā yantra', 'Kūpī yantra', 'Tulā yantra', 'Iṣṭikā yantra' and 'Ghatī-yantra.

The preparations like 'Ṣaḍguṇa-bali jārita Rasa sindūra and Makaradhwaja, where Gandhaka jāraṇa is done in different proportion, are prepared in Kūpī yantra using Balukāyantra method of heating. These preparations may be prepared with 'Samaguṇa Gandhaka Jāraṇa'[1] to 'Ṣaḍguṇa Gandhaka Jāraṇa' with a view to improve the efficacy of these preparations. And thus the preparations in which six times sulphur by weight is allowed to burn, may be considered much more powerful and potent than the others from both Rasāyana and therapeutic point of view.

**How Their Potency Increases[2]–**

According to the texts 'Pārada', 'Gandhaka' and 'Abhraka' possess almost the same properties. Hence when these are mixed with each other these are likely to react with each other greatly and on heating these may burn and leave their properties. This is more true in case of sulphur, hence when sulphur is mixed and burnt several times its more and more properties are incorporated in mercury. This is how mercury is made more powerful and potent from both therapeutic and alchemical point of view, specially through Gandhaka jāraṇa process.

**How to add Sulphur–**

Generally six times sulphur is added and burnt with mercury for its therapeutic potentiation. For this whole amount of sulphur should not be added at a time. It should be added in a

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1. रसगुण बलिजारणं विनायं न खलु रुजांहरणसमोभवति रसेन्द्रः ।
   न जलद कल धौत पाकहीनः स्पृशति रसायनतामितिप्रतिज्ञा ॥ (आ.प्र. १/११४)
   अजारयन्तः पविहेमगन्धं वान्छन्ति सूतात्फलमप्युदारम् ।
   क्षेत्रादनुप्तादपि सस्यजातं कृषीवलास्तेभिषजश्चमन्दाः ॥ (आ.प्र. १/११५)
2. देव्यारजौ भवेद्बन्धः धातुः शुक्र तथाऽभ्रकम् । आलिङ्गने समर्थो द्वौप्रियत्वाच्छवरेतसः ॥
   शिवशक्ति समायोगात्प्राप्यते परम् पदम् । यथास्याज्जारणा बह्वीतथास्याद्गुणदोरसः ॥
   (आ.प्र. १/१२५-२६)

phased manner. In the first time add equal part of sulphur and allow it to burn when its jāraṇa takes place add some more amount and allow it to burn. When this amount also burns add some more amount and allow it to burn. In this way any amount of sulphur could be added and allowed to burn (mercury is made jārita) continuously to the desired extent.

**Heating Time and Temp.–**

For Gandhaka jāraṇa the temp. of the apparatus should neither be very high nor be very low we must adjust it to Madhyamāgni (medium heat i.e. $350^0$C-$400^0$C). Though, it takes time but it is safe. For doing Gandha-jāraṇa Kāca Kūpī wrapped several times with cloth smeared in mud may be used. Some scholars advise to use Rasa Sindūra preparation method for several[1] times i.e. extracting mercury from Rasa sindūra and again adding sulphur and preparing it again using Kāca Kūpī and Bālukā yantra method. In this method heat should be given with Mridu, Madya and Tībragni manner and time should be followed four (4) hours for each agni.

**Quantity of Sulphur to be Made Jārita–**

According to the texts the quantity of Sulphur to be added and burnt varies from equal to thousand times depending upon the purpose for which 'jāraṇa' is done. Besides this the power and potency of mercury increases in proportion to the amount of sulphur added and burnt. If the amount is six times mercury develops disease curing property but if the amount goes to hundred or thousand times mercury acquires Vedha (transformation) power and becomes useful for Loha vedha purposes. It is mentioned in 'Rasa Ratnaākara'[2] that Śataguṇa balijārita Pārada acquires the power of Śatavedhitva (hundred times transformation power) if mercury is treated with 'Sahasraguṇa Balijāraṇa (thousand times sulphur jāraṇa) then acquires Sahasrāṁśa Vedha power (thousand times transformation power) i.e. may transform thousand times metal).

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1. कूपीकोटरमागतं रसगुणैर्गन्धं तुलायां विभुं विज्ञाय ज्वलम् क्रमं तु सिकतायन्त्रे शनैः पाचयेत् । वारम्वार मनेनवृद्धि विधिना गन्धक्षयेसिद्धये सिन्दूराद्युदितोऽनुभूयमणितः कर्मक्रमोऽयंमया ॥ (आ.प्र. १/१९०)
2. जीर्णेतु शतगुणे गन्धे शतवेधी भवेद्रसः । सहस्रगुणिते जीर्णे सहस्रांशेन वेधयेत् ॥ (र. रत्नाकर)

**Bandhas of Mercury–**

Ancient scholars have described various types and methods for Bandhas (fixation or solidification) of mercury in their respective texts. The term 'Bandha' used in this context denotes a process in which mercury is converted into solid form from liquid state or made hard or fixed. Various types of drugs/ substance are used for this purpose and the Bandhas have been divided on this basis.

As regards the aims, Bandhas are done with a view to restrict the Cāñcalytva[1] (quick moving) and Durgrahatva (uncatchable) properties of mercury. According to form Bandhas may be divided in the following types, viz–[2-3]

1. Jalukā bandha also known as Pakva bandha
2. Khoṭa-bandha also known as Piṣṭi bandha
3. Poṭa-bandha also known as Parpaṭikā bandha
4. Bhasma-bandha also known as Bhūtisama.

According to Causative materials used Bandhas may be divided again into four types, viz.[4-5]

1. Mulikā bandha – Uttama (Best)
2. Maṇi-bandha – Madhyama (Second best)
3. Dhātu-bandha – Adhama (Inferior)
4. Pūti-bandha – Adhamādhama (Most inferior).
5. Druti[6] bandha made with Abhraka druti – Dehalohakara.

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1. येन येन हि चाञ्चल्यं दुर्ग्रहत्वं च नश्यति । रसराजस्य संप्रोक्तो बन्धनार्थो हि वार्त्तिकैः ॥ (र.र.स. ११/६०)
2. वन्धश्चतुर्विधः प्रोक्तो जलौकाखोटपोटकौ । तथा भस्माविधः साक्षात्कथितो हि रसागमे ॥ (र.प्र.सु. २/२)
3. पक्कवन्धोजलौकास्यात्पिष्टीबन्धस्तुखोटकः । पोटः पर्पटिकाबन्धौ भस्मभूतिसमोभवेत् ॥ (र.प्र.सु. २/३)
4. मूलिकात्र मणिश्चैव स्वर्णकं नागबङ्गके । चत्वार एते सूतस्यबन्धनस्याथकारणम् ॥ (र.प्र.सु. २/४)
5. उत्तमो मूलिकाबन्धोमणिबन्धस्तु मध्यमः । अधमो धातुबन्धस्तु पूतिवन्धोऽधमाधमः । द्रुतिवन्धः पञ्चमोऽसौ ..... ।

In 'Mūlikā bandha' the causative materials used for solidifying mercury are herbs. In other words it may be said that when mercury is made solid by the effect of various types of herbs the Bandha is known as Mūlikā bandha. It is considered the best. In herbal drugs only 'Divyauṣadhies' (Devine herbs) are considered best for this purpose while 'Vanyausadhies and Tṛiṇauṣadhies' are considered ordinary for this purpose.

In 'Maṇi bandha' the causative materials used are manies (Gems/precious stones) and the bandhas produced by the effect of these substances are considered Madhyama (second best) type.

In 'Dhātu bandha' the causative materials used are various metals like Gold, Silver etc. and the bandhas produced by these are considered as Adhama (inferior) as compared to previous two types.

In 'Puti bandha' the causative materials used are Pūti lohas (lower metals) like lead and tin etc. and the bandhas produced by these are considered Adhamādhama (very inferior) on account of their inferiority from Loha vedha point of view.

In fifth type[1] 'Druti bandha' the druties of various drugs like Abhraka, Ratnas and Dhātus (various metals/minerals) are used as causative materials for solidifying/fixing mercury. Amongst druties Abhraka druti is considered the best for this purpose.

This type of bandha is claimed usefull for both Deha (body) and Loha (metals) vedha purposes.

**Suitability of Mercury for Bandhana–**

According to 'Rasendra Cintāmaṇi' Abhra jirṇa and Gandhaka jīrṇa Pārada is only considered suitable for Bandhana karma. Herbal drugs may show their bandhana effect only on such mercury. Pakṣacchinnatā and Sabījakatā of mercury are also considered essential for this purpose. That means Bandhana of mercury should be done only on Aṣṭādaśa saṁskārita mercury and then only success in Bandhana is possible in real sense.

**Form/Appearance of Baddha Pārada–**

According to the texts 'Baddha Pārada should be Kaṭhina (hard). In some texts it is claimed as hard as Vajra. In addition

1. द्रुतिवन्धः पञ्चमोऽसौ देहलोहकरः सदा। अभ्रद्रुति विशेषेण विज्ञेयोऽसौभिषग्वरैः॥ (र.प्र.सु. २/६)

to the Kaṭhinatva it should also have shining white colour similar to Candraprabhā (moon light).

**Properties and Effects of Baddha Pārada[1]–**

As per 'R.P.S.' Baddha Pārada is claimed to produce 'Vīryastambhana' in the body when kept in the mouth (i.e. arrests early discharge of semen or stops semen being discharged for long time or till it is kept in mouth). In Dhātuvāda Solidified mercury produces 'Vaṅgastambhana' i.e. removes or lessens liquidity of Tin metal on heating. In other words such mercury when mixed with Tin metal does not allow it to melt at its normal melting point.

If put in the milk makes the milk to dry. It is expected to give all types of Siddhies in mankind. If helps in making all types of works done. It prevents Jarā (Senile changes), makes the body strong and free from diseases. It checks Balī-Palita and Khālitya (ball hairs) and stimulates sexual power. It also removes 'Dāridrya' (poverty) of the persons. From Lohavedha point of view such mercury acquires 'Mukha' (conjums more grasa) and also Vedha (transformation) power.

In 'Rasa Ratna Samuccaya'[2] twenty five types of Rasa bandhas have been found mentioned. In the end the 26th type 'Jalūkā–bandha is also found mentioned in the list. However

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1. बद्धस्तु तेन बिधिना कठिनत्वं प्रजायते । (र.प्र.सु. २/१०)
वंगस्य स्तम्भनं सम्यक् करोत्येव न संशयः ॥ (र.प्र.सु. २/११)
धारितोऽसौ मुखे साक्षाद्वीर्यस्तम्भकरः सदा ॥ (र.प्र.सु. २/११)
वर्षमात्रं धृतो वक्त्रे बलीपलितनाशनः । सर्वसिद्धि करोऽप्येष मूलिकाबद्ध पारदः ॥ (र.प्र.सु. २/२२)
कठिनो वज्र सदृशो जायते नात्र संशयः । क्षीरं शोषयते नित्यं कौतुकार्थे न संशयः ॥
वीर्यं वङ्गं स्तम्भयति सत्यं सत्यं न संशयः ॥ (र.प्र.सु. २/३३-३४)

2. **रसबन्ध प्रकारा–**
हठारोटौ तथाऽभासःक्रियाहीनश्च पिष्टिका । क्षारः खोटश्चपोटश्च कल्कबन्धश्च कज्जली ॥
सबीजश्चैव निर्वीजो निर्जीवश्च सवीजकः । शृंखलाद्रुतिबन्धौच बालकश्च कुमारकः ॥
तरुणश्च तथा वृद्धो मूर्त्तिबद्धस्तथापरः । जलबन्धोऽग्निबन्धश्च सुसंस्कृतकृताभिधः ॥
महाबन्धाभिधश्चेति पंचविंशतिरीरिताः ॥ (र.र.स. ११/६१-६३)
केचि द्वदन्ति षट्विंशोजलूकाबन्धउच्यते । स तावन्नेष्यते देहे स्त्रीणां द्रावे प्रशस्यते ॥ (र.रस. ११/६४)

this type has no therapeutic importance. It is used for the stimulation of sexual desire in ladies.

**Description of Each Types of Bandha–**

**1. Haṭha Bandha[1]–**

In this type unpurified mercury is taken for doing its bandhana (solidification). It is not recommended for internal use as it is likely to produce different types of diseases in the body which may lead to even death.

**2. Āroṭa Bandha[2]–**

In this type purified mercury is used for doing bandhana. It is considered best for 'Kṣetrī Karaṇa' and also recommended for internal use for removing/curing number of diseases in due course of time.

**3. Ābhāsa Bandha[3]–**

Here mercury mixed with metals is triturated with herbal extractives and converted to solid state. Here original properties of mercury are changed to some extent only. Hence it is known as Ābhāsa bandha means here 'Guṇa Vaikṛiti' takes place in mercury properties.

**4. Kriyāhīna Bandha[4]–**

Here purified mercury is mixed with unpurified metals/ minerals and converted into solid state. This bandha is known

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1. **हठबन्ध–**
   हठोरसः स विज्ञेय सम्यक् शुद्धिविवर्जितः । स सेवितो नृणांकुयन्तिमृत्युंवा व्याधि मुद्धतम् ॥
   (र.रस. ११/६५)
2. **आरोट बन्ध–**
   सुशोभितो रसः सम्यगारोट इति कथ्यते । सक्षेत्रीकरणे श्रेष्ठः शनै र्व्याधिविनाशनः ॥
   (र.र.स. ११/६६)
3. **आभास बन्ध–**
   पुटितो यो रसो याति योगं मुक्त्वा स्वभावताम् । भावितो धातुमूलाधैराभासोगुणवैकृतः ॥
   (र.र.स. ११/६७)
4. **क्रियाहीनबन्ध–**
   असंशोधितलोहाद्यैः सधितो यो रसोत्तमः । क्रियाहीनः सविज्ञेयो विक्रियांयात्यपथ्यतः ॥
   (र.र.स. ११/६८)

as 'Kriyāhīna bandha'. If the 'Apathyas' are used during its course it may prove harmful to the body.

**5. Piṣṭi Bandha[1]–**

Here mercury is made into 'pisti form' through continuous grinding/rubbing in strong heat. It resembles butter in shape and appearance. It is known as 'Piṣṭi bandha'. For this bandha sulphur is mixed in small amount with mercury. It improves Jaṭharāgni (digestive power) of a person on internal use and claimed as Dīpana & Pācana.

**6. Kṣāra Bandha[2]–**

In this mercury is made solid by mixing it with Śaṅkha, Śukti or Varāṭa bhasma and the bandha so formed is known as 'Kṣāra bandha'. In this type bandhana of mercury is done with Kṣārīya (alkaline) padārthas hence it is known as "Kṣārabandha', on internal use it improves 'Jaṭharāgni', produce Puṣṭi (Tone) in the body and cures 'Jaṭhara vyathā' (abdominal pain).

**7. Khoṭa Bandha[3]–**

In this mercury is made solid just like round ball and is known as 'Khoṭa bandha'. On continuous strong heating its weight loss is seen. It may not be thermostable. On internal use it cures all diseases quickly.

**8. Poṭa Bandha[4]–**

Here melted Kajjali is converted into solid Parpati form by

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1. **पिष्टिका बन्ध–**
तीव्रातये गाढ़तरावमर्दात्पिष्टीभवेत्सा नवनीतरूपा । स रसः पिष्टिकाबन्धोदीपनपाचनस्तथा ।।
(११/६९)

2. **क्षारबन्ध–**
शंखशुक्तिवरायद्यैर्योऽसौ संसाधितो रसः । क्षारबन्धः परं दीप्तिपुष्टिकृच्छ्वलनाशनः ।।
(र.र.स. ११/७०)

3. **खोटबन्ध–**
बन्धोयः खोटतां यातिध्मातो ध्मातः क्षयं व्रजेत् । खोटबन्धः स विज्ञेयः शीघ्रं सर्वगदायहः ।।
(र.र.स. ११/७१)

4. **पोटबन्ध–**
द्रुतकज्जलिका मोचापत्रके चिपटीकृता । स पौटः पर्पटीसैव बलाधखिलरोगनुत् ।।
(र.र.स. ११/७२)

pressing it in between banana leaves. The bandha of this type is known as 'Poṭa bandha' According to text 'Poṭa' is parpati. On internal use it may cure all types of diseases, specially of children.

**9. Kalka Bandha[1]–**

In this bandha mercury attains the consistancy and appearance of mud through the effect of 'Swedanādi processes. It is known as Kalka bandha. It acts in accordance with the preparations with which it is used.

**10. Kajjali Bandha[2]–**

In this mercury mixed with sulphur is converted into black powder form by continuous grinding for some time. It is known as Kajjalī bandha. The preparations prepared by using Kajjali are also known as Kajjali bandha.

**11. Sajiva Bandha[3]–**

In this bandha Pārada is converted into bhasma form but on heating further when this bhasma shows some loss in weight then it is known as Sajīva bandha means here Pārada does not become completely Mṛita. On internal use it may not perform normal functions of Pārada bhasma means may not destroy effect of Jarā (old age) and Vyādhies.

**12. Nirjiva Bandha[4]–**

Here mercury, after having been made 'Abhraka' and 'Gandhaka' Jārita, is converted in the bhasma form completely. No

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1. **कल्कबन्ध–**
   स्वेदाधैः साधितः सूतः पङ्कत्वं सुमुपागतः । कल्कबद्धः स विज्ञेयो योगोक्त फलदायकः ॥
   (र.र.स. ११/७३)
2. **काज्जलीबन्ध–**
   कज्जली रसगन्धोत्था सुश्लक्ष्णा कज्जलोपमा । तत्तदयोगेन संयुक्तो कज्जलीबन्ध उच्यते ॥
   (र.र.स. ११/७४)
3. **सजीवबन्ध–**
   भस्मीकृतो गंच्छतिबह्नियोगाद् रसः सजीवः खलु प्रदिष्टः ।
   सं सेवितौऽसौ न करोति भस्मकार्यं जवाद्रोगविनाशनं च ॥ (र.र.स. ११/७५)
4. **निर्जीव बन्ध–**
   जीर्णाग्रको वा परिजीर्णग्रन्धो भस्मीकृतश्चखिललोहमौलिः ।
   निर्जीवनामा हि स भस्मसूतोनिःशेषरोगान्निनिहन्ति सधः ॥ (र.र.स. ११/७६)

portion of mercury remains unreduced to ashes in this bandha. Hence it is known as Nirjīva bandha. On internal use it cures all the diseases immidiately.

**13. Nirvija Bandha[1]–**

In this 1/4th part Swarṇa jīrṇa mercury mixed with sulphur is made into 'Piṣṭi' form first and then it is subjected to 'Puṭapāka' with equal amount of sulphur. The bandha so formed is known as 'Nirbīja bandha'. It is used internally for curing all the diseases.

**14. Sabija Bandha[2]–**

Here mercury is first made in 'Piṣṭi' form with 'Abhraka', Swarṇa, Tāra, Arka (Tāmra) and Kānta loha and then reduced to ashes with six times sulphur. It is known as Sabija bandha and claimed highly effective for all therapeutic purposes.

**15. Śṛiṅkhalā Bandha[3]–**

Here first 'Pārada bhasma' is prepared with 'Vajrādi Ratnas' and then it is mixed with other Pārada bhasma prepared with other drugs in equal parts and the 'bandha' so produced is known as Śṛiṅkhalā bandha'. This bandha is claimed useful for both 'Deha Karma' and 'Lohakarma'. It absorbs quickly in the body and may produce wonderful effects in the body which are known by 'Lord Śiva' only.

**16. Druti Bandha[4]–**

In this mercury is made solid or in 'bhasma' form with the

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1. **निर्बीज बन्ध–**
   रसस्तु पदांशसुवर्णजीर्णः पिष्टीकृतो गन्धक योगतश्च ।
   तुल्यांशगन्धैः पुटितः क्रमेण निर्बीजनामा सकलामयघ्नः ।। (र.र.स. ११/७७)
2. **सबीज बन्ध–**
   पिष्टीकृतैरभ्रकसत्वहेमतारार्ककान्तैः परिजारितो यः ।
   हतस्ततः षड्गुणगन्धकेन सबीजबद्धो विपुलप्रभावः ।। (र.र.स. ११/७८)
3. **शृंखला बन्ध–**
   वज्रादि निहतेसूते हतः सूतो समोऽपरः । शृंखलाबद्धसूतस्तु देहलोहविधायकः ।।
   चियप्रभावां वेगेन व्याप्तिं जानाति शंकरः ।। (र.र.स. ११/७९)
4. **द्रुति बन्ध–**
   युक्तोऽपि बाह्यद्रुतिभिश्च सूतो बन्धंगतो वा भसितस्वरूपः ।
   स राजिका पादमितो निहन्ति दुःसाध्यरोगान्द्रुतिबद्धनामा ।। (र.र.स. ११/८०)

'Druties' prepared out side and the bandha so produced is known as 'Druti bandha'. It is claimed to cure severe type of diseases even in 1/4 Rājikā (1/2 mg.) dose.

**17. Bālaka Bandha[1]–**

When Samābhra jārita mercury is converted into 'bhasma' form the 'bandha' so made is known as Bālaka bandha. It is claimed to be 'Rasāyana' and prevents/cures all diseases even associated with complications or Ariṣṭha lakṣaṇas, means it may acts as preventive, curative and health promotor.

**18. Kumāra Bandha[2]–**

In this 'Dviguṇābhra jārita pārada (mercury) is converted into bhasma form and the bandha made so is known as 'Kumāra bandha'. It is claimed to destroy all types of Pāpaja rogas (diseases caused due to the effects of sins) and acts as Rasāyana. Its one Taṇḍula (about 10 mg.) dose may be used for three weeks.

**19. Taruṇa Bandha[3]–**

In this 'Caturguṇābhra jārita' pārada (mercury) is converted into bhasma form and the 'bandha' so formed is known as 'Taruṇa bandha'. It is claimed as best 'Rasāyana'. It cures all the diseases within a weak's time. It promotes Bala and Vīrya of a person.

**20. Vṛiddha Bandha[4]–**

In this 'Ṣaḍguṇābhra jārita' pārada (mercury) is converted into

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1. **बालक बन्ध–**
   समाभ्रजीर्णः शिवजस्तु बाल संसेवितो योगयुतो जवेन ।
   रसायनो भाविगदापहश्च सोपद्रवारिष्टगदान्निहन्ति ।। (र.र.स. ११/८१)
2. **कुमार बन्ध–**
   हरोद्भवो यो द्विगुणाभ्रजीर्ण सस्यात्कुमारो मिततण्डुलोऽसौ ।
   त्रिसप्तरात्रैः खलु पापरोगसंघातघाती च रसायनं च ।। (र.र.स. ११/८२)
3. **तरुण बन्ध–**
   चतुर्गुण व्योम कृताशनोऽसौ रसायनाभ्यस्तरूणाभिधानः ।
   स सप्तरात्रात्सकलामयघ्नो रसायनोवीर्यबलप्रदाता ।। (र.र.स. ११/८३)
4. **वृद्धबन्ध–**
   यदाभ्रकः षड्गुणितो हि जीर्णः प्राप्ताग्निसख्यः सहिवृद्धनामा ।
   देहे च लोहे च नियोजनीयः शिवाहते कोऽस्यगुणान् प्रवक्ति ।। (र.र.स. ११/८४)

bhasma form and the bandha so formed is known as 'Vṛiddha bandha. It acquires friendship with Agni (fire) i.e. it becomes thermostable. It is highly useful for 'Dehakarma' and lohakarma. No one else can describe its properties except Lord Śiva.

**21. Mūrti Bandha[1]–**

In this mercury, without being subjected to 'Abhraka jāraṇa', is converted to solid form with the help of Divyauṣadhies. The bandha so formed is Mūrti bandha. It is also claimed thermostable as it does not show any loss even after continuous heating for long time. On internal use it may produce uncomparable wonderful effects in the body along with other preparations.

**22. Jala Bandha[2]–**

In this mercury is converted into solid form with Śilā Toya (cold water) or with any other type of water. The 'bandha' so formed is known as 'Jala bandha'. It prevents Jarā (senile changes) and Mṛityu (death) and cures diseases. If mixed with other preparations potentiates these further.

**23. Agni Bandha[3]–**

In this mercury alone or mixed with other drugs converted into solid Guṭikā form with the help of heat treatment. The bandha so formed is known as Agni bandha. On further heating it does not show any loss. It is claimed to produce 'Khecaratva' power (moving in the sky) in man.

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1. **मूर्त्तिबन्ध–**
योदिव्यमूलिकाभिश्च कृतोऽत्यग्निसहो रसः विनाभ्रजारणात्सस्यान्मूर्त्तिबन्धो महारसः ।
अयं हि जार्यमाणस्तु नाग्निनाक्षीयते रसः । योजितः सर्वयोगेषु निरौपम्यफलप्रदः ॥
(र.र.स. ११/८५-८६)

2. **जलबन्ध–**
शिलातोयमुखैस्तोयैर्बद्धोऽसौ जलबन्धवान् । स जरारोगमृत्युघ्नः कल्पोक्त फलदायकः ॥
(र.र.स. ११/८७)

3. **अग्निबन्ध–**
केवलो योगयुक्तो वा ध्मातः स्याद् गुटिकाकृतिः । अक्षीणश्चाग्निबद्धोऽसौ खेचरत्वादिकृत्सहि ॥
(र.र.स. ११/८८)

**24. Susaṁskṛita Bandha[1]–**

Collect Viṣṇukrānta, 'Snuhī latā (Śaśilatā)', 'Jalakuṁbhī', 'Dhattūra mūla', 'Viśālā' (Indravāruṇī), 'Nāginī, (Lakṣmaṇā) Kanda', Vyāghrapādī, 'Krauṇṭaka' (Sahacara), 'Vṛiścikālī', 'Hastisnuhī', 'Haṁsapādī', 'Sahā', (Mudgaparṇī) and Āsurī each in 1/4th part of mercury, mix these with the urine of virgin cow and prepare a paste, mix pārada with this paste, prepare a Golaka of this paste and heat it in 'Bālukā yantra'. Now mix this mixture with the ash of other drugs and heat it. The 'bandha' so made is known as 'Susaṁskṛita bandha'.

**25. Mahā Bandha[2]–**

For this mercury is mixed either with Gold or Silver and heated. By this process a homogenous amalgam is made and mercury so treated converts into long, heavy, white and solid form like guṭikā. It does not show any loss on heating. When pressed or hammered turns into powder form like a Lavaṇa (salt) and does not show any Mālinya (blackish colour) on rubbing. It melts quickly without producing any smell. It is known as 'Mahābandha'.

**26. Jalūkā Bandha[3]–**

In Rasaratna Samuccaya Jalūkā bandha is described as 26th type bandha. The other texts of Rasaśāstra have not described it as it is not found useful for Dehakarma. It is used for inducing sexual desires in the ladies.

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1. **सुसंस्कृत बन्ध–**
विष्णुक्रान्ता शशिलता कुम्भीकनकमूलकैः । विशालानागिनीकन्द व्याघ्रपादी कुरण्टकैः ।
वृश्चिकाली हस्तिशुण्ठी हंसपादी महासुरी ।। अप्रसूतगवां मूत्रैः पिष्टं बालुकके पचेत् ।
पक्केमेवं मृतैर्लोहैर्मर्दितं विपचेत्रसम् । यन्त्रेषु मूर्च्छा सूतानामेष कल्पः समासतः ।।
(र.र.स. ११/९०-९२)

2. **महाबन्ध–**
हेम्ना वा रजतेन वा सहचरो ध्मातो व्रजत्येकतामक्षीणो निविडोगुरुश्चगुटिकाकारोऽतिदीघोज्वलः ।
चूर्णत्वं पटुवत्प्रयाति निहतो घृष्टोनमुञ्चेन्मलम् । निर्वन्धो द्रवति क्षणात्सहि महाबद्धभिधानो रसः ।।
(१/८९)

3. **जलूका बन्ध–**
सूते गर्भनियोजितार्द्धकनके पादांशनागेऽथवा-पञ्चाङ्गुष्ठक-शालाली-कृतमदाश्लेष्मातबीजैस्तथा ।
तद्वत्तेजिनिकोलकाख्यफलजैश्चूर्णतिलंपत्रकं तप्ते खल्लतले निधाय मृदिते जाताजलूकावरा ।।

**Method of Preparation[1]–**

For this 1/2 part of Gold and 1/4th part of lead is mixed with 'Pārada' first then the following drugs each in 1/16th part are added and ground well in 'Tapta Khalva' till smooth paste is made. This paste is then made into Jalūkā (leaches) shape and the bandha so made is known as 'Jalūkā bandha'. The drugs are 'Eraṇḍa mūla', 'Sālmalī bija', 'Bhaṅgābīja', 'Śleṣmātaka bija', 'Jyotiṣmati bīja', 'Kolaphala Taila', and Tejapatra.

**The Size of Jalūkā[2]–**

It is also mentioned in R.R.S. that the size of Jalūkā depends upon the age of the lady for which it may be used and according to the texts the Jalūkā may be prepared in three sizes, viz.–

1. 8 aṅgula long for the use upto the 16 years aged ladies
2. 10 aṅgula long for the use upto 32 years aged ladies
3. 12 aṅgula long for the use in over 32 years age group – to 60 year group.

**Potentiation of Jalūkā[3]–**

It is further described in Rasaratna Samuccaya that so prepared Jalukā may furtehr be potentiated by mixing these with 1/16th part 'Kapikacchū roma or Paṭala (covering) Cūrṇa', Bakuci taila', 'Karpūra', 'Ṭaṅkaṇa' and 'Damanaka powder' and Triturated with 'Pippalī Kwātha' in 'Tapta Khalva' and then made into Vaṭī form.

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1. सैषा स्यात्कपिकच्छुरोमपटले चन्द्रावतीतैलके चन्द्रे टंकण काम पिप्पलिजले स्विन्नाभवेत्तेजनी ।
तप्तेखल्लतलेविमर्ध विधिवद्वलाद्वटीयाकृता सास्त्रीणां मददर्पनाशनकरी ख्याता जलूकावरा ॥
(र.र.स. ११/९३-९४)

2. **जलूका प्रमाण निर्देश–**
बाल्ये चाष्टाङ्गुलायोज्या यौवने च दशाङ्गुला । द्वादशैव प्रगल्भानां जलूका त्रिविधा मता ॥
(र.र.स. ११/९५)

3. **जलूका संस्कार विशेष–**
घृत्वा सूक्ष्ममुखे पात्रे मेषीक्षीरं प्रदापयेत् । स्थापयेदातयेतीव्रे वासराण्येकविंशतिः ॥
द्वितीयात्र मया प्रोक्ता जलौका द्रावणेहिता । पुरुषाणां स्थिता मूर्ध्नि द्रावयेद्वनिताकुलम् ॥
(र.र.स. ११/९६-९७)

Thus the size of 'Jalūkā' differs with the age group of ladies. Eight more formulas for preparing 'Jalūkā' are also found described in R.R.S. and may be refered to in the Text by those interested in their formation.

**Rasa Māraṅam–**

**Introduction–** It is mentioned in R.R.S. and other Rasa texts that usually mercury is used internally in following three forms i.e. in Mūrcchita form (converted into some therapeutically useful compound forms). Generally these are two types, viz– The compounds prepared with sulphur and the compounds prepared without sulphur. The compounds prepared with sulphur are more popularly used Rasa (mercury) compounds as these if prepared carefully strictly following the texts then these are non or least toxic and therapeutically most effective and also very safe for internal use. Such compounds are Kajjalī, Parpatī of various types and Rasa sindūra, Makaradhwaja and Malla (Arsenic) containing Sindūra Kalpas. The other types of compounds which are prepared without using sulphur are less commonly used Rasa (mercury) compounds. These are Rasa Karpūra, Rasa Puṣpa, Mugdha rasa and Saptāśālī Vaṭī etc. These if used internally for therapeutic purposes may be administered for shorter duration and with proper care as these may prove toxic if used for longer duration.

In baddha form also mercury is advised to be used for both internal and external purposes. In this form mercury may be mixed with various types of drugs and made into solid and/or hard form. Some baddha forms are still very common where as some baddha forms are considered most difficult to be prepared. From effective point of view texts have mentioned that these are also used for various purposes. It is mentioned about this that – 'Baddhaḥ Khecaratām datte' means there are some forms of baddha mercury which may induce the power of moving in the sky but in the present times such baddha form of mercury is not in common practice.

The third form of mercury which has been advised by ancient Rasa scholars is Mrita/Bhasma form of Rasa. And for this it has been mentioned in texts that if mercury is converted into ashes form successfully and if used internally may make the man Amara (im-mortal) means he may live long and may not die.

But many scholars of present times have worked on this project but in my opinion no scholar has acheived success in getting such Rasa bhasma prepared. And provably in ancient times also same situation exhisted and as such many scholars have advised to use Rasa Sindūra (a Sagandha Mūrcchita compound) in place of Rasa bhasma and the same advice is also followed by almost all the Vaidyas in the present times also.

However few formulae of Rasa māraṇa found mentioned in the texts. We may mention in this context that at present we are not able to perform eighteen saṁskāras of mercury and we could not make mercury Agnisthāyee (thermo-stable) hance its Māraṇa by applying heat for certain period and converting it in Bhasma (ashes) form is possibly not acheived.

**Sūtā Māraṇa Prakāraḥ–**

(I) Sajīva baddha pārada or Hiṅguloltha pārada 1 part, Palāśabija 1 part, Rakta (Kesara) 1 part all mixed to gather may be triturated with Jaṁbīramla and on drying may be applied heating in suitable yantra (apparatus)/Mūṣā with this method pārada certainly converts into ash form.[1]

(II) Mix Śuddha pārada 1 part, Apāmārga bīja Cūrṇa 1 part and Puṣkara (Kamala) bija Cūrṇa 1 part, grind these with water and prepare their paste. Put this paste in a strong mūṣā and apply heat through suitable puṭa system. In this way Pārada bhasma may be prepared.[2]

(III) Take Kākoduṁbarikā dugdha bhavita Hiṅgu 1 part and Śuddha pārada 1 part, mix both togather and grind with water or Kakoduberikā dugdha. Close this paste in mūsā and apply heat with puṭa system. With this method also Sūta bhasma may be prepared.[3]

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1. पलाशबीजं रक्तञ्च जम्बीराम्लेन सूतकम्। सजीवं मर्दितं यन्त्रे पाचितं म्रियते ध्रुवम्॥ (र.र.स. ११/११३)
2. खरमञ्जरिबीजान्वितपुष्करबीजैः सुचूर्णितैःकल्कम्। कृत्वा सूतं पुटयेदृढ़मूषायां भवेद्भस्म॥ (र.र.स. ११/११४)
3. काकोदुम्बरिकाया दुग्धेन सुभावितोहिङ्गुः। मर्दनपुटनविधिना सूतं भस्मीकरोत्येव॥ (र.र.स. ११/११५)

(IV) Prepare a paste of Devadālī and Harikrānta (Aparājitā) with Āranāla, mix Śuddha pārada with this paste and grind it for seven times or till pārada mūcchana. Then put this mūrcchita Sūta in Kharpara (earthen lid) and apply heat to it over a Culhi (furnace) for whole day adding the above liquid. Heating should be continued till it converts into white colour ash like Lavaṇa (common salt).[1]

(V) Prepare a powder of Apāmārgabija and Eraṇḍa bija, keep half of this power in a mūṣā, place Suddha pāradạ over this powder; now put remaining powder over this Sūta, close mūṣā properly and apply "heat with four laghupuṭas". with this method also Rasa bhasma may be prepared.[2]

(VI) Collect a Kaṭutumbī Kanda, make a hole in its middle fill Stri dugdha (woman's milk) in it, put Suddha pārada in this Kanda. Apply heat to this Kanda bolas by Svedana method using dung cakes. Repeat the process for seven times. with this method also Rasabhasma can be prepared. Some scholars recommond laghu puṭapāka insteed of svedana.[3]

(VII) Take Śuddha pārada and Śuddha Gandhaka in equal parts, prepare their Kajjalī, triturate it with Aṅkole mūlajala in a mortar. Close it in a mūṣā or Saṁputa. Apply heat in a Bhūdhara yantra for whole day. with this method also Rasa bhasma may be prepared.[4]

(VIII) Take Śuddha pārada and Śuddha Vajrābhraka in equal parts, triturate these with Vaṭa kṣīra for three prahara/(9 hours). Close this paste in a mūṣā or Sarāva saṁputa, keep this mūṣā or Sarāva saṁputa in Bālukā yantra and apply heat to it with the Vaṭa Kāṣṭha (ficus wood) for whole day (12 hours). With this method also Rasa bhasma may be prepared.[5]

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1. देवदालीं हरिक्रान्ताभारनालेन पेषयेत्। तद्द्रवैः सप्तधासूतं कुर्यान्मर्दितमूर्च्छितम् ॥
तत्सूतं खपरिदधाद् दत्वा दत्वा तु तद् द्रवम्। चुल्ल्योपरिपचेज्ज्ञाह्नि भस्मस्याल्लवणोपमम्।
(११/११६-११७)
2. अपामार्गस्य बीजानि तथैरण्डस्य चूर्णयेत्। तच्चूर्णं पारदे देयं मूषायामधरोत्तरम्।
रुद्ध्वा लघुपुटे पच्याच्चतुर्भिः। भस्मंतां नयेत् ॥ (र.र.स. ११/११८)
3. कटुतुम्ब्युद्भवे कन्दे गर्भे नारीपयाप्लुते। सप्तधाम्रियते सूतः स्वेदितो गोमयाग्निना ॥
(११/११९)
4. अङ्कोलस्य शिफावारि पिष्टं खल्ले विमर्दयेत्। सूतं गन्धकसंतुल्यं दिनान्ते तं निरोधयेत्।
पुय्येद्भूधरे यन्त्रे दिनान्ते स मृतो भवेत् ॥ (र.र.स. ११/२०)
5. वटक्षीरेण सूताभ्रौ मर्दयेत्प्रहरत्रयम्। पाचयेत्तेन काष्ठेन भस्मीभवति तद्रसः॥ (र.र.स.११/१२१)

There are many other methods also found mentioned in the Rasa texts. But at present we are not in a position to say that which formula is best. It is a matter of further investigation.

**Method for Using Rasabhasma[1]–**

After the preparation of Rasabhasma if any body wants to use it internally then he must first worship Rasācārya means who has prepared it just like a God Maheswara (Lord Siva) then also worship Rasabhasma which is kept (stored) in Śaṅkha, Danta (teeths) and Beṇu (Banśa) as per the capacity. It is also said that during this we must worship other Gods, cows and Brāhmins. Before ingesion Pārada-bhasma must be kept in a piece of betal leap (Parṇa Khaṇḍa) and then it should be used internally with suitable Anupāna (Vehicle).

**During Rasa Therapy Pathyas[2] As Advised–**

During Rasa therapy one must use yuṣas prepared with Taṇḍulīyaka, Dhānyaka, Paṭola, Alaṁbuṣā etc. these must be made Saṁskṛita with ghṛita, Saindhava, Dhānyaka, Jīraka and Ārdraka. He must use Godhūma. Old Śāli dhānya, Cow's milk, ghee and Dadhi (curd), for drinkig Haṁsodaka and Mudga rasa may be used.

**Apathyas[3]–**

Bṛihati, Bilva, Kūṣmāṇḍa, Vetrāgra, Kārabellaka, Māṣa, Masūra, Niṣpāva, Kulittha, Sarṣapa, Tila, Laṅghana, Udvartana,

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1. **रस सेवनविधि–**
अथातुरोरसाचार्यं साक्षाद्देवं महेश्वरम्। साधितं च रसं शंखदन्तवेण्वादिधारितम्॥
पूजयित्वा यथाशक्तिदेवगोब्राह्मणानपि। पर्णखण्डेर्घृतंसूतं जग्ध्वास्यादनुपानतः॥
(र.र.स. ११/१२२-१२३)

2. **रस सेवनेपथ्यानि–**
घृतसैन्धवधान्याक जीरकार्द्रकसंस्कृतम्। तण्डुलीयकधान्याक पटोलालम्बुषादिकम्॥
गोधूमजीर्णशाल्यन्नं गव्यं क्षीरं घृतं दधि। हंसोदकंमुद्गरसः पथ्यवर्गः समासतः॥
(र.र.स. ११/१२४-१२५)

3. **अपथ्यानि–**
बृहतीबिल्वकूष्माण्ड वेत्राग्रं कारवेल्लकम्। माषं मसूरं निष्पावं कुलित्थं सर्षपं तिलम्॥
लङ्घनोद्वर्त्तनस्नान ताम्रचूडसुरासवम्। आनूपमांसं धान्याम्लं भोजनं कदलीदले॥
कांस्यं च गुरु विष्टम्भितीक्ष्णोष्णं च भृशं त्यजेत्॥ (र.र.स. ११/१२६-१२७)
ककारादिगण द्रव्यसेवन निषेध ..

Snāna, Tāmra cūḍa, Sarāṣapa, Ānūpa māṁsa, Dhānyāmla, Injestion of food in Kadalī patra and Kāṁsya pātra, In food Guru, Viṣṭaṁbhi, Tikṣṇa, uṣṇa should also be avoided.

All the drugs included in Kakārādi Gaṇa-Devīśāstrokta and Śrīkṛiṣṇa devokta.

**Treatment for Rasa Vyāpad (Complications)[1]–**

**On Complaining Udgāra–** Dadhyamla, Kṛiṣṇa mīna with Jīraka,

**On Anila Kṣobha–** Abhyanga with Nārāyaṇa etc. Tailas,

**On Complaining Arati–** Pouring of cold water over Mastaka (head)

**On Complaining Tṛiṣṇā–** Nārikelāṁbu and Mudgayūṣa with sugar.

**For Improving Rasa Vīrya (Potency) of Mercury Therapy[2]–**

During Rasa Therapy one must use Drākṣā, Dāḍima, Kharjūra and Kadalīphala. And to potentiate Rasa Vīrya one must use Dadhi, Kṣīra, Ikṣu rasa and Śarkarā (sugar) and Śitopacāra.

**On Stoping Rasa Therapy[3]–**

After stoping Rasa therapy one must use Kaṇṭakārī phala and Bilva majjā for some time to prevent any further complications and take usual diet.

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1. **रस व्यापदि प्रतीकारः–**
   उद्गारे सति दध्यम्लं कृष्णामीनं सजीरकम् । अभ्यङ्ग मनिलक्षोभेतैलेर्नारायणादिभिः ॥
   अरतौशीततोयेन मस्तकोपरि सेचनम् । तृष्णायां नारिकेलाम्बु मुद्गयूषं सशर्करम् ॥
   (र.र.स. ११/१३२-१३३)
2. **रसवीर्यवृद्धर्थम् उपचाराः–**
   द्राक्षादाडिमखर्जूर कदलीनां फलं भवेत् । रसवीर्य्यविवृद्धयर्थं दधिक्षीरेक्षुशर्करा ॥
   (र.र.स. ११/१३४)
   शीतोपचारमन्यच्च ..... ॥
3. **रस त्याग विधौ–**
   ..... रसत्यागविधौपुनः । भक्षयेद्बृहतीबिल्वं सकृत् साधारणोविधिः ॥
   (र.र.स. ११/१३५)

**Pharmaceutical Processes of Aṣṭa Samskaras (Eight Special Processes) of Pārada–**

According to Rasa literature Aṣṭa Saṁskāras of Pārada (mercury) are considered highly important to remove its various doṣas (impurities) and to enhance its potency and effectiveness from therapeutic as well as alchemical point of view.

Various drugs and methods are found mentioned in the literature for these Saṁskāras but in the present pharmaceutical study most simple, easy and authentic methods for each processes are selected on the basis of tradition and experiences and these are as per Rasa Hridaya Tantra Text.

For the present study crude mercury obtained from market is taken for each processes and the loss or gain in the weight of mercury and the other changes if produced are noted after each Saṁskāra (process). The drugs, apparatuses and the methods for each process are followed strictly as per the text mentioned earliar except for Pātana Saṁskāra where instead of doing Ūrdhwa, Adhaḥ and Tiryak pātana – Three times pātana is done in modified Pātana yantra. Here Pātana piṣṭi is prepared with copper foils taken in 1/3rd quantity of mercury in each time of repeatition. No separate drugs recomended in each pātana process (Ūrdhwa, Adhaḥ and Tiryak) have been used. 50 gm. of mercury sample was collected after each process for physico-chemical and toxicity study.

**Details with Regards to Eight Samskaras of Mercury–**

**1. SWEDANAM–** Application of Heat through boiling acidic liquid.

**Drugs for Paste–**

Āsurī (Brassica compestris linn) 1/16th part of Hg.
Paṭu (Saindhava lavaṇa – Rock salt) 1/16th part of Hg.
Kaṭuka Traya– Śuṇṭhi (Zingiber officinale Rose), Marica (Piper nigrum Linn), Pippali (Piper longum Linn) — all mixed in 1/16th part of Hg
Citraka mūla (Plumbago zeylanica Linn root 1/16th part
Ārdraka (Zingiber officinal Rose) 1/16th part
Mūlaka (Raphanus sativus Linn)s 1/16th part

**Method–** Prepare their fine paste with Kāñji (weak acidic liquid) keep this paste on Kadali patra, put mercury in this, prepare its bundle through a cloth, suspend it in a Dolā yantra pot filled with Kañji liquid, apply heat with mild temperature for three days maintaining the boiling of liquid. Take out the bundle after three days and collect mercury from the paste after washing it with hot water properly with care. If needed Kanjī may be added in the pot repeatedly.

**Object of Swedana–** Mala Śaithilya Karaṇa means by Swedana treatment malas (impurities of mercury) are made loose.

**Duration–** Swedana is applied for three days.

**Precaution–** Bundle may be prepared in four fold cloth to avoid escaping of mercury during boiling. Washing of mercury should be done with much care.

**Loss or gain–** Some mercury is lost during washing

**2. MARDANAM–** Grinding of mercury with drugs/liquid in Tapta Khalva.

**Drugs for Mardana–** Guḍa (Jaggary), Dagdha urṇā (burnt wool), Lavaṇa saindhava (Rock salt), Mandira dhūma (House soot) Iṣṭikā Cūrṇa (Brick powder), Āsurī Cūrṇa (Brassica compastris Linn powder) each in 1/16th part of mercury.

**Method–** Grind all well with Kāñji liquid in an iron and stone mortar continuously for three days. After three days collect mercury from mixture by washing it with hot water carefully. If needed Kāñjī may be added as and when required.

**Object of Mardana–** Bahir mala vināśana means to destroy externally mixed impurities.

**Apparatus–** Preferably use Tapta Khalva for grinding

**Duration–** Continue grinding for three days.

**Precaution–** Washing of mercury paste may be done very carefully. Avoiding loss of mercury as much as possible.

**Loss or gain–** Some of mercury may be lost during washing and collecting mercury. At the end it should be filtered through the three/four fold cloth piece.

**3. MŪRCCHANAM–** (Grinding of mercury in iron Khalva till Naṣṭapiṣṭatva state)

**Drugs–** Gṛiha Kanyā (Aloe barbidensis Mill) pulpa, Triphalā (Harītakī, Bibhītakī, Āmalakī phala twak powder) all mixed together 1/16th part of Hg. Citraka mūla twak– 1/16nd part of mercury.

**Method–** Mix Triphalā and Citraka mūla powder with mardita mercury and also add Kumārī pulpa in as much quantity as required for grinding till mercury and mixed drugs attain Naṣṭapiṣṭatva state i.e. mercury is made into very finest globules and losses its original form by grinding. For this Kumārī pulp may be added several times. It is known as Mūrcchana saṁskāra of mercury.

**Object of Mūrcchana–** Naisargika or Kañcuka doṣa Vināśana. Here Ghṛita Kumārī destroyas Maladoṣa, Triphalā destroys-Agni doṣa and Citraka mūla destroyes Viṣa doṣa.

**Apparatus–** Iron mortar.

**Duration–** Till mercury attains Naṣṭa-piṣṭa form. Generally 6-7 days are needed to reach Naṣṭa piṣṭa state of mercury.

**Repeatition–** Process may be repeated from 3-7 times.

**Precaution–** Grinding should be done till mercury divides into very finest globules and looses its original form.

For re-gaining mercury from its Naṣṭapiṣṭa form is very difficult and takes time hance its Ūtthāpana is described as a separate saṁskāra.

**4. UT-THĀPANAM–** (Regaining of mercury in its original form from Mūcchita state).

**Method–** For regaining of mercury in its original form either washing with hot water or unṣṇa Āranāla is done or Patana karma is done.

For this Mūrcchita mercury is kept first inside hot water or hot Āranā/Kāñjika for two/three days then wash it by rubbing and decanting water several time or till complete mercury returns to its original form. If washing method may not be found sufficient then the washed material/mixture is dried in sun rays and subjected to heating in Patana yantra to re-gain mercury by sublimation process.

**Apparatus–** Trays, Pātana yantra.

**Duration–** Till whole or maximum amount of mercury is obtained/regained.

**Precaution–** 1. As in this process mercury is divided into very-very fine globules hence the chances of its loss by floating on water surface are very great hence one should wash very carefully.

2. During pātana also its fumes should be condensed properly and converted into Hg form.

**Loss/gain–** In this process much loss is generally observed.

**5. PĀTANA SAṀSKĀRA–** (Upward/Down ward sublimation/ Distilation)

In Pātana Saṁskāra ancient scholars have advised three types of Pātanas – Ūrdhwa-Pātana
Adhaḥ-Pātana and
Tiryak-Pātana

But generally now a days we the 20th Cent. scholars use improved/modified Pātana yantra and as such repeat the process in this apparatus three times. And as regards the drugs generally copper foils or copper sheet pieces are used in all the three patanas taking copper 1/3rd part each time. In ancient Pātana yantras mercury is lost in large quantities hence now a days steel or iron made yantras are made and used for convinience.

**PĀTANAM (Sublimation and Distillation)–**

**Drugs–** Copper foils 1/3rd part of mercury)

**Method–** Mix Copper foils with mercury (Utthāpita) and grind it in an iron Khalva with lemon juice till copper foils and mercury convert in Tamra Pishthi form. If needed lemon juice may be added whenever required. Grinding should be done forcefully for several days (7-10 days).

Pātana piṣṭi is then filled in modified and improved Pātana yantra and sealed properly. This yantra is then subjected to strong heating which help to sublime mercury as vapours which are condensed with a continuous flow of cold water running in condensor attached to Pātana yantra. So condenced mercury is then collected in a conical flask filled with water. This is a pure mercury. It was a observation of ancient and even modern scholars that within one Pātana (Sublimation/distilation) mer-

cury may not be made fully pure hence these scholars have suggested to do (repeat) the Pātana process three times to bring mercury in purest form.

**Object of Pātana–** Nāga Vaṅgādi yaugika doṣa nāśana. While heating if lead and tin etc. doṣas (metals) are mixed in mercury by nature or mixed artificially by traders for commercial benefits, these will remain at the bottom of the apparatus and pure mercury may go up as fumes and on cooling may be condensed and collected in pure form.

**Apparatus–** Improved and modified Pātaṇa yantra attached with codensor.

**Duration–** Process may be continued till mercury gets distilled.

**Repeatition–** Pātana process may be repeated 3 times.

**Precaution–** 1. Pātana yantra should be airtiet

2. Sufficient heat should be applied (above 600-700°C) for sufficient times.

3. Condesation should be done properly to get maximum amount of mercury.

4. Handling of the apparatuses should be done with care.

**Loss or gain–** Some loss is expected.

**RO(BO)DHANA SAṂSKĀRA (Potentiation/Activation) of Hg–**

**Drugs–** Saturated Saindhava lavaṇa Solution 500 ml
Pātita Rasa (mercury)
Glass bottle – one.

**Method–** First prepare a saturated saline solution of saindhava lavaṇa, fill it in glass bottle, put Pātita mercury in it and keep the pot in a calm and quite place undisturbed for 3 days. On 4th day take out the mercury, wash it with water and collect it in a glass bottle.

**Object–**To destroy its Ṣaṇḍhatva doṣa, To provide it an Āpyāyana (Potentiation or activation), To remove its Mandavīryatva.

**Apparatus–** Glass bottle/jar

**Duration–** 3 days.

**Loss or gain–** There is no chance of loss.

**NIYAMANA SAṂSKĀRA (Restraining of mercury) of Hg–**

**Drugs–** 1. Phaṇi (Tāṁbūla Patra (Piper betal leaf)
2. Laśuna Kanda (Allium Saivum Linn)
3. Aṁbuja (Rock salt)
4. Mārkava (Eclipta alba Linn)
5. Karkoṭi phala (Momordica dioica)
6. Cincikā (Tamarimdus indica Linn) all taken in 1/16th part of mercury and made into fine paste with Kāñjī.

**Method–** Here mercury is put in this paste kept on Kadalī patra, make the bundle of this paste and suspend it in Dolāyantra filled with Kāñjī, apply heat through boiling liquid continuously for 3 days. Here the Swedana is applied by Dolāyantra method. On complition of process mercury should be washed and collected carefully.

**Object–** Capalatva Nivṛitti by Niyamana Karma.

**Apparatus–** Dolāyantra.

**Process–** Swedana.

**Duration–** Three days with boiling liquid.

**Loss–** 10 gms on account of washing of mercury from paste.

**DĪPANA SAṂSKĀRA (Appetization – Grāsārthī Karana)–**

**Drugs–** Bhū(Alum), Khaga (Kasisa (Ferrous Sulphate), Ṭaṅkaṇa (Borex), Marica (Piper nigrum Linn), lavaṇa Saindhava (Rock salt), Āsurī (Brassica compastris Linn), Sīgru (Moring oleifera lamk) all taken in 1/16th part to mercury and made into fine paste with Kāñjī.

**Method–** Apply Swedana by Dolāyantra method

**Duration–** 3 days.

**Apparatus–** Dolāyantra.

**Loss–** May be 10 gms.

By this process mercury is made Dipita/Grāsārthi (Greedy to consume grāsa (metal content) added as grāsa to mercury.

**Note–** Dīpana, Mukhakaraṇa, Bubhuksita are used as the synonyms.

Mercury treated with above mentioned eight saṁskāras should preferably be used for preparing medicines. But in absence of Aṣṭa saṁskārita mercury Hiṅguloltha mercury may also be used as it is considered equal in properties to mercury which is Jīrṇagandha.

**Some Important Points About Eight Saṁskāras–**

Saṁskāra is Technical Term which is used to denote some addition or change in the properties of the substance due to some kind of treatment through which the substances are passed. In the context of eight Saṁskāras Rasa (mercury) is subjected to pass through some important processes like **Swedana** (heating through boiling liquid (specially weak acidic) by Dolāyantra method for three days continuously. **Mardana** (Grinding with the same acidic liquid (Kanjī) by Tapta Khalva (hot mortar having 45-50$^0$C Temp.) for 3 days. **Mūrcchana** (Grinding in iron mortar till Rasa (mercury) attains a Naṣṭa-piṣṭa state). **Ut-thāpana** (Bringing back to its original state by washing or by subjecting to Pātana (sublimation or distilation). **Pātana** (Sublimation/ distilation of Rasa (mercury) in form of Śulva pisti (copper and mercury amalgam) Three times to remove its metallic/chemical impurities. These five process are applied to remove various Rasa doṣas (Naisargika, yaugika and aupādhika/Kancuka doṣas). **Bodhana, Niyamana** and **Dīpana** Saṁskāras are applied to potentiate mercury in many ways i.e. to make it more active, effective Bubhukṣita and grāsārthī.

In these Saṁskāras following five types of yantras are used i.e. Dolāyantra for applying Swedana in Swedana saṁskāra, Niyamana and Dīpana saṁskāra. Tapta Khalva is used for Mardana Saṁskāra, Loha Khalva yantra is used for Mūrcchana saṁskāra, Glass Jara is used to fill Saindhava vāri (Saturated saline solution) for Bodhana saṁskāra, Hot water/Kanjika washing is used to clean the mercury from Kalka Kāñjika mixture and to regain mercury in its original liquid form. Pātana (Sublimation, Distilation and Condensation is done to evaporate mercury as fumes and to condense it in again in liquid mercury form) and also to make it pure (free from its impurities).

For pārada saṁskāras certain herbal and mineral drugs are used for preparing fine paste, for grinding mercury with these

drugs for Mardana and Mūrcchana saṁskāra and Niyamana and Dīpana saṁskāra. These are taken in 1/16th (Ṣoḍaśāṁsa) part of mercury.

For Saindhava vari – Saindhava lavana (Rock salt) is used to make its saturated saline solution for the Āpyāyana (Potentiation) of mercury. Tāmra (copper) is used to prepare śulva piṣṭi for Pātana Saṁskāra and for this 1/3rd part of Śulva (copper) from mercury is used each time. The drugs required for each specific Saṁskāra have already been mentioned with their latin names.

Washing of mercury mixture should always be done with either hot water or hot Āranāla/Kāñjika and if required washing may be repeated for several times till mercury is cleaned and obtained fully, mercury washing should be done very carefully to avoid mercury loss to minimum. During washing its loss may be in the form of Jala gati and Haṁsa gati. During saṁskāras its loss may be in Swedana, Mardana, Mūrcchana, Utthāpana and Pātana saṁskāras of these much loss is expected in last two Saṁskāras.

After completion of eight Saṁskāras obviously no **physical changes** are observed in its form, appearance and shining.

There may be slight change in its Sp.Gr. as per our observation it was lowest in Mardita Parada 13.16 and maximum in crude mercury 13.63.

**1. Sp. Gr. of each sample–**

| | |
|---|---|
| Crude mercury | – 13.63 |
| Swedita mercury | – 13.59 |
| Mardita mercury | – 13.16 |
| Murcchita mercury, Utthapita mercury | – 13.31 |
| Patita mercury | – 13.56 |
| Bodhita mercury | – 13.28 |
| Niyamita mercury | – 13.39 |
| Dīpita mercury | – 13.55 |

**2. Percentage purity of samples–**

| | |
|---|---|
| Crude mercury | – 97.81% w/w |
| Swedita mercury | – 97.81% w/w |
| Mardita mercury | – 96.70% w/w |

Murcchita utthapita – 95.96% w/w
Patita mercury – 97.43% w/w
Rodita mercury – 96.04% w/w
Niyamita mercury – 96.44% w/w
Dipita mercury – 96.86% w/w

**3. Solubility–**

The samples were found soluble in boiling sulphuric acid, in Gold 1:1 Dilute Nitric acid. These are readily soluble in cold fuming Nitric acid, in all other solvents the above samples of mercury were found insoluble.

**Toxicity Study of Mercury in Experimental Animals–**

In Ayurvedic texts mercury and its compound have occupied a very important place. But for therapeutic use only processed mercury is recommended in different forms. The preparations which contain processed mercury in any form are found to show excellent therapeutic activities in very low doses without producing any toxic menifestations in the human subjects. But according to modern view mercury, when used in absorbable form by oral route is supposed to cause mercury poisoning. Iqubal singh et al (1976) have reported its 5 mg/day dose as lethal to human beings. The Washington State Dept. of Ecology has set a limit of 50 PPG (100 PPM) in 1971 while Japan has set a limit of 10 PPG (20 PPM) dose for mercury which is not lethal.

In the present study we have aimed to assess the role of Śodhana (purification) and other special processes of mercury mentioned in Āyurvedic Texts. To determin the Toxic effects of crude and processed mercury, it was administered in an absorbable form by dessolving it in dilute Nitric acid. Scares et al (1973) reported that the rats fed with diet containing 16 PPM. mercury did not show outward signs of toxicity until 6th week. Thus in the present series 3 different doses i.e. 16 PPM, 20 PPM and 25 PPM were selected for assessing the changes that are produced in the experimental animals (rats) by the crude and processed mercury.

**Material and Method–**

35 adult and healthy albino rats of both sexes ranging 150-100 gms wt. were selected. These were divided in seven groups keeping five in each group.

The drug solution was prepared by dessolving 1 Gm. of crude and processed mercury in 1 ml of 1:1 Nitric acid and again in 1:10000 diluted water

**The dose Schedule–** The solution of crude and processed mercury is used in 15 PPM, 20 PPM and 25 PPM doses per 100 gm of body wt., 1-3 groups were given crude mercury solution and 4-6 groups were given processed mercury solution in 1 ml dose orally for seven days through a rubber catheter 7th group was given pure distilled water in 1 ml dose and served as control.

**Observation–** No outward toxic effects were observed in any of the animal during the course of treatment. Hence histopathological changes produced in the liver, kidney and spleen of the animals of all groups were taken in account to assess the toxic effects of all the samples in different doses and in different groups.

On 9th day all the animals were sacrificed and their organs were taken out and preserved in 10% formalin solution. The slides of the tissues of all the groups were prepared and stained properly and were examined under microscope to detect changes (damages) produced in organs with the crude and processed mercury in all the doses.

**Results of Histopathological Changes–**

| S. N. | Name of Tissue | Treated Group | | | | | | Control Group |
|---|---|---|---|---|---|---|---|---|
| | | 16 PPM | | 20 PPM | | 25 PPM | | |
| | | Crude | Proce. | Crude | Proce. | Crude | Proce. | |
| 1. | Liver | Venous congestion | No change | Venous congestion | No change | Venous congestion | No change | No change |
| 2. | Kidney | No Change | No Change | Venous congestion | Slight fatty degeneration | Necrosis venous congestion Fatty degeneration | Slight fatty degeneration | No change |
| 3. | Spleen | Venous congestion | No change | Venous congestion | No change | Venous congestion | No change | No change |

**Discussion–**

It is evident from this study that during Aṣṭa Saṁskāra some impurities have been found added and in some cases these impurities have been found removed also. The important observation of this study is lowering of percentage of purity of treated mercury by about 2% than that of crude one. Though from percentage point of view lowering of percentage purity by 2% is not so significant however according to the finding of experimental study it is very significant because the sample of treated mercury proved least toxic as compared to crude one. From therapeutic aspect this finding is hightly important specially in case of mercury which otherwise has been proved highly toxic to the human subjects on internal use.

Thus, on this basis it may be presumed that purification through ancient Āyurvedic methods may not always be considered as chemical purification rather it may some times add some useful substances to the main drug which from chemical point of view may be considered as impurities but from therapeutic point of view these may be useful for the body tissues or organs. It is also true that ancient methods of purification certainly help to remove some substances from the drugs which are supposed to be harmful or toxic to the body tissues. Both these presumptions are found proved in the present study of Aṣṭa saṁskārita pārada. As lowering of percentage purity of Mardita pārada confirms the addition of some substances as impurities while some other sample indicate that original impurities present in the crude and pātita pārada are removed from the pārada.

The toxicity study conducted in experimental animals reveal that none of the sample of mercury has shown any symptoms of acute toxicity in the dose of 16-20 and 25 ppm. dose. However as regards late toxic effects, the crude mercury sample has shown congestion in liver and spleen even in 16 ppm dose. In 20 ppm. dose the venous conjestion in Kidney tissues was evident in addition to liver and spleen tissues. In 25 ppm. dose it has spread in larger areas of the above tissues along with necrosis and fatty degenerations in some areas. This shows that crude mercury sample has proved to be highly toxic to liver,

spleen and kidney tissues in 20 and 25 ppm. doses. But in case of processed (Aṣṭa saṁskārita) mercury no toxic changes of any kind are evident in liver and spleen. Only in case of kidney tissue slight fatty degeneration was observed in 20 and 25 ppm. dose. Thus on the above basis it may be said that processed mercury is much less toxic as compared to crude one.

Though this study has proved that Aṣṭa saṁskāras if processed properly may play a significant role in reducing the toxicity of mercury to great extent. It is very encouraging. However more such studies in larger groups of animals may be conducted repeatedly at many centres to arrive at a conclusion in this respect.

**RASA YOGAH (Important mercurial preparations)–**

**1. Kajjalī[1]–** (Black sulphide of mercury)

**Ingredients & proportion** Śuddha Pārada, Śuddha Gandhaka Take these in half, equal and double porportion

**Method[2]–** Mix mercury and sulphur in prescribed amount. Ground both well in an iron or porceline mortar without adding any liquid till these turn into smooth and black powder form without any shining. Because it is in black powder form hence known as Kajjali.

**Precaution–** While preparing Kajjali sprinkle little water in the mortar to avoid its spreading and to facilitate smooth preparation.

Grinding should be continued till complete disappearance of mercury particles.

**Test–** It should be free from shining mercury particles which may be tested in sun shine by rubbing Kajjalī in between first finger and thumb with little water. It may be tested by rubbing it on Gold and Copper sheets with lemon juice. There should not be any white silver like coating on the sheets.

**2. Rasa Parpati–** Parpaṭa like flakes of mercury sulphide

**Ingredients–** Kajjalī, Ghrita, Kadali patra, dung

1. योगोक्तमान गन्धेन निर्द्रवो मर्दितो रसः । निश्चन्द्रः कज्जलाभोऽसौ कज्जलीत्यभिधीयते ॥ (रसामृत १/१८)
2. अर्धसमानद्विगुणमिताद्यागन्धकचूर्णात्पारदकस्य मर्दनजन्यामसृणकाया कज्जलरूपा कज्जलिकासा ।'

**Method**[1]– Kajjalī prepared with sulphur and mercury should be put in an iron Darvī (pot/laddle) anointed with ghee. Subject it to heating on mild fire, on melting the melted material is poured on the banana leaf (Musa peradisiaca Linn) kept on buffalow dung. It is immidiately covered with another banana leaf and pressed, on cooling its flakes are collected from banana leaf and powdered. In this way all other parpaṭi preparations are prepared and stored in glass jars.

**Test for Good Quality Parpaṭī–**

If the Parpaṭī of good quality is prepared its flakes should break easily on applying little pressure by thumb. If it does not breaks it is of Mṛidu pāka. Breakable Parpaṭī flakes are considered of Madhya pāka. In Khara pāka it remains in powder form usually of red colour. It does not turn into parpaṭī form probably due to burning of sulphur content on account of high Temp.

**Doses & Anupāna**[2]**–**

Rasa Parpaṭī should be used in 1 ratti (120 mg.) dose twice daily mixed with fried Jīraka (Cuminum cyminum) powder and 1/2 ratti (60 mg.) Hiṅgu fried in ghee (Ferula foetida Regal). It may also be used with the prescribed drugs for particular diseases.

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1. **पर्पटी निर्माण विधि–**
रसगन्धौ समौ कृत्वा दृढ़खल्वेविमर्दयेत्। नष्टसूतं यदा चूर्णं भवेद् कज्जलसन्निभम्॥
घृतलिप्ते लोहपात्रे तदा तं स्थापयेद् बुधः। त पात्रं स्थापयेदन्ये वालुकास्तीर्णपात्रके।
निर्धूमे बदराङ्गारे द्रवीकुर्याद् प्रयत्नतः। महिषीमलविन्यस्ते तत्र तं कदलीदले।
निक्षिप्य तदुपर्यन्यद्पत्रं दत्वा प्रपीडयेत्। शीतलत्वंगते पत्राद् समुद्धृत्य विचूर्णयेत्।
एवं सिद्धा भवेद् व्याधिघातिनी रसपर्पटी। विधिरेष तु विज्ञेया सर्वासुपर्पटीष्वपि॥
(रसामृतम् १/२२-२६)

2. **मात्रा–**
रक्तिकासम्मितं प्रातः भृष्टजीरकसंयुतम्। गुञ्जार्धभृष्टहिंग्वाढ्यं भक्षयेद्रसपर्पटीम्॥
रोगानुरूपभैषज्यैरपि तां योजयेद्बुधः। अनुपेयं पयस्तक्रं दाडिंमादिरसोऽपि वा॥
(रसामृतम् १/२७-२८)

**Parpaṭī Vardhamāna Kalpa[1]–**

If parpaṭī is used in Vardhamāna Kalpa form then increase the dose of parpaṭī in one rattī (120 mg.) dose daily till it is raised to 10 ratti (1200 mg.) dose, continue the same dose till complete cure is obtained. After getting complete cure reduce the dose of parpaṭī by one rattī daily. This is dose schedule for Parpaṭī Kalpa and may be followed in all types of parpati preparations as per Ācārya Jādavajī Trikamaji.

**Indications[2]–**

Rasa Parpaṭī is indicated in Jīrṇa jwara (Chronic pyrexia), Grahaṇī (Sprue syndrome), Atisāra (Diarrhoea), Pāṇḍu roga (Anaemia), Bahnimāndya (Dyspapsia), Yakṛid dālyudara (Hepatomagaly), Plīhodara (Spleenomagaly), and Jalodara (Ascitis) etc. diseases.

**Note–** During Parpaṭī Kalpa therapy patient should be put either on salt free milk diet or butter milk diet or on fruit juice diet. After Parpaṭī Kalpa therapy also patient is advised to take milk and butter milk in sufficient quantity along with normal prescribed diet upto 3-4 months. During Parpaṭī Kalpa therapy patients should be advised complete rest.

**Important Observations of Author–**

As per Ayurvedic concept mercury should be used in therapeutics only after it is subjected to Mūrcchanā process means in compound form and that too Sagandha mūrcchita form. As Sagandha compounds of mercury are considered least toxic.

Following Sagandha compounds of mercury are found used in Ayurvedic therapeutics. Such as Kajjalī, Parpaṭī and Rasa

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1. **पर्पटी बर्धमान क्रम–**
   प्रत्यहं बर्धयेत्तस्या ह्येकैकांरक्तिकांभिषक् । नाधिका दशगुञ्जातो भक्षयेत्तांकदाचन ।।
   आरोग्यदर्शनं यावद् भक्षयेद्दशरक्तिकाम् । आरोग्यदर्शनादूर्ध्वं तांतथैवापकर्षयेत् ।।
   क्रमएषतु विज्ञेयः सर्वासुपर्पटीष्वपि ।
2. **रोग प्रयोगाः–**
   जीर्णज्वरं च ग्रहणी तथातीसार मेव च ।।
   पाण्डुरोगं वह्निमान्द्यं यकृत्प्लीहजलोदरान् । एवमादीन् गदान्हन्ति सेविता रसपर्पटी ।।
   (रसामृतम् १/२९-३२)

sindūra. All these are mercuric sulphides however of these Kajjalī may be comparatively more toxic than others. The reason for this may be the presence of free mercury in Kajjalī because it is prepared without any heat treatment hence in this free mercury is expected to remain present in some amount which makes it comparatively toxic. Whereas in Parpaṭī and Rasa-sindūra heat treatment is given which helps to convert mercury into mercury sulphide compound form, which are considered least toxic and highly effective on internal use.

**Rasa Sindūram[1] (Red sulphide of mercury)–**

Take purified Rasa in 8 pala (400 gm) quantity and purified sulphur in 4 pala (200 gm). Prepare their Kajjalī by grinding both carefully. It is then put in Kācakūpī (glass bottle) wrapped with seven layers of cloth smeared in mud, keep this Kācakūpī in an earthen pot containing a hole in its middle. Fill this earthen pot with a sand upto the neck of glass bottle. Put this earthen pot containing sand and bottle on culhi/furnace to apply heat for eight yāmas (24 hours) increasing the heat at regular intervals i.e. with Mṛidu, Madya and Tībrāgni temperature pattern. During Madhyamāgni bottle neck is likely to be blocked with sulphur fumes which should regularly be cleaned by inserting hot iron rod in the bottle frequently. During Tībragni stage a flame comes out of the bottle mouth allowing extra sulphur to burn quickly. When flame disappears from the bottle mouth and extra sulphur burns completely. The bottle mouth should be corked and sealed tightly and continue to apply same heat for 2-3 hours more to sublimate the Sindūra compound prepared at the bottom of the bottle leaving unsublimed material at the bottom. Now stop heating and allow bottle to cool itself. Next day when bottle is cooled completely it is taken out and broken with traditional method and the compound Rasa Sindūra adhered at the neck of the bottle is collected.

1. **रस सिन्दूरम् –**

पलाष्टकं शुद्धरसं तदर्धं शुद्धगन्धकम् । लौहखल्वे निधायाथ मर्दयेत्कज्जलीं शुभाम् ॥
सप्तमृद्वस्त्रलिप्तायां काचकूप्यां क्षिपेच्चतत् । सच्छिद्रेमृत्तिकाभाण्डे काचकपीन्यसेच्चताम् ॥
कूपिकाकण्ठपर्यन्ता पूरयेदिष्टबालुका । क्रमवृद्धाग्निना सम्यक् पचेद्यामाष्टकं भिषक् ॥
पाके रुद्धं मुखं कूप्या गन्धकेन प्रजायते । शलाकामायसींतप्तां दत्वा गन्धंविशोधयेत् ।
जीर्णेगन्धे मुखं रुद्धाकूपीयामद्वयंपचेत् ॥ स्वाङ्गशीतेततो यन्त्रेकूपींभित्वा समुद्धरेत् ।
रसं सिन्दूरनामानं कूपीकण्ठगतं भिषक् ॥ (रसामृतम् १/३४-३८)

**Note–** 1. In 'Rasamritam' Ācārya Jādavaji has advised to add one Karṣa Narasāra and Sphaṭikā also in the Rasa Sindūra compound but as per our experience these are not necessary as without these also a good compound of Rasa sindūra is prepared.

2. For conferming the complete burning of extra sulphur in the compound a Śītā Śalākā Test should be done. The positive Śīta Śalākā Test conferms burning of extra sulphur in the compound. If extra sulphur does not burns completely then when Śītā loha śalākā is inserted in Kūpī and taken out some portion of burning sulphur may be found adhered on Śalākā that confirms the presence of extra sulphur in the bottle. But if Śītā Śalākā comes out completely clean that conferms complete burning of extra sulphur in the compound. And it is the right time for corking.

**Actions and Uses–**

It is claimed as Yogavāhī[1] (Calatyst), Vṛiṣya (Afrodisiac), Balya (Tonic) and Rasāyana (Rejuvinator) and with suitable anupānas may be used in all the diseases.

**Doses and Anupānas–**

It may be used in 1-2 rattī (125-250 mg.) dose mixed with honey or with any suitable anupāna.

**Note–** Rasa Sindūra is a Kūpīpakva rasāyana and in ancient times it was being prepared through Vālukā yantra method. In this heat is being applied in Kramavṛiddhāgni manner (in increasing order i.e. frist with mṛidu agni (mild heat (150-200$^0$C) followed by madhyamāgni (medium heat (200$^0$C-400$^0$C) and then with Tībrāgni (400$^0$C-600$^0$C). The idea of using Vālukā yantra was to apply uniform heat to the Kūpī through out the process.

For standardisation of Mṛidu, Madhya and Tībrāgni we in the dept. of Rasashāstra, B.H.U. Varanasi have tried to prepare Rasa sindūra through modified electric mufful furnace (vertical type). The temp. standardisation was made on the basis of

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1. **रससिन्दूर गुणाः–**
योगवाही परं वृष्यो बल्यश्चापिरसायनः । निजानुपानयोगैश्च सकलेष्वामयेषु च ॥
(रसामृतम् १/३९)

the signs and symptoms found mentioned in the literature for Mṛidu, Madhya and Tībrāgni. We have also given or coined three names for these such as melting state, Fuming (Profuse) state and flaming state as in mild heat Kajjalī will melt (150°C-200°C), in medium heat profuse fumes are produced which if not cleared with hot iron rod may block the bottle mouth, in this state Kajjalī also start to boiling in side Kūpī (350°C-400°C).

In strong heat state flame comes out of the bottle mouth as such it is known as flaming state (550°C-600°C) after some time the flame disappears indicative of extra sulphur burning and in the last stage when extra sulphur burns completely Śitā Śalākā Test is performed to confirm it. On finding Śitā Śalākā Test positive one should not weight and bottle needs to be corked immidiately. The another test is coin test – in this a copper coin or plate may be put on the mouth of the bottle for 2-3 minits and then taken away and seen for white coating indicating of mercury fumes comming out means the formed compound has started to disintegrate due to high temp. hence the bottle should be corked immediately.

**Advantages of Vertical Type Electric Muffle Furnace–**

1. We may record the Temp. range and control the same as per requirement. The required range of Temp. may also be maintained for desired duration.

2. In this heating sand bath is also not required as there is no sudden rise or fall of Temp. The same pattern of Temp. may be maintained till required.

3. Duration of heating time may be cut short through the furnace heating as there is no loss of temperature in this system.

4. The cooling of furnace Temp. may need 8-12 hours depending upon the season and environment.

**Note–** In the present Rasa sindura formula sulphur is used in half quantity of 'mercury but it may be prepared by raising any amount of sulphur and as the sulphur amount is increased the properties of Rasa sindura may also be raised in that proportion. The only thing to be noted here is the duration of heating time. It may be found raised also. As increased amount of sulphur may need more time to burn, during the time of heating.

**Makaradhwaja Rasa[1] (A Gold Containing Mercury Compound)–**

**Contents–**

Taka one Pala (50 gm) of purified Gold leaves, 8 palas (400 gms) of purified or Asta saṁskārita mercury and 16 palas (800 gms) of purified sulphur, Nyagrodha Śunga (Ficus bengalensis Linn) juice, Kumārī (Aloe barbadensis Mill) juice.

**Method of Preparation of Kajjalī–**

First mix purified Gold leaves cut into small pieces with mercury, ground well till complete amalgam of gold is prepared (good quality of mercury piṣṭi is made), Now mix sulphur powder with mercury piṣṭi or amalgam and grind well till a good quality of Kajjalī is made. Now apply bhāvanā of both the Bhāvanā dravya rasas. Let the Bhāvanā juices dry by Trituration. On drying fill this Kajjalī in Kāca Kūpī prepared for it through glass funnel. Fix it in Vālukā yantra or electric vertical type muffle furnace and apply heat with Kamāgni pāka (applying mṛidu, madhya and Tibrāgnī) and on completion of pāka collect Makaradhwaja from the neck of the bottle and Gold bhasma from the bottom of the bottle.

**Makaradhwaja Yoga[1]–**

For this mix one part Talastha Gold bhasma and eight parts of Kaṇṭhastha Makaradhwaja, ground both well and add Lavaṅga (Syzygium caryophyllaeum Gaertn) Kuṁkum (Crocus sativus Linn), Jātīphala (Myristica fragrans Hoult) and Karpūra (Cinnamomum camphora Nees & Eberm) each in half

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1. **मकरध्वज योगः–**

पलं मृदुस्वर्णदलं रसेन्द्रात्पलाष्टकं षोडश गन्धकस्य ।
न्यग्रोधशुङ्ग प्रभवैः रसैर्वा दिनं विमर्धाथ कुमारिकाद्भिः ॥
सत्काचकुम्भेनिहितं सुगाढे मृत्कर्पटैस्तद् दिवसत्रयं च ।
पचेद् क्रमाग्नौ सिकताख्ययन्त्रे भवेद्रसोवैमकरध्वजाख्यः ॥
तलस्थ स्वर्णभागः स्यादेकोऽष्टौ मकरध्वजात् । तदर्धभागा देयाः स्युर्लवङ्गात् कुंकुमात्तथा ॥
जातीफलाच्चकर्पूरादेकश्चभृगनार्मितः । बल्लं बल्लद्वयवापिताम्बूलीदल संयुतम् ॥
भक्षयेन्मधुरस्निग्धकटुकाम्लविवर्जितम् । शृताच्छीतं सितायुक्तं गोदुग्धं गोधूममाज्यकम् ॥
करोत्यग्निबलं पुंसां जराव्याधि विनाशनम् । मेधांयुःकान्तिजननो वृष्यश्चमकरध्वजः ॥
(४२-४५)

quantity and Kastūrī (Moschus chiferus) one part, mix all well by grinding. Use this mixture in one balla (375 mg) or two balla (750 mg) dose with Tāmbūla dala (Piper betle linn leaf). During the course of this therapy the patient should be advised to use madhura and snigdha diet free from pungent & sour things. He should use boiled and cooled milk mixed with Sitā (sugar) Godhūma (wheat) and ghee.

It increases digestion power, destroys Jarā and Vyādhies (ageing process and diseases), promotes Medhā (intelligence), prolongs life, brightens complexion and acts as Vṛiṣya (aphrodisiac).

It is also called as Candrodaya and Suvarṇa Sindūra.

**Malla Sindūram[1] (Arsenic and Mercury Sulphide)–**

**Ingredients–** Purified mercury 9 parts, Rasakarpūra 9 parts, purified sulphur $5^1/_2$ parts, purified malla $4^1/_2$ parts, and purified Gold leaves $4^1/_2$ part.

**Method of Preparation–** First mix mercury and Gold leaves grind well to make their good piṣṭi (amalgam). Now add sulphur and prepare Kajjalī by grinding, add Rasa Karpūra and Somala to this Kajjali and mix well. Triturate the mixture with ghṛita Kumārī juice. On drying powder it and fill it in glass bottle specially prepared for it and apply heat in a phased manner through Vālukā yantra or vertical type muffle furnace for two days. In the end cork the bottle and stop heating, on self cooling collect Malla sindūra from the neck and Gold bhasma from the bottom. It is known as Malla sindūra. If Malla sindūra and Gold bhasma both are mixed together then it is known as Malla Candrodaya.

On internal use it destroys Vāta and Kapha doṣas and the diseases caused with their prakopa.

**Dose & Anupāna–**

As it contains Arsenic also along with mercury sulphide hence its dose should be less i.e. 1/4th-1 ratti (30-120 mg) mixed with honey and Sitopalādi cūrṇa 1 gm. In Kaphaja disorders it

1. **मलसिन्दूरम्–**
रस रसविधू नवाक्षौ सार्द्धेषुः चतुः सुवर्ण बलिमल्लौ ।
कूष्यां द्व्यहं विपक्वः पवनकफौ हन्ति मल्लसिन्दूरः ॥ (रसामृतम् १/४६)

may be used with Ārdraka juice and honey. It is specially usefull in all types of Vāta-kaphaja diseases such as Ardita (Facial paralysis), Pakṣāghāta (Peraplegia, Hemiplegia), Jirṇa Pratiśyāya (Chronic rhinitis) and Kaphādhika śwāsa and Kāsa.

Experimentally and clinically it was found very effective in Tamaka śwāsa (Bronchial asthma) and in status asthmaticus like conditions.

**Rasa Karpūra–**

Rasa Karpūra and Rasapuṣpa are the Nirgandha mūrcchanā compounds however these are also prepared through Vālukā yantra method of applying heat. These are mercurric or mercurous chlorides. As such these are comparatively more toxic to the human body than the Sagandha Kūpīpakva rasāyana yogas. Hence these should not be used for longer duration and if used one should be very careful while using these.

There are many formulae for Rasakarpūra in ancient texts but in the present times these are usually prepared as per the formula of 'Rasa Taraṅginī' by 'Sadānanda Sharmā'.

According to that Rasakarpūra is prepared in two phases i.e. first with sulphuric acid and then with Saindhava lavaṇa.

**Formula of Rasakarpūra–**

**Ingredients–** 1. Śuddha mercury 1 part

2. Con. Sulphuric acid $1^1/_2$ half to 2 parts

   It is heated to white powder on mild heat in moisture free atmosphare. Then it is added with equal amount of

3. Saindhava lavaṇa – Equal amount.

**Method–**

It is then filled in glass bottle and prepared with Vālukā yantra method or modified vertical type muffle furnace giving comparatively less temp. Its moisture content as vapours start to came out of mouth at about 140°C-160°C temp. which ceases at about 320°C-350°C completely then it is corked and applied same heat for another 2-3 hours to allow Rasakarpūra compound formed at the base, to sublime at the neck. Next day on self cooling it is collected from the neck of the bottle and the

product remained at the base is discarded. It is either white Niddle shaped or in white powder form.

It is generally mercurric chloride from chemical point of view but some times if sulphuric acid is mixed in less amount then it is a mixture of mercurric and mercurous chloride. Mercurric chloride is more toxic and mercurous chloride is less toxic and may be prepared by mixing Hg 1 in 1/2 Con. $H_2SO_4$.

The term Rasa Karpūra was introduced by Bhavamiśra (in 16th Cent.) for the first time. Before 20th Cent. it was being prepared with Kāsīsa, Tutth and Sphaṭikā and many other ingredients. But since 20th Cent. A.D. 'Rasataraṅgiṇī' has advised to use Conc. Sulphuric acid in $1^1/_2$ to 1 part of mercury to produce white mercurric sulphate an intermediary product and then advised to use Saindhava lavaṇa with equal part to intermidiary product. He advised to prepare it in Vālukā yantra using Kācakūpī.

Rasakarpūra is bacteriostatic and bacterrocidal.

**Note–** 'Rasa taraṅgiṇīkāra' has also mentioned to prepare 'Rasapuṣpa' with Kāsīsa and Saindhava lavaṇa. Here also Kāsīsa should be used double to mercury and then Saindhava lavaṇa equal to intermediary product using Vālukā yantra heating method.

Chemically it is mercurous chloride and least toxic.

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# CHAPTER-4
# DESCRIPTION OF LOHAS (METALS) AND THEIR PROCESSING TECHNIQUES

## LOHAS (METALS)

Only six lohas (metals) are known and used in the therapeutics of Āyurvedic Medicine. Because of Dehadhāraṇāt[1] (Sustenance) of body tissues) these are also known as 'Dhātus'. These provide nourishment and strength to body tissues and thus sustain the body and its form.

The term loha[2] is composed of the root 'Luh' meaning Karṣaṇe means the materials which are obtained by the extraction method from their ores/minerals are known as Lohas. The term loha is used since ancient times i.e. from the time of Caraka and Suśruta Saṁhitas (1000 B.C.). The Lohas are Suvarṇa (Gold), Rajata (Silver), Tāmra (Copper), Lauha (Iron), Nāga (Lead) and Vaṅga (Tin).

In about 9th/10th Cent. A.D. These are classified in three groups, viz. –

1. Sāra loha – Suvarṇa, Rajata.
2. Śuddha loha – Tāmra, Louha
3. Pūti loha – Nāga, Vaṅga.

But since 12th Cent. A.D. Their number rose to nine and have been classified in four groups i.e.

1. Sāra loha – Suvarṇa, Rajata
2. Sādhāraṇa loha – Tāmra, Lauha
3. Pūti loha – Nāga, Vaṅga
4. Miśra loha – Pittala (Brass), Kāṁsya (Bell metal) and Varta loha (An alloy made of five metals).

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1. वलीपलित खालित्य कार्श्यबल्यजरामयान् निवार्य दधते देहं नृणांतद्धातवो मताः।
(आ.प्र. ३/२)
2. धातुर्लोहे लुह इति मतः सोऽपिकर्षार्थवाचि (र.र.स.)

Till 14th Cent. A.D. only above mentioned nine lohas are known and used in Āyurvedic therapeutics. But since the end of 14th A.D. or bigining of 15th A.D. Yaśada (Zinc) is added to loha group by Shri 'Madanapāla' and due to low melting point it is included in 'Pūtiloha' group. The metals which have low melting point are included in Pūtiloha group in ancient times.

Mythologically all the six metals are said to have their origin from different Gods as follows–

1. Gold[4] is from God Agni (fire – Viśṇu).
2. Silver is from God Candramā (Moon or Śiva).
3. Copper is from God Sūrya (Sun).
4. Tin is from God Indra (King of Gods).
5. Lead is from God Vāsukī (King of Serpents).
6. Iron is from God Yama (God of Death).

Further nine Lohas[5-6] are also said to be related with nine Planets as follows–

1. Suvarṇa – (Gold) with Guru (Jupitor).
2. Rajata – (Silver) with Candra (Moon).
3. Tāmra – (Copper) with Sūrya (Sun).
4. Lauha – (Iron) with Śani (Saturn).
5. Nāga– (Lead) with Budha (Mercury).
6. Vaṅga – (Tin) with Śukra (Venus).
7. Pittala – (Brass) with Maṅgala (Mars)
8. Kāṁsya – (Bell metal) with Rāhu (Dragon's head)
9. Kānta lauha– (Load stone) with Ketu (Dragon's tail) and
10. Varta Lauha (Alloy of five metals) with Ketu (Dragon's tail)

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4. स्वर्णं तु विद्ध्यग्निभवंहिवीर्यं चन्द्रस्य रौप्यं परमेश्वराच्च ।
शुल्वं सुजातं हि सहस्ररश्मेर्वङ्गं च शक्राद्वपुराददेऽपि ॥
सीसं च नागं खलु वासुकेर्हि लोहं यमादेवहि कालमूर्त्तेः ।

5. **रसवाग्भटे नवलोहानि–**
शुद्धं लोहं कनकरजतं भानुलोहाश्मसारम् । पूतीलोहं द्वितयमुदितं नागवङ्गाभिधानम् ॥
मिश्रं लोहं त्रितयमुदितं पित्तलं कांस्यवर्त्तम् । (र.चू. १४/I)

6. ताम्रतारनागाश्च हेमवङ्गौ च तीक्ष्णकम् । कांस्यकं वर्त्तलोहं च धातवो नवये स्मृताः ।
सूर्यादीनां ग्रहाणां ते कथिता नामभिः क्रमात् । (आ.प्र. ३/३)

All these metals should be used internally only after subjecting these with Śodhana and Māraṇa process. As without subjecting these with Śodhana and Māraṇa processes these are likely to produce some toxic or undesired effects in the body and thus to make these least or non-toxic and highly absorbable their Śodhana and Māraṇa treatments are considered essential.

## LOHAS (METALS) AND THEIR PROCESSING TECHNIQUES

### Śodhana of Lohas (Metals)–

As per the Rasaśāstra scholars the metals and the materials of mineral origin must be subjected to Śodhana process first. According to Āyurvedic Rasaśāstra concept Śodhana (purification) may not be considered as chemical purification as in many cases the materials purified as per Āyurvedic Śodhana methods may be added with such materials which from chemical point of view may be considered as impurities but from therapeutic point of view these are considered very essential for improving their therapeutic effects and minimising their toxic effects.

Thus, Āyurvedic Śodhana treatments are not always purity the materials chemically rather these lower the percentage purity of the materials but at the same time their toxicity is found reduced and as such so purified materials are used internally for therapeutic purposes. Not only this the materials purified as per Āyurvedic Śodhana methods may some-times develop many new useful therapeutic properties which some times may antagonise the toxic effects of the same material.

### Objectives of Āyurvedic Śodhana Treatments–

The main objective of Āyurvedic Śodhana treatment is to remove or lessen the undesired toxic effects of the materials, to make the materials suitable for further Māraṇa process, to make these brittle by inducing cracks in their surfaces, to divide these into fine particles with a view to expose their maximum surface area to get reacted with the possible and/or desired chemical reaction expected to take place during Śodhana and Māraṇa processes. This is expected to be done with the treatment of organic materials and the heat, being applied during Śodhana process.

**Types of Śodhana Process–**

As per the Rasa texts the Śodhana process has been divided in two types, i.e. Sāmānya Śodhana (General purification) and Viśeṣa śodhana (Specific purification).

1. Sāmānya Śodhana– is that which is commonly applicable for a group of materials or number of materials.

2. Viśeṣa Śodhana is that which is specific for a particular drug/material.

**Procedure for Sāmānya Śodhana–**

In case of metals like– Rajata, Tāmra and Lauha these are first made into fine sheets, piercible by niddle, then these sheets (pieces) are heated to red hot on fire and quenched in each of the following liquids for seven times in each liquid. The liquids are Tila taila (Sesamum oil), Takra (Butter milka), Gomūtra (Cow's urine), Kāñjika/Āranāla (weak fermented acidic liquid) and Kulattha Kaṣāya (Horse gram decoction).

The above mentioned General Śodhana method is not considered applicable in case of Gold (Suvarṇa). Some scholars have mentioned that Gold does not require any Śodhana treatment.

In case of Pūtiloha group i.e. Nāga (lead), Vaṅga (Tin) and Yaśada (Zinc) which have low melting points are first melted on fire and then poured into the above mentioned five liquids through Piṭhara yantra (a stone plate having a hole in its middle) seven times in each liquid with care. Then both molten metal and powdered metal are collected for further process.

**Procedure for Viśeṣa Śodhana–**

For Viśeṣa Śodhana the same procedure (Heating and quenching) is applied but the liquids are changed.

In case of Gold a few scholars have advised a specific Śodhana method to improve its Golden colour and shining. For this these have advised to apply Pañcamṛittikā paste on Gold sheets and to apply 'laghu puṭa' heat.

**Jāraṇa Process for Lohas–**

In case of Pūti lohas which have low melting points the Jāraṇa treatment is advised before Māraṇa process. Thus, 'Jāraṇa'

is an intermediary procedure in between Śodhana and Māraṇa process to convert low melting point metals suitable for 'Māraṇa' treatment.

In this these metals are first melted on fire in an iron pan and then added with Apāmārga Pañcāṅga or Aśwattha twak powder rich in alkali content and burnt, the rubbing of the melted metal with burnt carbon of herbs may be continued till whole metal converts into black powder form; if necessary herbal powder is further added till complete conversion of metal into powder form. In the end metal with carban powder is collected at the centre of iron pan and covered with eathen lid and applied strong heat for 2-3 hours to complete the reaction (oxidation process). On self cooling the ash is seived to seperate the metal particles if any. This powder is then taken for Māraṇa process.

**Māraṇa Process–**

In case of metals, non-metals and the materials of mineral origin Māraṇa (Incineration) process is most important, as it helps to convert these into Rasībhavana state (absorbable form or organometallic compound form) by addition of Māraṇa drugs, Bhāvanā drugs and heat treatment.

**Objectives of Māraṇa Process–**[7-8]

Māraṇa means to kill the metals and minerals i.e. by subjecting these with Māraṇa process the metals and minerals loose their self characteristics and convert into such compound form which is on internal use is absorbed into the system, exhibits their therapeutic effects, improves immune system of the body, does not produce any side or toxic effects, strengthens body tissues, maintains positive health and prevents the onset of diseases. Such form may be considered as pharmaceutically suitable forms.

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7. मृतानिलोहानि रसीभवन्ति ।
8. निघ्नन्ति युक्तानि महामयांश्च । अभ्यासयोगाद्दृढ़देहसिद्धिं ।
   कुर्वन्ति रुग्जन्म जराविनाशम् ॥ (र.र.स.)

Further Māraṇa process may convert metals/minerals the into very fine state of subdivisions even below the microne size.

Within one 'Bhāvanā and Puṭapāka' complete conversion of metal/mineral into desired compound form is not possible hence repetition of whole process for several times is necessary. For this development of desired colour of the final product (Bhasma) is necessary. Further all these tests mentioned for the Bhasmas should be achieved.

**Stages of Māraṇa Process–**

To prepare good quality of finished product of Bhasma Māraṇa process may be divided in the following steps, viz.–

1. Mixing of Māraṇa drugs/materials.
2. Preparation of Kajjalī or mixture with Māraṇa drugs.
3. Application of Bhāvanā (Trituration with Bhāvanā liquids).
4. Pelletisation and Samputikaraṇa (Closing in earthen lids).
5. Application of desired heat by puta system or with electric furnance.
6. Repetition of whole process (till desired characters achieved).
7. Testing of Bhasma with prescribed tests.

**Categories of Māraṇa Drugs/Materials–**

The Māraṇa materials to be mixed with metals/minerals are divided in four categories on the basis of their qualities.

1. Mercury and its compounds– First (best) category.
2. Herbal drugs used as Bhāvanā come in second category.
3. Sulphur, Haritāl, Manaḥ-śilā etc. come in IIIrd category.
4. Anti-metals (Arilohas) come in IVth (inferior category) & not recommended.

**Mixing of Māraṇa Drugs/Materials–**

In case of metals, generally mercury and its compounds are used along with herbal extractives and Sulphur, Haritala or Manaḥśilā. In some cases all the three types of materials are used while in other cases only herbal drugs are used and in some cases third category materials are found used depending upon the requirement.

In case of Gold, Silver and Copper etc. metals where Mercury or Hiṅgula are used, first pisti is to be made and then sulphur or its compounds are mixed to prepare a Kajjali which is then given the Bhāvanā with prescribed herbal extractives and then heat is applied.

In case of Nāga Vaṅga and Yaśada no Māraṇa materials are used but in these cases Jāraṇa is done to convert metals into powder form and then these are subjected to **Bhāvanā** and **Puṭapāka** which are repeated for required number of times.

In case of Nāga (lead) Manaḥśilā should be used as Māraṇa drug.

As regards 'Puṭapāka' ancient scholars have advised to use dung cakes collected from forest in required amount depending upon the heat tolerance power of particular metal or mineral. Except gold, silver and lead other metals need higher temperature for their conversion into Bhasma form. Hence to prepare their bhasma 'Gajapuṭa' heat is generally used. As per our observation in 'Gajaputa' highest temp. reaches to about 950$^0$C but it will be for shorter duration i.e. about 15-20 minuts and then start falling hence we have decided that if we raise the temp. to 700$^0$C and maintain it for about one hour than Gajaputa heat effect can be achieved. Thus, in electric Muffle furnace if 700$^0$C heat is given and maintained for one-hour then Gajaputa heat effect is practically observed. In case of gold, silver and lead initially we are applying 'Kapota' puṭa heat and then we may go upto 'Kukkuṭa' puṭa heat in the last few puṭas. From temp. range point of view we may say that in Kapota puṭa the temp. may range 300$^0$C-350$^0$C while in Kukkuṭa Puṭa it may range 450$^0$C-500$^0$C for half to one hour. Within this range of temp. gold, silver and lead bhasmas could be prepared without any difficulty. These puta also touch higher range of temperaturs but it is for very less period.

It may also be pointed out here that if mercury or its compounds– Kajjali or Hiṅgula are mixed with metals or minerals then these may divide/dis-integrate metals/minerals quickly into finest subdivisions and when heated mercury and sulphur may go away by heat treatment and in some cases sulphur may form sulphide compound with metal and thus help to form desired compound in the bhasma which is either non-toxic or least toxic

on internal use in the body. Further during processing metal or mineral is subjected to Bhāvanā with herbal extractives which are organic in nature and may take part in the formation of organometallic compounds which become more acceptable to the body tissues/organs and such compounds when absorbed may produce desired therapeutic effects. Because of this these are recommended to be mixed with metals and minerals as Māraṇa drugs. Only Anti-metals are not recommended for mixing, as anti-metals are not helping in the Māraṇa process rather these may remain present in the bhasmas and make these adulterated, and probably because of this these are not recommonded as Māraṇa drugs.

**Pelletisation and Puṭapāka–**

After giving bhāvanā semisolid mass of bhasma mixture should be made into thin and flat pellets (Cakrikas). The idea behind making pelletisation is to expose maximum surface of metal or mineral particle to get heat treatment as by heat treatment chemical reaction in the metal particle starts and progresses and converts metal particle into desired compound form but within one heating the desired reaction can not reach to whole metal particle, only a portion of metal particle get converts into compound form hence repeatition of Bhāvanā and Puṭapāka is necessary. It is expressed in the texts as follows–

**यथा यथा विशेद्वह्निर्बहिस्थपुटयोगतः । चूर्णत्वाप्तिर्गुणावाप्तिस्तथायोगेषु निश्चितम् ।**

Means the heat, applied from the outside of the Saṁpuṭa through puṭa fuel slowly inters into the materials kept in Sarāva saṁpuṭa, converts metal particles into fine powder (compound) form. And with this way the desired properties are induced in the Yoga (bhasma), in the same proportion.

**Repeatition of Whole Process for Several Times–**

It is also very essential and important. As it has been observed that within one Bhavana and Puṭapāka complete conversion of metal particle into desired organo-metalic compound is not possible. It is observed that within one Bhavana and heat treatment metal particle starts to convert into desired compound form and a layer of that compound invades the metal particle and does not allow the reaction to go deep to unreacted metal

particle and it needs the exposure of the metal particle, thus by repetition of Bhavana in which grinding/trituration is done, which removes the upper layer of the formed compound and makes the metal particle surface exposed for further reaction to be achieved by further heat treatment. Thus by repeatition of whole process the unreacted metal particle surface becomes exposed and becomes liable for further reaction. To confirm this ancient Rasaśāstra scholars have developed Niruttha and Apunarbhava tests which are likely to reveal the unreacted metal particles if remain present in the bhasma. If these tests are found positive that confirms the quality of the bhasma i.e. of good quality.

**Effects of Māraṇa Process[9]–**

After completion of Māraṇa process bhasmas should develop following qualities.

1. These should achieve Rasībhavana state, means the Māraṇa procedures should be continued till bhasma become suitable for absorption and that is possible only when these convert into Rasībhavana state.

2. Bhasmas should develop curative effectiveness i.e. on internal use these may cure even severe diseases.

3. Bhasmas should be made suitable for long term use i.e. These should be non toxic for human system even after long use as by continuous use for long term these are likely to make the body very strong which is possible by raising immune system means these may act as immuno-modulators or may raise body resistance power to high level.

4. The onset of diseases may be prevented and the user may remain always in healthy state.

5. These if used for long time may check ageing process or senile changes of the body and likely to make the user always in yoothful state. That means Bhasmas should have Rasāyana effects by making the body strong, healthy (disease free) and also free from ageing process.

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9. निघ्नन्ति युक्तानि महामयांश्च । अभ्यासयोगाद्दृढ़देहसिद्धिं ।
कुर्वन्ति रुग्जन्म जराविनाशम् ।। (र.र.स.)

## DESCRIPTION OF EACH METAL AND ITS PROCESSES

### Suvarṇa (Au) and Its Process

**Mythological Origin**[10]**–**

According to ancient texts Gold is said to be originated from the semen of God Agni. Once God Agni saw young and beautiful wives of Sapta Riṣies and got highly excited and discharged his semen which wherever fell on the earth produced Gold.

**Varieties**[11]**–** As per ancient texts Suvarṇa has following five varieties.

1. Prākṛita
2. Sahaja
3. Bahni saṁbhūta
4. Khanija
5. Rasa or Rasendra Vedhaja

As per modern texts–

1. Native Gold
2. Obtained from its minerals/ores i.e. Mineral Gold.
3. Obtained as a result of transformation.

It is further mentioned in the texts that first 3 varieties are of Divya (Divine) origin and consists of Ṣoḍaśa Varṇa (Sixteen colours) and are rare. Hence in later texts only 2 or 3 varieties are found mentioned, viz.–

1. Rasaja (obtained from mercurial transformation)
2. Khanija (from mines)
3. Loha Śankaraja (Transformation from lower metals). Of these Rasaja and Khanija are said to possess Caturdaśa Varṇa (Fourteen colours) and these are usually available.

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10. **सुवर्णोत्पत्ति–**
विसृष्टमग्निना शैवं तेजः पीतं सुदुःसहम्। अभूत्स्वर्णं तदुद्दिष्टं सुवर्णं बह्निसम्भवम्।
(र.चू. १४/५)
पुरानिजाश्रमस्थानां सप्तर्षीणांजितात्मनाम्। पत्नीर्विलोम्य लावण्यलक्ष्मीसम्पन्नयौवनाः।
कन्दर्पदर्पविध्वस्तचेतसो जातवेदसः॥ पतितंयद्धरापृष्टे रेतस्तद्धेमतामगात्॥
(आ.प्र. ३/६-७)

11. **स्वर्ण भेदाः –**
प्राकृतं सहजं बह्निसम्भूतं खनिसम्भवम्। रसेन्द्रवेधसंजातं स्वर्णं पञ्चविधं स्मृतम्॥
(र.चू. ४/२)

**Description of Each Variety–**

1. Prākṛita[12]– is that which originates from Rajoguṇa and covered whole Brahmāṇḍa (Universa). It is not available even to Devas (Gods).

2. Sahaja– is that which covered Brahmā as Jarāyu at the time of his birth. In due course of time it changed in Sumeru hill. It may be said that the Gold obtained from Sumeru is Sahaja Suvarṇa (Native Gold).

3. Bahni Saṁbhūta– is that which is said to have originated from God Agni who once tried to retain the semen of lord Siva but could not tolerate and thrown it on the earth which in due course turned as Gold. It is claimed to make the body Ajara (free from senility) and Amara (free from death) by mere Dhāraṇa (bearing).

4. Khanija– is that which is obtained from the mines and is used to remove diseases.

5. Rasaja– is that which is produced through mercurial transformation. It is considered to be Rasāyana; Pavitra (Auspicious) and Śreṣṭha (best).

**Modern Description of Gold–**

Gold is a soft metal. Its hardness is 2.5, Sp. Gr. 19.43, it is very heavy and used for preparing ornaments. For this it is mixed

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12. **प्राकृत सुवर्ण–**

ब्रह्माण्डं संवृतं येन रजोगुणभुवा खलु। तत्प्राकृतमिति प्रोक्तं देवानामपि दुर्लभम्॥

**सहज सुवर्ण–**

ब्रह्मायेनावृतोजातः सुवर्णेन जरायुणा। तन्मेरुरूपतां जातं सुवर्णं सहजं हितत्॥

**बह्निसम्भूत–**

विसृष्टभग्निना शैवं तेजः पीतं सुदुःसहम्। अभूत् स्वर्णं तदुच्छिष्टं सुवर्णं बह्निसम्भवम्॥
एतत्स्वर्णत्रयं दिव्यं वर्णैः षोडशभिर्युतम्। धारणादेव तत्कुर्याच्छरीरमजरामरम्॥

**खनिज सुवर्ण–**

तत्र तत्र गिरीणां हि जातं खनिषु यद्भवेत्। तच्चतुर्दशवर्णाढ्यं भक्षितं सर्वरोगहृत्॥

**रसेन्द्रवेधज सुवर्ण–**

रसेन्द्रवेध सम्भूतं तद्वेधजमुदाहृतम्। रसायनं महाश्रेष्ठं पापघ्नं वेधजं हि तत्॥

(र.चू.१४/३-८)

with Copper to make it hard. 24 carat Gold is considered pure. In 14 carat Gold its percentage is about 60%.

It is malleable and ductile and possess bright matellic lustre. Its colour varies from grey to yellow. In nature it is found in free state as well as in compound form. It is frequently alloyed with Silver and often contains traces of iron and Copper. Pure Gold is Golden yellow. Pyrite is nearly always associated with Gold. Its streak is yellow. Its smelting point is 1062°C. It is insoluble in most acids and readily dissolves in Aqua-regia. It is not acted upon by water and atmosphere.

It is distinguished by its softness, malleability and high sp. gr. It is a precious metal. In India it is found in large quantities in Kolar mines of Mysore. It is also obtained from Anantapur mines of Madras. It is also found in the sand of the rivers of Bihar, Assam and M.P. Native Gold generally contains varying amounts of Silver (upto 40%) Iron, Copper, Bismuth, Zinc, Lead and Tin.

**Physical Properties**[13]**–**

**For best variety–** It becomes red on heating, white on cutting, yellow like Keśara on rubbing over Nikeṣa (Touching stone). It is Guru (Heavy), Mridu (Soft), Snigdha (Smooth), Cāruvarṇa (Bright colour) and Dalarahita (Without scales). It is red or yellow in colour (Ṣoḍaśa varṇayukta) 24 carat purity and should not contain Silver and Copper as impurities.

**For inferior variety–** Rough on touch, low coloured, dull, hard, blackish, looks grey on heating and rubbing. Thick, light, breakable and with scales is considered inferior and not good for use.

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13. **श्रेष्ठ सुवर्णगुणाः–**

घृष्टं वर्णेधुसृणसदृशं रक्तवर्णं च दाहे छेदे किञ्चित् सितसकपिलं निर्दलं भूरिभारम् ।
स्निग्धं स्वर्णं रविविरहितं स्त्यानरक्तप्रमांढ्यं श्रेष्ठं दिष्टमतुलितलसच्चारुवर्णं च स्वर्णम् ॥
(र.चू.१४/१०)

**त्याज्य स्वर्णलक्षणानि–**

रूक्षं विवर्णं मलिनं कठोरं कृष्णं च दाहे निकषे च पाण्डु ।
स्थूलाङ्गकं निर्भरकं कडारं स्फुरत्सुवर्णं दशधा न शस्तम् ॥ (१४/११)

**Pharmacotherapeutic Properties**[14]**–**

Rasa – Kaṣāya, Tiktā, Madhura and Kaṭu.

Guṇa – Śīta, Guru, Snigdha and Picchila.

Vīrya – Śīta

Vipāka – Madhura

Karma – Vṛṣya, Balya, Bṛiṁhaṇa, Rasāyana, Medhya, Matismṛitiprada, Āyuṣkara, Kāntikara, Vāk Viśuddhikara, Sthira-vayaskara, Pavitra, Śivatarakara, Pāpaghna, Lekhana, Viṣagarahara, Sukhakara, Deharoga pramāthī, Praśamitajara, Bhūtāveśa-praśāntikara, Rucya, Varṇya, Pathya, Puṣṭipradāyī, Ojovivardhana, Vayasthairyakara.

**Doṣa Prabhāva–** Tridoṣaghna

**Vyādhi Prabhāva–** Kṣaya, Unmāda, Jwara, Śoṣa, Śwāsa, Kāsa Agnimāndya, Vami, Aruci, Arśa, Prameha, Kārśya, Pāṇḍu, Duṣṭa grahaṇī, Viṣa garodbhava roga, Āgantuka roga, Pāpajaroga, Jaraāroga, Tridosaja roga, Daivakrita roga, Yakṣmā.

**Pharmaceutical Processes of Gold–**

**Necessity for Gold Śodhana–**

Gold mixed with silver etc. metals becomes an alloy and with this Gold properties and effects could not be achieved.

Hence its Śodhana is needed. It is further mentioned in this context that if pure (best variety) Gold is available then its Śodhana is not necessary. Only other metals should be subjected to Śodhana.

It is mentioned in 'Āyurveda Prakāśa' that if Gold Śodhana is to be done then it is to be done by applying Pañca Mṛittikā paste prepared by lemon juice and applying heat by puṭapāka method to improve its colour and shining. The Śodhana with

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14. **सुवर्णगुणाः–**

स्निग्धं मेध्यं गरविषहरं बृहणं वृष्यमग्र्यम्। यक्ष्मोन्मादप्रशमनपरं देहरोगप्रमाथि ॥
मेधा-बुद्धि-स्मृति-सुखकरं सर्वदोषामयघ्नं रुच्यं दीपि प्रशमितजरं स्वादुपाकं सुवर्णम् ॥
(र.चू. १४/२२)

सुवर्णं शीतलं वृष्यं बल्यं गुरु रसायनम्। तुवरं स्वादु तिक्तं च पाके स्वादु च पिच्छिलम्।
पवित्रं बृहणं मेध्यं मेधास्मृतिमतिप्रदम्। हृद्यमायुष्करं कान्तिवाग्विशुद्धिस्थिरत्वकृत ॥
विषद्वयं क्षयोन्मादत्रिदोषज्वरशोफजित्। (आ.प्र. ३/२७-२९)

Taila, Takrādi drugs (materials) is only applicable in cases of Silver etc. other metals and it is not recommonded for Gold.

**Gold Śodhana Procedure[15]–**

First prepare Pañca mṛittikā paste by mixing each of the materials of Pañcmṛittikā with lemon juice in an iron mortar. It is then applied on the thin Gold sheets piercible by needle. Put pasted Gold sheets in an earthen lid, cover it with another lid and seal the joint with a peice of cloth smeared in mud. On drying it is put in dung cakes (about 20-30 in numbers) and ignite these and apply heat with laghu puṭa. Repeat the process three times in the end open the saṁpuṭa, on self cooling, clean the Golden sheet with a cloth piece. By this procedure the colour of Gold sheets become very brightly shining. These purified sheets may be used wherever needed.

**Gold Māraṇa Procedure–**

For Gold Māraṇa generally Makaradhwaja[16] preparation method is followed.

In this method–

1. Purified Gold sheets I part
2. Purified or Aṣṭa Saṁskārita Pārada 8 parts
3. Purified Gandhaka – 16 parts
4. Lemon juice – q.s.

**Procedure–**

First purified Gold sheets are cut into very small pieces, these are then mixed with Saṁskārita pārada in an iron mortar and triturated with lemon juice till good piṣṭi (amalgam) of Gold is made with pārada. Then add Śuddha (purified) Gandhaka (Sulphur) powder double to pārada by weight and ground carefully till good quality Kajjalī is made. It is then taken out in

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15. **सुवर्णशोधनम् –**
बल्मीकमृत्तिका धूमं गैरिकं चेष्टिकापटुः । इत्येताः मृत्तिकाः पञ्च जम्बीरैरारनालकैः ॥
पिष्ट्वा कण्टकवेध्यानि स्वर्णपत्राणि लेपयेत् । पुटेत्पृथुहसन्त्यां तु निर्वाते त्रिंशदुत्पलैः ॥
..... यावद्वर्णो विवर्धते । इयमेवं सुवर्णस्य शुद्धिर्नान्याहि विधते ॥
(आ.प्र. ३/१६-१७)

16. मकरध्वज योग– पलं मृदु स्वर्णदलं रसेन्द्रात्पलाष्टकं षोडश गन्धकस्य ।

butter paper and filled in Kūpīpāka bottle prepared for the purpose by applying successive seven layers of Kapaḍa miṭṭi (Cloth piece smeared in mud) and dried completely, fill Kajjali in the bottle up to 1/3rd part only and keeping two third part of bottle empty. It is then fixed in Bālukā yantra or verticle type electric muffle furnace for applying heat by Kramāgnipāka system (first by mṛidu agni (150°C-200°C) for about six hours or till whole Kajjalī gets melted. This is known as melting stage.

There after heat is raised slowly to madhyamāgni stage (350°C-400°C). It is known as profuse fuming and boiling of Kajjalī stage. During this stage profuse fumes are comming out of the bottle mouth. In this stage the neck of the bottle must be cleared off from the blockage of sulphur fumes by frequently inserting red hot iron rod in the Kupi (bottle) mouth because bottle neck portion is comparatively cool hence sulphur fumes which come out in profuse quantity are likely to deposit there and may cause blockage if not removed carefully and frequently by inserting red hot iron rod. In this stage melted Kajjalī inside the bottle also start boiling hence care may also be taken to prevent its comming out of the bottle, means at this state the temp. of the furnace should not be allowed to rise till boiling of Kajjalī subsides or comes down. This stage may be allowed to continue for long time i.e. 6-8 hours to allow the extra sulphur present in the compound to burn to its maximum.

Then the temp. of the furnace may be raised further to reach to Tibrargni stage (550°C-600°C) to allow extra Sulphur present in the compound to burn quickly. As by reaching so high temp. sulphur burns with producing flame at the Kūpīmouth. It is known as flamming stage. In this stage due to high temp. flame starts to appear at the Kūpīmouth and rises as high as 2"-3" (inches) depending upon the quantity of sulphur taken in the formula. If sulphur quantity is double to mercury or more by weight. Then its hight and continuence time will be more and if sulphur quantity is less then its duration and hight will also be less. After some time its hight may be reduced and slowly it may disappear also from bottle mouth which is indicative that now extra sulphur is almost burnt and we should be very careful and should watch the bottle for other signs i.e. we

should look for redness of the bottom of the bottle. If it is there then "Śitaśalākā test" may be performed. For this cold iron rod is inserted in the bottle and should be taken to the bottom and take it out. If it comes out completely clean that confirms that now there is no extra Sulphur in the bottle and one may go for corking of bottle. But if some burnt and melted Sulphur adhares on the Śītaśalākā then one should weight for some more time to allow the extra Sulphur to burn and allow same temp. to continue. Till Śitā Śalākā test is found positive one must weight. and once it is found positive we should cork the bottle mouth and seal it. Delay in corking is also not good as by delaying the compound formed at the bottom of the bottle start to dis-associate and mercury gets free and start evaporating which may be confirmed by doing 'Copper Coin Test'. For this a copper coin or Tāmra patra piece should be put on the mouth of the bottle and watched for the presence of mercury. If it is found on the copper coin immediately bottle mouth should be corked otherwise one may weight and get him-self confirmed for complete burning of extra sulphur.

After corking and sealing of the bottle mouth the same temp. may be continued for 1-2 hours to get the formed compound sublimed at the neck of the bottle. And then the furnace be allowed to cool by itself. On self cooling bottle is taken out of the furnace, external covering is removed and cleaned properly. It is then brocken by applying thread soacked in spirit and burning the same. On complete burning it is removed and water drops are thrown immediately bottle breacks in two pieces. The upper portion contains Makaradhwaja compound which has to be taken out carefully and lower portion contains partially prepared Gold bhasma with some amount of mercury and Sulphur. Some scholars mix both the parts and use as Makaradhwaja condrodaya. Others use both the parts seperately. Lower part is further processed to prepare Gold bhasma as follows.

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17. जाम्बवाभं सुवर्णस्य भस्म प्राहुर्भिषग्वराः । (आ.प्र. ३/७६)
त्रिंशद्वनोपलैर्देया पुटाह्येवं चतुर्दश । (आ.प्र. ३/६१)
जायते कुङ्कुमच्छायं स्वर्णं द्वादशभिः पुटैः । (र.चू. १४/१७)
काञ्चनार जटापुटैः कुक्कुट नामधेयैः । (र.चू. १४/१८)

**Procedure for Gold Bhasma Preparation[17]–**

For this partially prepared Gold bhasma powder collected from lower part of bottle is put in an iron mortar and subjected to Bhāvanā (Trituration) with Kāñcanāra rasa or decoction and made into small flat pellets which on drying are closed in Sarāva saṁpuṭa and sealed. It is then subjected to heating in laghuputa (Kapota/Kukkuṭa puṭa) or in Muffle furnace at 300$^0$C-350$^0$C temp. initially for one hour and then at 400$^0$C-450$^0$C. and maintain it for one hour. In this way apply 10-14 putas with Kāñcanāra rasa/decoction to prepare re-consideration red colour Gold bhasma. In Ayurveda Prakāśa the colour of Gold bhasma[17] is mentioned as Jāmbvābha (just like Jambūphala) blackish red. But usually the colour of Gold bhasma is red. In 'Rasendra Cūḍāmaṇi' Gold bhasma colour is said as Kunkumacchāya means just like Kunkuma[17] which is red with Dwādaśa putas (12) heatings.

**Dose–** As per Rasendra[18] Cūḍāmani 2 Guñjā (250 mg).

**Anupāna–** Trikaṭu cūrṇa and Ghṛita.

Indications already mentioned. It may be used in any diseases, even caused by evil spirits (Bhūta-preta[19] bhayajanya rogas) and also caused with all the three types of Viṣas. It also prevents the onset of diseases.

**Contra Indication–** Avoid the use of Bilvaphala[19A].

**Note–** Those who have taken Gold or its bhasma internally in the body to such persons any kind of poison can't produce any effect and can't be absorbed in the body.

**Synonyms[20] of Gold–**

Suvarna is also known as Swarṇa, Kanaka, Hiraṇya, Hema, Hāṭaka, Tapanīya, Kaladhauta, Gāṅgeya, Bharma, Kāñcana,

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17. See footnote 17 on the page 104.

18. एतद्भस्म सुवर्णजं कटुधृतोपेतं द्विगुञ्जोन्मितं लीढं हन्ति नृणाम् .... (र.चू. १४/२३)

19. निःशेषरोगविध्वंसि भूतप्रेतभयापहम् । बन्धनं भाविरोगाणां विषत्रयगदापहम् ॥ (र.चू. १४/२४)

19A. **अपथ्य–** विना विल्वफलं चात्र सर्वमन्यत् प्रशस्यते । (र.चू. १४/२५)

20. **सुवर्णनामानि–**

स्वर्णं सुवर्णं कनकं हिरण्यं हेमहाटकम् । तपनीयं कलधौतं गाङ्गेयं घर्मकाञ्चनम् ॥
चामीकरं शातकुम्भं तथा कार्त्तस्वरंचतत् । जाम्बूनदं जातरूपं महारजतमित्यपि ॥ (आ.प्र. ३/२१-२२)

Cāmīkara, Śātakumbha, Kārtaswara, Jāṁbūnada, Jātārūpa, Mahārajata.

**Precaution–**

1. While preparing Gold bhasma handling should be done with care to avoid any loss.

2. During puṭapāka proper heat should always be maintained as it is observed that rise of temp. may either make the pellets very hard or even make these to adher to Sarāva (Earthen lid) used for applying puṭapāka. If it happens it is likely to disturb or prolongs the process.

3. It is our observation that with Āyurvedic Māraṇa process Gold is not likely to convert into some chemical compound form only its particle size is reduced which may remain associated with some activated carbon particles.

## Rajata (Silver) and Its Process : (Ag)

**Mythological Origin–**

1. Mythologically it is said to be originated from the semen of God Candramā (Moon).

2. As per 'Āyurveda Prakāśa'[21] it is said to have its origin from the drops of tears of lord Śiva which fell on the earth from his third eye which is opened when he become angry.

3. As a result of Vedha process with mercury.

**Varieties[22]–**

In Rasa texts three varieties of silver are found described–

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21. **उत्पत्तिः –**
त्रिपुरस्यबधार्थाय निर्निमेषैर्विलोचनैः । शिवो निरीक्षयामास क्रोधेन परिपूरितः ॥
तृतीयादश्रुविन्दुस्तु लोचनादपतत् भुवि । तस्माद्रजतमुत्पन्नं नानाभूमिषु संस्थितम् ।
भवति कृत्रिमं चापि वङ्गादेः सूतयोगतः ।

22. **रजत भेदाः –**
सहजं खनिसंजातं कृत्रिमं च त्रिधामतम् । रजतं पूर्वपूर्वंहि स्वगुणैरुत्तमोत्तमम् ॥
(र.चू. १४/२६)

**सहज रजत–**
कैलासाद्यद्रिसम्भूतं रजतं सहजं भवेत् । तत्स्पृष्टं हि महाव्याधि नाशनं देहिनां भवेत् ॥

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1. Sahaja – Best, occurs in Kailāśa Parvata.

2. Khanija– Better, occurs in Himālaya Parvata.

3. Kṛitrima– Good, occurs as result of Vedha process from Pārada.

*Out of these*– 1. Sahaja is capable of removing diseases by mere touch but it is claimed Durlabha (rare).

2. Khanija Rajata is a commonly available variety and is said to possess Rasāyana property. It may be used for Māraṇa.

3. Kritrima Rajata is made through transformation from lower metals (Tin etc) by mercury. But at present it is difficult to get.

In 'Rasārṇava' two varieties of Rajata are found mentioned i.e. white and black. White is pure and black is impure.

**Modern Description of Silver–**

Like Gold silver is also a soft metal. It is malleable, ductile and excellent conductor of heat and electricity. Its hardness is about 2.3, Sp. Gr. 10.5 when pure. It is comparatively ligher than Gold. It is white in colour, but may be grey, black or bluish black due to the action of atmosphare or of solutions. Tarnish is due to the formation of oxids or sulphides of silver. It melts at 960$^0$C, readily soluble in nitric acid. It has metalic lustre, white shining streak, can be distinguished from other metals by its colour, Sp. Gr. and malleability. In nature silver is usually found in large irregular masses, in flat scales and in granules or crystals, cubes and octahedrons are more common. Some times silver occurs as native silver in large twisting branching masses. Pure silver is unknown. The important source of silver is sulphide ore–Argentite (AgS). The mineral of black Rajata usually contains varying amount of Gold up to 28% and also Copper, Arsenic, Mercury, Iron, Antimony and Platinum. Some times it is found associated with lead. Galena

**खनिज रजत–**

हिमाचलाद्रिकूटेषु यद्रूप्यं जायते हि तत्। खनिजं कथ्यते तज्ज्ञैः परमं हि रसायनम्॥

**कृत्रिम रजत–**

श्रीरामपादुकान्यस्तं वङ्गं यद्रूप्यतां गतम् तत्पादरूप्यमित्युक्तं कृत्रिमं सर्वरोगनुत्॥

(र.चू. १४/२७-२९)

रसेन्द्रवेधसंजातं कृत्रिमं रजतं हितत्। (आ.प्र. ३/८३)

खनिजं मारणार्थं हि ग्राह्यं लक्षणलक्षितम्। (आ.प्र. ३/८४)

(PbS) is also an important source of silver but in this the percentage of silver is less. Sometimes it is found in Gold minerals but only in traces.

The Native silver may be taken as Sahaja Rajata. The sulphide mineral of silver Argentite and Galena may be taken as Khanija Rajata and Kṛitrima Rajata is that which is made by mixing various metals and processing them with specific processes known as Vedha (Transformation). In this way an alloy is made which looks like silver in colour and properties but actually it is not silver, it is an alloy only.

Silver is found in veins with Calcite ($CaCO_3$); Quartz ($SiO_2$). It is not acted upon by pure water and air. Copper is mixed to make it hard. It is also a precious metal and used for coinage, jewellery and in Āyurvedic medicines.

**Physical Properties–**

Purest Rajata becomes more white when heated.

**Qualities of Best Rajata[23]–**

According to 'Rasārṇava' best Rajata is that which is guru (heavy), snigdha (smooth), mṛidu (soft) and śveta (white). As per Rasendra Cūḍāmaṇi the best Rajata remains white on cutting and heating, looks as white and clear as Śaṅkha (conch shell), solid and should not be brittle. Rajata similar to moon in colour is considered best.

**Qualities of Inferior Rajata[23A]–**

That Rajatā which becomes red, yellow and black on heating, which is rough, brittle, non-ductile, light, thick, hard on touch with scales and mixed with other metals like copper etc. is considered inferior and should not be used.

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23. **ग्राह्य रजत–**

गुरु स्निग्धं मृदु श्वेतं दाहेच्छेदघनक्षमम्। वर्णाढ्यं चन्द्रवत्स्वच्छं रूप्यं नवगुणं शुभम्॥
(आ.प्र. ३/८५)

**ग्राह्य रजत गुणाः–**

घनं स्निग्धं मृदुस्वच्छं दाहे छेदे सितं गुरु। शंखाभं मसृणं स्फोटरहितं रजतं शुमम्॥

23A. **त्याज रजत–**

दाहे रक्तं च पीतं च कृष्णं रूक्षं स्फुटं लघु। स्थूलाङ्गं कर्कशाङ्गं च रजतं त्याज्यमष्टधा॥
(र.चू. १४/३०-३१)

**Pharmaco-therapeutic Properties**[24]**–**

**Rasa–** Kaṣāya, Amla, Madhura,

**Guṇa–** Snigdha, Śīta, Guru, Sara.

**Vīrya–** Śīta

**Vipāka–** Madhura

**Karma–** Lekhana, Vayasthāpana, Vayaḥ-sthairyakara, Āyuprada, Varṇya, Vṛiṣya, Paramabalya, Rucya, Medhya, Gadahara, Jaṭharāgnidīpi, Puṣṭikārī, Ajarāmarakara, Vīrya vardhaka and Rasāyana.

**Doṣa Prabhāva–** Vāta-prakopajit, Vatapittajit.

**Vyādhi Prabhāva–** Pittaja roga, Kṣayaja roga, Gudaja roga, Netra roga, Pāṇḍu roga, Sarva doṣaja roga, Dīrgha roga, Timira roga, Yakṣmā, Śwāsa, Kāsa, Jwara, Tṛiṣṇā, Śoṣa, Ajīrṇa, Aruci, Gulma, Udara and Arśa.

**Pharmaceutical Processes of Rajata (Silver)–**

**Necessity for Rajata Śodhana**[25]**–**

It is mentioned in 'Āyurveda Prakāśa' that impure Rajata if used internally is likely to produce Śarīra Tāpa (high temp.) in

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24. **रौप्यगुणाः–**

रूप्यं विपाकमधुरं तुवराम्लसारं शीतंसरं परमलेखनकं च रूच्यम् ।
स्निग्धं च वातकफजिज्जठराग्निदीपि बल्यप्रदं स्थिरवयस्करणं च वृष्यम् ॥
(र.चू. १४/३८)

रौप्यं शीतं कषायाम्लं स्निग्धं वातहरंगुरु । रसायनं विधानेन सर्वरोगापहारकम् ॥
(र.र.स. ५/३१)

रूप्यंशीतं कषायाम्लं स्वादुपाकरसं सरम् । वयसःस्थापनं स्निग्धं लेखनं वातपित्तजित् ॥
प्रमेहादिक रोगांश्च नाशयत्यचिराद्ध्रुवम् । गुटिकास्य धृता वाक्ये तृष्णाशोषविनाशिनी ॥
(आ.प्र. ३/८७-८८)

भस्मीभूतं रजतममलं तत्सभौव्योमभानू । सर्वैस्तुल्यं त्रिकटुकलितं सारधाज्येन युक्तम् ।
लीढं प्रातः क्षपयतितरां यक्ष्मपाण्डूदरार्शः कासंश्वासं नयनजरुजः पित्तरोगानशेषान् ॥
(र.चू. १४/३९)

25. **अशुद्धरजतदोषाः–**

तारं शरीरस्य करोति तापं विड्वद्धतां यच्छति शुक्रनाशम् ।
वीर्यंबलं हन्ति तनोश्च पुष्टिं महांगदान् पोषयति ह्यशुद्धः ॥ (आ.प्र. ३/४२)

the body (Fever), Vidbaddhatā (Constipation), Sukranāsa (Loss of seman/impotancy), loss of Bala and Vīrya (Strength and potancy), Śarīrapuṣṭi (Body nurishment), allows the onset of severe diseases by lowering body resistance power. Hence it should be purified and incinerated.

**Procedure for Rajata Śodhana[26]–**

First Rajata should be subjected to Sāmānya Śodhana by treating the sheets of silver with Taila, Takra etc. five liquids i.e. heat the pieces of the sheets of silver to red hot state and quench these in each of the five liquids one by one repeating the process for seven times in each liquid. The five liquids are Tila taila (Sesamum oil), Takra (Butter milk), Gomūtra (Cow's urine), Kāñjika (Fermented weak acidic liquid) and Kulattha Kaṣāya (Horse gram decoction). After completing Sāmāny Śodhana Rajata should be subjected to Viśeṣa Śodhana.

**Viśeṣa Śodhana[26]–**

For this fine sheets of Silver treated with Sāmānya Śodhana method should be heated to red hot on burning fire and quenched in Agastya Patra juice.

Repeat the heating & quenching procedure for three times to complete the Viśeṣa Śodhana.

**Procedure of Rajata Māraṇa–**

After Viśesa Śodhana Rajata patras should be cut into small pieces and mixed with double part of Hiṅgula purified and ground in iron mortar with lemon juice till good quality Rajata piṣṭi is made, prepare its small pellets and dry these. Then these are kept in the lower pot of Damaru yantrā, seal its joint tietly and apply heat from down to Damaru yantra for six to twelve hours continuously and keep the upper pot of Damaru yantra cool by puting wet cloth piece and changing it frequently so

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26. **रजत शोधनम्–**

तैलतक्रादिशुद्धस्य रजतस्य विशेषतः । शोधनम् .....

**विशेष शोधनम्–**

सूक्ष्मपत्रीकृतं रूप्यं प्रतप्तं जातवेदसि । निर्वापितमगस्त्यस्य रसे वारत्रयंशुचि ॥

(आ.प्र. ३/९४)

that mercury vapours comming out of the Hiṅgula may be condensed properly, repeat the whole process for three times and in subsequent heatings equal part of Hiṅgula may be used. It is claimed in the texts that within three such heatings black colour Rajata bhasma can be prepared. But it is our experience that within three heatings with Damaru yantra good quality, shining free, black colour bhasma may not be prepared and may need some more putas. In further putas only sulphur is used in 1/4th part to silver. Here Kukkuṭa puṭa heat may be given using 15-20 Vanyopalas each time. In ordinary case 8-10 putas may be needed. The colour of bhasma will be black which is probably Silver-sulphide compound.

**Doses–** 1/4th part to 1 Ratti (30 mg to 120 mg) with honey and ghee.

**Properties of Rajata Bhasma–**

Rajata bhasma is claimed Medhya, Vṛiṣya, Balya, Vayasthairyakara, Rasāyana and Lekhana. Experimentaly Rajata bhasma is found very effective in improving intelligence and memory and proves brain tonic and nervine tonic.

**Method of Using Rajata Bhasma–**

In 'Rasendra Cūḍāmaṇi' it is said that Rajata bhasma should be mixed with Abhraka bhasma and Tāmra bhasma in equal parts and Trikaṭu powder equal to all and may be used in the morning mixed with unequal part of honey and ghee. It is indicated in Yakṣmā, Pāṇḍu, Udara roga, Arśas, Kāsa, Śwāsa, Netra rogas (eye diseases) and in all types of Pittaja rogas. As per 'Rasa Ratna Samuccaya' it should be used with Rasāyana vidhi in all the diseases. As per 'Āyurveda Prakāśa' it may cure Prameha etc. urinary disorders very quickly. Improperly incinerated Rajat Bhasma should not be used in therapeutics[27].

## Tāmra (Copper) and Its Processes : (Cu)

**Mythological Origin[28]–**

According to ancient views copper is said to have its ori-

27. **अपक्व रजत सेवन निषेधः–** अपक्वं रजतं चैव नैंव योज्यं सदा गदे।

28. **ताम्रोत्पत्तिः–**

शुक्रं यत्कार्त्तिकेयस्य पतितंधरणीतले। तस्मात्ताम्रं समुत्पन्नमिदं प्राहुः पुराविदः॥

(आ.प्र. ३/११०)

gin from the semen of 'Kartikeya' (Son of Lord Śiva) which fell on the earth.

As per 'Rasa Kāma Dhenu' Śulva had its origin from 'Sūrya' (Sun).

**Varieties[29]–**

| | |
|---|---|
| As per 'Rasārṇava' – | 1. Rakta (Red) – Best |
| | 2. Kṛṣṇa (Black) – Inferior |
| As per Source– | 1. Nepālaja – Best |
| | 2. Mlecchaja – Inferior |

Copper having red colour and softness is considered the best as it is claimed to be pure and free from impurities. The blackish and hard copper is considered inferior as it may contain iron, lead etc. as impurities which make it hard also and as such it is considered inferior and not recommonded for internal use.

The other texts like 'Rasendra Cūḍāmaṇi'[30] and 'Rasa Prakāśa- Sudhākara' have described its varieties on the basis of its places of origin and as such copper obtained from the mines of 'Nepala' is considered best and that which is obtained from the mines other than 'Nepala' is considered inferior and not recommonded for therapeutic uses.

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29. **ताम्रभेदाः–**

म्लेच्छं नेपालकञ्चेति तयोर्नेपालकंवरम्। नेपालादन्यखन्युत्थंम्लेच्छमित्यमिधीयते ॥
(र.चू. १४/४०)

**गुणाः–**

अतिशोणं मृदु कृष्णं कठिनं क्रमशः स्मृतम्। (आ.प्र. ३/१११)

**म्लेच्छ ताम्रलक्षणानि–**

सितकृष्णारुणच्छायं वामिभेदि कठोरकम्। क्षालितं च पुनः कृष्णं मेतन्म्लेच्छकताम्रकम् ॥

30. **नेपालताम्र लक्षणानि–**

सुस्निग्धं मृदुलं शोणं घनाघातक्षमं गुरु। निर्विकारं गुणैः श्रेष्ठं नेपालं ताम्रमुच्यते ॥
(र.चू. १४/४२)

जपाकुसुमसंकाशं स्निग्धं मृदुघनक्षमम्। लोहनागोज्झितं ताम्रं नेपालं मृत्युदेहितम् ॥
(आ.प्र. ३/११३)

अतिशोणं मृदुश्रेष्ठम् ..... (आ.प्र. ३/११३)

**Modern Description of Copper–**

In nature copper is found in Native form as well as in the form of sulphides, oxides and carbonates. Native copper is rare. Generally copper is obtained in the form of its ores. Nearly 200-300 copper ores are seen in nature, of which sulphide group of minerals are more common. In Sulphides Chalcocite, Chalcopyrite, Covallite, Cuprite and Bornite are the commonest, of the Oxides Cuprite, and of the Carbonates Malachite and Azurite deserve mention.

Native copper is found in the forms of crystals and cubes but scales, graines, plates and masses are also not uncommon.

Its hardness is 2.6-3, Sp.Gr. 8.5-9, has metallic lustre, hackly fracture. Also malleable and ductile, colour-copper red. Due to Tarnish and decomposition products may be superficially black, red, green or blue. Streak-copper red, metallic and shiny. Excellent conductor of heat and electricity.

Native copper is generally almost pure, but sometimes contains small amounts of silver, arsenic, bismuth and antimony. It occurs principally in volcanic rocks, in veins, in dark coloured ignious rocks. It is hard to mine.

The sulphides and carbonates are easier to handle. The sulphides are black, purple and yellow. The oxides and native copper are dull red. The carbonates blue and green. The common associates are calcite, quartz and silver.

America, Chile, Peru, Cyprus, Africa, Japan, Australia, Northen Rodesia, Canada, Congo and Russia have large deposits of copper. The percentage copper in its ores depends on the nature of the place from which it is obtained. In very thin plates it is translucent with a green colour. It melts at $1085^{0}$, and usually dessolves in acids. The most characteristic chemical reaction is its solubility in nitric acid with the evolution of brownish red fumes of nitric oxide gas. Its boiling point is $2300^{0}$. It is an important constituent of the valuable alloys like Brass, Bronze, bell-metal and german silver. Blue Vitriol (Copper sulphate) is its important compound and is used as a fungicide. Some compounds of copper are used as insectisides.

Copper and its compounds when put on fire yeild a bluish green flame which is suggestive of the presence of copper in the compound. The flame test of copper is mentioned in ancient texts also.

**Physical Properties–**

**For Good Variety**[30]– That copper is considered good which is deep red or red like a beak of Parrot (Śuka Cañcunibha or 'Atyanta Śoṇita' or red like 'Japāpuṣpa', which looks red on cutting or fracture, heavy (Guru), Smoth (Snigdha), Mridu (Soft), malleable and ductile and which could be made into thin sheets, wires, should not turn black on heating. Free from impurities like iron, lead etc. and that which is obtained from the mines of 'Nepal' is considered the best and recommended for use.

**Inferior Variety**[31]– That which is grey/pale (Pāṇḍura), blackish red in colour, hard, light in weight, breakable or brittle, with scales, associated with impurities, remains black even after washing, may cause vomitting sensation and purgation when used internally and which is obtained form the mines other than 'Nepal' is known as Mleccha-Tāmra and considered inferior and not recommended for use.

It is also mentioned that if copper obtained from 'Nepal' is not available then the copper obtained from Tuttha as its Satva is also considered good and may be used.

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30. See footnote 30 on the page 112.

31. **त्याज्यताम्र लक्षणानि–**

सितं कृष्णारुणच्छायं वामिभेदि कठोरकम्। क्षालितं च पुनः कृष्णमेतन्म्लेच्छकताम्रकम्॥ (र.चू. १४/४१)

नेपालादन्यखन्युत्थं म्लेच्छमित्यभिधीयते। (र.चू. १४/४०)

पाण्डुरं कृष्णशोणं च लघुस्फुटनसंयुतम्। रूक्षाङ्गं सदलंताम्रं नेष्यते रसकर्मणि॥ (र.चू. १४/४३)

कृष्णं रूक्षमतिस्तब्धं श्वेतं चापिघनासहम्। लोहनागयुतं शुल्वं म्लेच्छं दुष्टं नरैस्त्यजेत्॥ (आ.प्र. ३/११४)

**Pharmacological and Therapeutic Properties**[32]**–**

**Rasa–** Kaṣāya, Tiktā, Madhura and Amla.

**Guṇa–** Śīta, Laghu, Sara, Snigdha.

**Vīrya–** Uṣṇa.

**Vipāka–** Kaṭu.

**Karma–** Lekhana, Alpa Bṛiṁhaṇa, Kṣutkara, Hṛid viśodhana, Kṛimighna, Rasāyana, Ropaṇa, Netrya, Garaviṣahara, Śodhana.

**Doṣa Prabhāva–** Vāta Kaphahara, Pitta Kaphahara.

**Vyādhi Prabhāva–** Pāṇḍu, Udara roga, Arśa, Gulma, Plīharoga, Yakridroga, Kṛimi, Śotha, Śūla, Udaraśūla, Pariṇāma śūla, Aṣṭavidha śūla, Amlapitta, Jwara, Śwāsa, Kāsa, Kṣaya, Kuṣṭha, Pīnasa, Agnimāndya, Kṣayaja-Prameha, Grahaṇīroga, Mūtrakṛicchara, Jīrṇa jwara, Arocaka, Mūrcchā, Āmadoṣa, Āmavāta, Vṛiddhi, Sthaulya, Jarā, Viṣadoṣa and Mṛityu.

Tāmra bhasma is considered highly useful in Śwāsa, Kāsa, Jwara, Śūla and Hṛidroga.

**Effects of *Ashodhita* and *Asamayak* Marita Tāmra**[33-34]**–**

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32. **ताम्रगुणाः–**

ताम्रं तिक्तकषायकञ्च मधुरं पाके च वीर्योष्णकं साम्लं पित्तकफापहं जठररुक् कुष्ठामजूर्त्यन्तकृत् ।
ऊर्ध्वाधः परिशोधनं विषयकृत्स्थौल्यापहं क्षुत्करं दुर्नामक्षयपाण्डुरोगशमनं नेत्र्यं परं लेखनम् ॥
(र.चू. १४/६९)

तत्तद्रोगहरानुपानसहितं ताम्रं द्विवल्लोन्मितं संलीढ़ं परिणामशूलमुदरं शूलं च पाण्डुं ज्वरम् ।
गुल्मप्लीहयकृत्क्षयाग्निसदनं मेहं च मूलामयं दुष्टां च ग्रहणीं हरेद् ध्रुवमिदं तत्सोमनाथाभिधम् ॥
(र.चू. १४/७०)

एतत्ताम्रसमं नान्यत् मधुरं दोषवर्जितम् । नान्यन्निशेषदोषघ्नं वृष्यं स्वस्थोचितं नृणाम् ॥
(र.चू. १४/७१)

33. **ताम्रदोषाः–**

उत्क्लेद मोहभ्रमदाहभेदास्ताम्रस्य दोषाखलु दुर्धरास्ते ।
विशोधनात्तद्विगतस्वदोषं सुधामयं स्याद्रसवीर्यपाके ॥ (र.चू.१४/४४)

न विषं विषमित्याहु स्ताम्रं तु विषमुच्यते । एको दोषो विषे ताम्रे त्वष्टौ दोषाः प्रकीर्त्तिताः ॥
(आ.प्र. ३/११५)

34. भ्रमोमूर्च्छाविदाहश्च स्वेदक्लेदनवान्तयः । अरुचिश्चित्तसन्ताप ऐते दोषा विषोयमाः ॥
(आ.प्र. ३/११६)

Unpurified and unreduced copper to ashes is considered highly poisonous. It is said to be more poisonous than poison itself because poison possess only one doṣa (harmful effect) while such copper may cause following eight doṣas (bad effects in the body) such as – Bhrama (Vertigo), Mūrcchā (Unconciousness), Vidāha (Burning sensation), Sweda (Sweating), Kleda (Wetness sensation), Vānti (Nausea and vomiting), Aruci (Anorexia) and Citta santāpa (Mental uneasiness). Besides these it is likely to produce following diseases i.e. Kuṣṭha, severe purgation, Vātarakta, Kāmalā, Kānti Vīrya and Balanāśa, Dhātu kṣaya, Śoṣa, Śūla and Āyunāśa. Hence it is highly essential to purify it with general and specific puri-fication methods.

## Śodhana Process–

### Procedure for Sāmānya Śodhana[35]–

For this first prepare fine copper sheets, then these are heated to red-hot and quenched into five liquids (Taila, Takra, Gomūtra, Kāñjika and Kulattha Kaṣāya) serially seven times in each liquid. After completion of Sāmānya Śodhana copper sheets should be subjected to Viśesa Śodhana also as follows.

### Procedure for Viśeṣa Śodhana[35A]–

For this Sāmānya Śodhita copper sheets are pasted with the paste prepared with Saindhava lavaṇa either with Snuhī Kṣīra or with Arka Kṣīra and heated to red hot on fire and then quenched in Nirguṇḍī juice for three times.

In 'Rasa Ratna Samuccaya' a simple method for Viśeṣa Śodhana is also mentioned i.e. purified copper sheets may be heated with cow's urine strongly for one yāma (3 hours). On cooling these are washed with hot water. This is done with a view to destroy various doṣas of Tāmra.

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35. **शोधनम्–**

तैलतक्रादिशुद्धस्य तत्तद्दोषनिवृत्तये। शुल्वस्य शोधनं प्राज्ञैर्विशेषात्समुदाहृतम् ॥

35A. **विशेषशोधनम् –**

स्नुह्यर्कक्षीरसिन्धूत्थैस्ताम्रपत्राणि लेपयेत्। अग्नौ प्रताप्य निर्गुण्डीरसे संसेचयेत्त्रिशः ॥ (आ.प्र. ३/११७)

गोमूत्रेण पचेद् यामं ताम्रपत्रंदृढाग्निना। शुद्ध्यतेनात्र संन्देहः ..... ॥ (र.र.स. ५/५२)

स्नुह्यर्कक्षीरसेकैर्वा ताम्रशुद्धिः प्रजायते। (आ.प्र. ३/११८)

**Tāmra Māraṇa Process–**

For Tāmra Mārana two methods are mentioned in the texts.

For this first cut the Śodhita Tāmra into small pieces and then mix these with double part of mercury and triturate with lemon juice till good amalgam of Tāmra is made with pārada. Then add sulphur in double quantity and prepare their Kajjalī of good quality. Then apply bhāvanā with Cāṅgerī juice, prepare small flat pellets and apply Ardhagajapuṭa heat. Repeat the procedure for several times and use sulphur in equal quantity in successive puṭas. With three such heatings black colour Tāmra bhasma is prepared as per the claims of the texts but actually it needs at least 10-12 puṭas (heatings). In later puṭas heat may be raised to Gajapuṭa level as in Tāmra bhasma. Copper needs to be converted in sulphide form only and not in sulphate form and for this we should test the end product of Tāmra bhasma with sour curd piece. And in this test after putting Tāmra bhasma on curd there should not be a bluish tinge. Then only Tāmra bhasma is considered of good quality.

As per the second formula i.e. Somanāthī[36] Tāmra formula Tāmra patras should be mixed with equal quantity of Pārada Gandhaka and Tālaka half to sulphur and Manaḥśilā half to Tālaka. Here also first Tāmra patras should be mixed with mercury and triturated with lemon juice till their amalgam is made, then sulphur is added to prepare Kajjalī and thereafter Tālaka and Śilā are added and mixed properly. This Kajjalī is then filled in glass bottle upto one third part and applied heat through Bālukā yantra method using Kramāgni pāka system (applying Mridu agni first then Madhyama and lastly Tīvrāgni) at least for 18 hours. On getting the red compound formed, bottle is corked and sealed to sublime the compound at the neck and leaving the Tamra bhasma at the bottom.

Here addition of Tālaka and Śilā are important probably these are added to help in the formation of copper sulphide

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36. **ताम्रमारण–**

शुल्वतुल्येन सूतेन बलिना तत्समेन च । तदर्धांशेनतालेन शिलयाचतदर्धया ।।
विधायकज्जलीश्लक्ष्णांभिन्नकज्जलसन्निभाम् । यन्त्राध्यायविनिर्दिष्टगर्भयन्त्रोदरान्तरे ।।
कज्जलीताम्रपत्राणि पर्यायेणविनिक्षिपेत् । प्रपचेदयामपर्यन्तं स्वाङ्गशीतंप्रचूर्णयेत् ।।

(र.चू. १४/६६-६८)

compound and to reduce the toxic effects of copper to great extend as it is mentioned in the literature that 'Viṣasya Viṣamauṣadham' means effect of one poison can be reduced by adding another poison. And in the same analogy Tālaka and Śilā added in the formula may neutralise the toxic effects of copper to some extent otherwise only sulphur is sufficient to convert copper into sulphide form in the presence of heat.

**Amṛitīkaraṇa of Tāmrabhasma–**

There are two procedures for Amṛitīkaraṇa of Tāmrabhasma. The first method is with Pañcāmṛita and second method is with Sūraṇa Kanda (Rhizome of Amorphophallus companulatus Blume).

In first method the prepared Tāmra bhasma is mixed with Pañcāmṛita materials i.e. with milk, curd, ghee, honey and sugar all taken in equal parts, triturate these well with Tāmrabhasma, prepare pellets, close in Sarāva saṁpuṭa and apply same puṭa heat which was given during Māraṇa process. On cooling watch Tāmra bhasma whether it produces any colour change on curd piece. If no change in colour is observed that ensures good qualtity of Tāmrabhasma.

In second method Tāmra bhasma prepared as above is triturated with lemon juice and made into bolus mass. It is then kept in a hole made into Sūraṇa Kanda by cutting a piece, it is then covered with the same piece and covered and sealed with a piece of cloth smeared in clay/mud, on drying it is applied Gajapuṭa heat. On cooling take out the bolus and look for change in properties of bhasma. i.e. appearance of blue/green colour on Curd peice. If no change is observed then take the bhasma of good quality otherwise repeat the māraṇa process 2-3 times to make the bhasma of good quality. As the name of the process indicates that by this process any bhasma can be made free of any toxic or bad effects and made just like Amrita (Nectar) i.e. useful for internal use. This procedure is recommended for all the bhasmas but in case of Tāmra bhasma it has been found claimed essential to make the bhasma free from its Utkleśa, Vānti and Bhranti etc. toxic effects.

**Test For Tāmra Bhasma–**

1. It must be black in colour on account of Copper sulphide formation.

2. It should not produce any nauseating sensation, vomiting, purgation and vertigo etc. toxic effects on internal use.

3. It must be kept in contact with any Amla (Acidic liquid) lemon juice or sour curd piece for some time or for 24 hours and should not produce any bluish or greenish tinge (Colour). If it appears or produced then the bhasma may not be taken as of good qualtity and should be processed further.

**Doses–** Its dose is mentioned as 2 Balla in the texts, but it is very high dose. Now it may be used in 1/4th - 1/2 (half) ratti dose (30 mg to 60 mg) only.

In 'Rasa Prakāśa Sudhākara' it is mentioned about Tāmra bhasma that it should be mixed with honey and ghee in unequal proportion and with Pippali (two in number) and all mixed in one balla dose (2 ratti).

**Synonyms of Tāmra–**

Tāmra is also called Audumbera, Udumbara, Śulva, Ravipriya, Mleccha mukha and all the synonyms of Sun.

## Loha (Iron) and Its Process : (Fe)

**Mythological Origin–**

It is said in 'Āyurveda Prakāśa' that in ancient times when Lolima Demons are fighting with Devas (Gods) their blood drops fell on the earth which in due course of time gave origin to various types of Lohas.

**Historical Review–**

Loha (iron) is known to menkind since ancient times. Many references regarding Loha are available in Vedas. (The oldest literature available in Indian soil.) During that period it was used for commercial and other purposes but its medicinal value became known only since the period of 'Āyurvedic Saṁhitās' ('Caraka & Susruta Saṁhitās' – 1000 B.C.). In that period iron was available in pure as well as in mineral form. Its important mineral 'Gairika' (Heamatite) was also known and used since the time of 'Saṁhitās'.

**Varieties**[37]**–**

Three types of lohas are found mentioned in ancient times such as –

1. Muṇḍa (Three subtypes)
2. Tīkṣṇa and (Six subtypes)
3. Kānta (Five subtypes)

of the three Muṇḍa loha is said to be Vartula (round) and found on earth or hills. Tīkṣṇa loha is known by the name Gajavallī, while Kānta loha is known as Cumbaka.

Muṇḍa loha is used for preparing iron vesseles, Tīkṣṇa loha is used to prepare swords etc. weapons while Kānta loha is rare but considered best of all, Of the three Tīkṣṇa loha is recommended for Māraṇa purpose. As per late Vaidya Śri Yādavaji's view steel iron turnings are available in plenty in the workshops as a waste product and the same is now be used for preparing Loha bhasma.

**Modern Description of Iron–**

Iron has light grey colour and has metallic lustre. Its dorsal surface when put under microscope after proper cleaning looks granular. Its melting point is 1500$^0$C and boiling point is 2950$^0$C.

Now a days iron is obtained from its oxide minerals, of which Heamatite, Limonite and Magnatite are the most important, of these Hematite is 'Gairika' and magnatite is Kānta pāṣāṇa of Āyurvedic Rasaśāstra. Some times sulphide minerals are also

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37. **लोहभेदाः–**

मुण्डं तीक्ष्णं च कान्तं च त्रिप्रकारमयः स्मृतम्।

**मुण्डभेदाः–**

मृदुमुण्डंकडारं च त्रिविधं मुण्डमुच्यते।

**तीक्ष्ण भेदाः–**

खंरसारं च हत्नालं तारावहं च वाजिरम्। काललोहामिधानं च षड्विधंतीक्ष्णमुच्यते॥

(र.चू. १४/८०)

**कान्तलोहभेदाः–**

कान्तलोहं चतुर्धोक्तं रोमकं भ्रामंकतथा। चुम्बकं द्रावकञ्चेति तेषुश्रेष्ठं परंपरम्॥

(र.चू. १४/८८)

used for obtaining iron but for this these have to be first converted into oxide form and then iron is extracted from these. Of these Pyrite (Chalcopyrite) Suvarṇa mākṣika ($CuFe.S_2$) Mercasite (Raupya mākṣika) (FeS) Iron pyrite (Vimala) ($FeO_2$) and Pyrrhotite (Bronze)– Kāṁsya mākṣika) deserve mention. But the extraction of iron from these is difficult and costly affair. Thus in India iron was obtained from Heamatite (Gairika) only since ancient times. The best variety of Heamatite yeilds 65-70% of iron. For this purpose it is heated with charcoal in the presence of oxygen so as to allow carbon to mix with oxygen and to form $CO_2$ which goes away and iron metal remains in the furnace and collected. During this process carbon, silicon, phosphorous and maganese are found mixed with iron in traces. This iron is known as cost iron or pig iron which may be Muṇḍa loha of Āyurveda. This is not malleable rather it is brittle.

**Important Ores of Iron–**

**1. Heamatite–** This is the most important ore of iron which contains about 70% of iron. Heamatite varies from a read earthy powder to dark, compact and shiny mineral. Its hardness is 1.6, streak cherry red. Rakta Gairika, Swarṇa Gairka and Pāṣāṇa Gairika– all are included under this mineral.

**2. Limonite (Yellow Ochre)–** This is an iron ore with water. It is soft and earthy or in compact, smooth, dark and rounded masses. Never crystaline. It contains about 60% of iron. Hardness 1-1.5, Sp.Gr. about 3.5, streak-yellow brown. It may be taken as Pīta Gairika, Suvarṇa Gairika.

**3. Magnatite–** It is the only black ore that can be picked up easily by a magnet. It is hard and heavy. Its hardness is 6, Sp.Gr. 5.2, black crystals or masses are found in basic igneus rocks and metamorphosed sedimentary rocks. Its streak is black.

**4. Siderite–** is occasionally used as iron ore. Its deposits are usually small and iron content is low (48%). Crystals are common, more often in masses which cleave like calcite, colour yellow, grey, dark brown, hardness about 4, Sp.Gr. 3.8, streak white, lustre– Pearly.

Its sulphide ores are usually used as source of sulphur.

**Physical Properties of Lohas[38]–**

As per the description of 'Rasārṇava' iron which is blue or black in colour, smooth and having sharp edges – Sūkṣmadhāra is considered the best.

**Muṇḍa loha–** may be cost or pig iron from modern point of view. Its melting point is 1200$^0$C much lower than that of other types of iron hence it is called 'Druta drāva'. In addition to iron it may contain carbon, silicon, maganese, phosphorus and sulphur upto 4%. It is used for making various iron pots of daily use. Muṇḍa loha varieties are based on its malleability.

**Tīkṣṇa loha–** is a type of steel which is made after removing some of the impurities from cost or pig iron. Many types of steel could be made by reducing or removing the carbon content of chromium. Manganese and nickel may also be mixed in different proportions for making various types of steel. Perhaps the varieties of Tīkṣṇa loha may also be explained on this basis.

**Tests for Tīkṣṇa Loha–**

As per 'Āyurveda Prakāśa' the best variety of Tīkṣṇa loha is that in which a person can see his image after it is pasted with a paste of Kāsīsa and Āmalakī and washed with water. Only such Tīkṣṇa loha is recommended for Māraṇa. Sāra Tīkṣṇa loha is that in which after acidic treatment like Nimbu rasa or Ciñcā drava small projection like structures appear on its surface.

**Property of Each Variety of Kānta Loha–**

1. Bhrāmaka Kānta Loha may possess very low magnetic power and as such it can not attract iron things rather produce only slight movement.

2. Cumbaka Kānta Loha may possess slightly better magnetic power and it may attract small iron materials and which could be separated easily.

3. Karṣaka possess still better magnetic power, it can attract things from some distance and with some force.

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38. **मुण्डलोह गुणाः–**
मुण्डं परं मृदुलकम्। (र.चू. १४/७९)

4. Drāvaka possess further better magnetic power. It can attract the things suddenly from greater distances.

5. Romaka is most powerful magnet. If it is put in iron powder and taken out iron powder will adhare all over its surface and looks like romas (a bunch of hairs). It contains magnetic atoms in large quantities distributed in all directions.

The magnetism of Kanta loha is greatly influenced by the effect of Sun, air and exposure to atmosphere. Hence it should be collected from the deep places of mines and may be preserved by keeping these in a safe places and should not be exposed to air, Sun-rays.

In India Kānta loha is available in plenty in the form of sand. It has a metallic lustre. It is heavy and black in colour Sp.Gr. is 5.18. Selam mines of Madras are famous famous for Kānta loha in India. It is also available in Bangal, Bihar, U.P. and South Hyderabad in the form of sand.

**Tests for Kānta Loha[39]–**

1. If a drop of oil is put in a Kānta loha vessel full of water it does not spread.

2. Kānta loha vessel neutralizes the bitterness of Nimbapatra Kalka mixed with water and allowed to remain in the vessel for some time.

3. Hiṅgu will loose its smell if put in Kānta loha vessel.

4. If milk is boiled that will not come out of it even by boiling rather it takes the Shape of Sikhara (hill peak).

5. White grams become black if washed with water kept on Kānt vessel.

6. It can cut other metals like a dried wood.

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39. **कान्तलोह परीक्षा–**

पात्रेयस्य प्रसरति जलेतैलविन्दुर्न क्षिप्तो हिङ्गुर्गन्धं विसृजतिनिजंतिक्ततां निम्बकल्कः ।
पाच्यं दुग्धं भवति शिखराकारकं नैति भूमौ कान्तं लोहंतदिदमुदितं लक्षणोक्तं न चान्यत् ॥
(र.चू. १४/९३)

## Pharmacological and Therapeutic Properties[40-43]–

### Loha[40]–

**Rasa–** Tikta, Madhura, Tubara (Kaṣāya)

**Guṇa–** Śīta, Sara, Guru, Rūkṣa (Uṣṇa)

**Vīrya–** Śīta (Uṣṇa– R.K.D.)

**Karma–** Lekhana, Balya, Vṛiṣya, Āyuṣya, Vayaśya Cakṣuṣya, Yogavāhī, Rudhirakṛit, Koṣṭha Śodhi, Vājīkara, Vīryakara, Putraprada, Śreṣṭhatama Rasāyana, Madana Sanjanana, Balakara, Prabhūta guṇakara.

**Doṣa Prabhāva–** Anilāpaha, Sleśmāmayahara, Tridoṣahara.

**Vyādhi Prabhāva–** Śotha, Śūla, Arśas, Pāṇḍu, Kāmalā, Kṛimī, Śoṣa, Plīharoga, Medoroga, Kuṣṭharoga, Jarāroga, Rudhiraroga, Gulmaroga, Udararoga, Hṛidroga, Śleṣmaroga, Śwāsa, Kāsa, Prameha, Grahaṇī, Jwara, Āmavāta, Bhrama, Kṣīṇatā, Pīnasa, Vami, Aruci, Bandhyatva, Malajaroga and Mrityu.

### Muṇḍa Loha–

**Rasa–** Tikta, Tuvara, Madhura.

**Guṇa–** Guru, Rūkṣa.

**Vīrya–** Śīta

**Vipāka–** X

**Karma–** Agni Pradīpi, Koṣṭha Śodhi, Rudhirakrit,

**Doṣa Prabhāva–** Kapha Vātahara.

**Vyādhi Prabhāva–** Śūla, Prameha, Kāmalā, Pāṇḍu, Gulma, Āmavāta, Jaṭharārti, Śopha, Āmaśūla, Āmakapha, Dāharoga, Śoṣa, Kuṣṭha and Raktaroga.

### Tīkṣṇa Loha–

### 1. (Khara loha)[41]–

**Rasa–** Tikta

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40. **मुण्डलोहगुणाः–**
मुण्डं परं मृदुलकं कफवातशूलमूलाममेहनद कामलपाण्डुहारी
गुल्माभवात जठरार्त्तिहरं प्रदीपि शोफापहंरुधिरकृत् खलुकोष्ठशोधि ॥ (र.चू. १४/७९)

41. **खरलोह गुणाः–**
रूक्षंस्यात्खरलोहकं सुमधुरं पाके च वीर्ये हिमं तिक्तोष्णं कफपित्तकुष्ठजठरप्लीहामपाण्ड्वर्त्तिनुत्
सद्यः शूलयकृद्रदक्षयजरामेहामवातापहं दीप्तं चाति रसायनं बलकरं दुर्नाभमेदोऽपहम् ॥
(र.चू. १४/८७)

**Guṇa–** Uṣṇa/Śīta, Rūkṣa

**Vīrya–** Śīta (Uṣṇa)

**Vipāka–** Madhura

**Karma–** Dipana, Rasāyana, Balakara

**Doṣa Prabhāva–** Kaphapitta kara

**Vyādhi Prabhāva–** Sadyaḥ Śūlahara, Yakrid Vikāra, Plīharoga, Jaṭharavyādhi, Āmaśūla, Pāṇḍu, Kṣaya, Kuṣṭha, Jarā, Arśa, Prameha, Āmavāta, Medoroga.

**2. Sāra loha–**

**Rasa–** Tikta, Kaṣāya

**Guṇa–** Guru, Rūkṣa

**Vīrya–** Śīta

**Doṣa Prabhāva–** Pittanāśaka

**Vyādhi Prabhāva–** Chardi, Pīnasa, Śwāsa, Kāsa, Grahaṇī, Atisāra, Pariṇāma Śūla, Ardhāṅga Vāta, Sarvāṅga Vāta.

**Kānta Loha**[42-43]**–**

**Rasa–** Tikta

**Guṇa–** Usṇa, Snigdha, Śīta

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42. **कान्तलोह गुणाः–**

कान्ताऽयोतिरसायनोत्तरतरं स्वस्थे चिरायुःप्रदं स्निग्धं मेहहरं त्रिदोषशमनं शूलाममूलापहम् ॥
गुल्मप्लीहयकृत्क्षयामयहरं पाण्डूदरव्यधिनुत् तिक्तोष्णं हिमवीर्यकं किमपरं योगेन सर्वार्तिनुत् ॥
(र.चू. १४/९४)

43. **लोहभस्मगुणाः–**

एतत्स्यादपुनर्भवंहिभसितं लोहस्य दिव्यामृतं सम्यक् सिद्धरसायनं त्रिकटुकीवेल्लाज्यमध्वन्वितम् ।
हन्यान्निष्कमितं जरां च मरणं व्याधींश्चसत्पुत्रदं दिष्टं श्रीगिरिशेन कालयवनोद्भूत्यै पुरातत्पितुः ॥
(र.चू. १४/११४)

एतत्संसेव्यमानानां न भवन्त्यामयोच्चयाः । जायते च सुतः श्रीमान् धीधैर्यबलसंचयः॥
(र.चू. १४/११३)

क्षयं पाण्डुगदं गुल्मं शूलमूलामयं तथा । मेहमेदोऽग्निमान्द्यं च यकृप्लीहं च कामलाम् ॥
श्वासं कासं च कुष्ठं च ज्वरं शूलान्वितं तथा ॥ (र.चू. १४/२०-२१)

कृष्णायः शोथशूलार्शः कृमिपाण्डुत्वशोषनुत् ॥ वयस्यं गुरु चक्षुष्यं सर्वमेदोऽनिलापहम् ॥
(र.सा.सं. १/३६.२.)

**Vīrya–** Uṣṇa/Śīta

**Karma–** Balavardhaka, Vīryavardhaka, Śarīra Vardhaka, Agnivardhaka, Rasāyana, Cirāyuṣkara, Vṛiṣyatama, Ojovardhaka, Tejovardhaka, Dṛiṣṭi Vardhaka, Kāntivardhaka, Samastaro-gahara.

**Doṣa Prabhāva–** Tridoṣa Śamana.

**Vyādhi Prabhāva–** Śopha, Pāṇḍu, Kāmalā, Halimaka, Jarāroga, Kṣaya, Aṣṭādaśa Kuṣṭha, Gulma, Udararoga, Udara Śūla, Arśas, Bhagandara, Yakrid-Plīharoga, Amlapitta, Prameha, Āmadoṣa, Āmavāta, Śirorujā, Bandhyatva, Samastaroga.

**Bad Effects[44] of Unpurified and Unincinarated Loha–**

In 'Āyurveda Prakāśa' seven types of doṣas are mentioned in Loha i.e. Gurutā (heaviness), Dṛḍhatā (stiffness), Utcleda/ Utkleśa (nausea), Kaśmala/Glāni (timidness), Dāhakāritā (burning sensation), Āma doṣa (undigestiveness), Durgandhatā (bad smelling). Hence Lohas should be used after proper Śodhana

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आयु:प्रदाता बलवीर्यकर्त्तारोगापहर्त्तामदनस्यकर्त्ता ।
अय: समानं नहि किंचिदस्ति रसायनं श्रेष्ठतरं नराणाम् ॥ (र.सा.स. १/३६३)
लोहं शीतं सरंतिक्तं मधुरं तुवरं गुरु । रूक्षं वयस्यं चक्षुष्यं लेखनं वातलं जयेत् ॥
कफं पित्तं गरं शूलं शोफार्श: प्लीहपाण्डुता । मेदोमेहकृमीन् कुष्ठंतत्किहंतद्गुणंस्मृतम् ॥
(आ.प्र. ३/२२१-२२)

44. **अशुद्धलोह सेवन दोषा:–**
अशुद्धलोहं न हितं निषेवणादायुर्बलं कान्तिविनाशिनिश्चितम् ।
हृदिप्रपीडां तनुते ह्यपाटवं रुजं करोत्येव विशोध्य मारयेत् ॥ (र.र.स.५/७९)
अविशोधित लोहानां विषवद्गमनं मतम् । (र.चू. १४/१२८)
हत्पीडां बह्निदौर्बल्यं महारोगान्मृतिं तथा । करोति सेवनाल्लोहंमशोधितममारितम् ॥
(आ.प्र. ५/८)
षण्ढत्वकुष्ठामयमृत्युदं भवेद् हृद्रोगशूलौकुरुतेऽश्मरीं च ।
नानारुजानां च तथा प्रकोपं करोति हल्लासशुद्धलोहम् ॥ (आ.प्र. ३/२२४)

**लोहदोषा–**
गुरुताद्यढतोत्क्लेद: कश्मलं दाहकारिता । अश्मदोष: सदुर्गन्धो दोषा: सप्तायस:स्मृता: ॥
(आ.प्र. ३/२२३)

**असम्यङ्मारित दोषा:–**
जीवहारि मदकारि चायसं देहशूलकृदसंस्कृतं ध्रुवम् ।
पाटवं न तनुते शरीरके दारुणां हृदिरुजां च यच्छति ॥ (आ.प्र. ३/२२५)

and Māraṇa. These doṣas are considered as Swābhavika doṣas (natural impurities). Besides above following diseases are also caused by unprocessed lohas– Bandhyatva (sterlity), Kuṣṭha (leprotic disease), Mṛityu (death), Hṛidroga (cardiac disease), Śūla (various types of pain), Aśmary (calculous) and Hrillāśa (unrelishing), Balahanī (loss of strength), Buddhi dirṣaṇa (loss of intelligence), Prāṇaharaṇa (death), Rogajanana (onset of diseases), Śarīrapaṭutānāśa (loss of working capability), Hṛidaya dāruṇa rujājanana (severe pain in cardiac region), Madajanana (loss of sense), Sundaratānāśa (loss of beauty). Hence in case of Loha it is highly essential to do Śodhana and Māraṇa before its internal use.

**Śodhana Process[45]–**

Before subjecting to Śodhana treatment Loha should be converted to thin sheets or fine powder.

**Sāmānya Śodhana Procedure–**

For this iron (Seats or fine powder) should be heated to red hot and quenched into Taila Takra, Gomūtra, Kāñjika and Kulatha Kaṣāya seven times in each.

**Viśeṣa Śodhana Procedure–**

It should be treated either with simple Triphala Kvātha or Kvātha prepared with Gomūtra using eight times liquid to Triphalā and reducing it to 1/4th part. It may also be treated with Kadalīmūlajala.

For this, Triphalā is taken in 16 palas, water eight times, reduced to 1/4th part by boiling, in this 5 (five) palas of loha should be quenched seven times. By this Śodhana method loha doṣas are removed.

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45. **लोहशोधनम् –**

तैलतक्रादिसंशुद्धं लोहं शोध्यं विशेषतः । प्रोक्तदोषविनाशाय तदिदानीमिहोच्यते ॥
त्रिफलाष्टगुणेतोये त्रिफलाषोडशंपलम् । तत्क्काथे पादशेषेतु लोहस्य पलपञ्चकम् ॥
कृत्वापत्राणितप्तानि सप्तवारं निषेचयेत् । एवं प्रलीयते दोषो गिरिजो लोहसम्भवः ॥
(आ.प्र. ३/२४१-२४३)

तप्तानि सर्वलोहानि कदलीमूलवारिणि । सप्तधात्वभिषिक्तानि शुद्धिमायात्यनुत्तमाम् ॥
(र.सा.स. १/३०५)

**Loha Māraṇa[46] (Incineration)–**

It is mentioned in 'Rasendra Sāra Saṅgraha' that for doing Loha Māraṇa i.e. for preparing Niruttha loha bhasma Śodhita loha cūrṇa should be treated with Bhānupāka, Sthālīpāka and Puṭapāka methods.

**Procedure for Bhānupāka[47]–**

For this Triphalā Kvātha is prepared with Triphalā taken equal to Loha cūrna, add water two times to Triphalā, reduce it to 1/4th part by boiling. This Triphalā Kvātha is mixed with Loha cūrṇa and dried with sunrays continuously for three days or this Triphalā Kvātha should be prepared seven times and may be dried seven times in sun rays.

**Procedure for Sthālīpāka[48]–**

For Sthālīpāka Triphalā is taken three times to Loha cūrṇa, add sixteen times water to Triphalā and reduced to 1/8th part by boiling. This Kvātha mixed with Bhānupakva loha in a Sthāli (Wide mouth iron pot) and heated to dryness. It is known as Sthālīpāka. The Sthālīpaka loha should be washed with clean water and dried loha powder is then taken for Puṭapāka.

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46. **लोहमारणम् –**
मानुपाकस्तथा स्थालीपाकाच्चपुटपाकत: । निरुत्थोजायते लोहो यथोक्तफलदो भवेत् ।।
(र.सा.सं. १/३०८)

47. **भानुपाकविधि–**
क्षालने भानुपाके च लोहतुल्यं फलत्रिकम् । जलद्विगुणितं दत्त्वा चतुर्भागावशेषितम् ।।
एवमुक्तं फलक्वाथं जलंदत्त्वा पुन: पुन: । शोषयेत्सूर्यतेजोभिर्निरन्तरमहस्त्रयम् ।।
अथवा तत्र तत्क्वाथं दत्त्वा दत्त्वाभिषग्वर: । सप्तसप्त विभागेन सप्तवारान् विशोषयेत् ।।
(र.सा.सं. १/३११-३१३)

48. **स्थालीपाकविधि–**
स्थालीपाके फलं ग्राह्यमयसस्त्रिगुणीकृतम् । तस्य षोडशिकं तोयमष्टभागावशेषितम् ।।
(र.सा.सं. १/३१४-३१५)
स्थाल्यां क्वाथादिकं दत्त्वा यथाविधिविनिर्मितम् । पाकेन क्षीयते यस्मात्स्थालीपाक इति स्मृत: ।।
(र.सा.सं. १/३१८)
स्थालीपाके सुसंपक्वं प्रक्षाल्यस्वच्छवारिणा । शुष्कं संचूर्ण्य यत्नेन पुटपाके प्रयोजयेत् ।।
(र.सा.स. १/३२१)

**Procedure for Puṭapāka[49-50]–**

Puṭapāka means application of heat by Puṭa system. It is mentioned in this context that as we go on applying puṭas for number of times the properties of Loha-bhasma are also found increasing in the same proportion. Hence Loha bhasma prepared with Puṭapāka method is considered good for internal use as by applying Puṭas The doṣas (Bad/toxic effects) are destroyed, therapeutically usefull properties are induced and loha gets converted into an ash form i.e. change into suitable compound form which is absorbable and least toxic and therapeutically of high value.

It is further mentioned in the texts that how much Puṭas should be given. The puṭa process may be continued till the Loha bhasma floats on still water surface like a Hamsa (swan) on account of lightness of its particles.

It is further[51] mentioned in this context that ten (10) to hundred (100) puṭas are given for curing diseases. For making bhasma usefull as Rasāyana hundred (100) to thousand (1000) puṭas are given and for making loha bhasma usefull for Vājīkaraṇ ten (10) to five hundred (500) puṭas are given.

**Method for Applying Puṭa–**

Prepare a pit of one Hasta (Rājahasta- 22$^{1}/_{2}$") diameter, fill it upto half with dung cakes, Tuṣa (Husk) or Kāṣṭha (Woods)

49. **पुटपाकनिर्देशः–**
पुटाद्दोषविनाशः स्यात् पुटादेव गुणोदयः । म्रियते च पुटाल्लोहस्तस्मात्पुटं समाचरेत् ॥
यथा यथा प्रदीयन्ते पुटाः सुबहुशो यदि । तथा तथा प्रकुर्वन्ति गुणानेव सहस्रशः ॥
पुटपाकेन पक्वन्तु शस्यते रसकर्मणि । (र.सा.सं. १/३२२-३२४)

50. **पुटपाक विधि–**
हस्तमात्रमिते गर्त्रे करीषेणार्धपूरिते । अथवा तुषकाष्ठाभ्यां पूरितेऽर्धे निधापयेत् ॥
लोहमग्निं ततो दत्वा तथैवोर्ध्वप्रपूरयेत् । दिवा वा यदि वा रात्रौ विधिनानेन पाचयेत् ॥
चतुर्भिः प्रहरैरेवं पुटपाकेन पाचयेत् ॥ (र.सा.सं. १/३४८-३५०)
कुण्डस्थो भस्मनाच्छन्नः आकृष्टव्यः सुशीतलः । समाकृष्टस्यतप्तस्य गुणहानिः प्रजायते ॥
(र.सा.स. १/३५२)

51. **पुटसंख्याफलनिर्देशः–**
दशादिशतपर्यन्तो गदे पुटविधिर्मतः । शतादिस्तु सहस्रान्तः पुटो देयोरसायने ॥
वाजीकर्मणि विज्ञेयो दशादिशतपञ्चकः ॥ (र.सा.स. १/३२५)

then keep Loha in Sarāva Saṁputa and apply heat, then fill the remaining part of pit with fuel used. In this way heat is applied for four (4) Praharas (12 hours) in day time or in night. And then on cooling Loha Sarāva Saṁputa (Earthen lid containing Loha bhasma covered with ash) is taken out.

**Another Simple Method for Loha Māraṇa[52]–**

Mix 1/12 part Śuddha Hiṅgula powder with Loha cūrṇa apply bhāvanā with Ghrita Kumārī rasa and triturate, apply heat by puṭa system for two (2) Yāma (6 hours). In this way by applying seven puṭas loha bhasma is prepared.

**Niruttha[53] Test of Loha Bhasma–**

So prepared Loha bhasmas should be tested for their Nirutthatva by mixing the same with the materials of Mitrapañcaka (Ghee, Madhu, Guggulu/Guḍa, Guñjā and Ṭaṅkaṇa) and applied heat with same puṭa as was given while preparing bhasma. If bhasma is found Niruttha then the same may be used internally in 4 (four) ratti (500 mg) dose. Now it is used in 1-2 ratti dose.

**Procedure for Nirutthī Karaṇa[54]–**

If Loha-bhasma is not found Niruttha then it should be mixed with equal part of Cow's ghee and Śuddha Gandhaka (Sulphur) and apply Bhāvanā with Ghrita Kumārī and grind in Tapta Khalva for one day and apply Gajapuṭa heat. In this way all Loha-bhasmas may be made Niruttha.

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52. **लोहमारण विधिः–**
क्षिपेद्वाद्वादशांशेन दरदंतीक्ष्णचूर्णतः । कन्यानीरेण संमर्धयामयुग्मंच संपुटेत् ।
एवं सप्तपुटे मृत्युं लोहचूर्णमवाप्नुयात् ॥ (आ.प्र. ३/२६२-२६३)

53. **निरुत्थ परीक्षा–**
सर्वमेव मृतं लोहं ध्मातव्यं मित्रपञ्चकैः । यद्येवंस्यान्निरुत्थं च सेव्यं रक्तिचतुष्टयम् ॥
(र.सा.स. १/३५८)

54. **निस्वत्थीकरणविधि–**
गोघृतं गन्धकं लोहं तप्तखल्वे विमर्दयेत् । दिनैकं कन्यकाद्रावे रुद्धवा गजपुटे पचेत् ॥
इत्येवं सर्वलोहानां कर्त्तव्यं स्यान्निरुत्थितम् ॥ (र.सा.स. १/३६०)

**Anupāna**[55]–

1. With Triphalā cūrṇa and Madhu for all diseases.

2. Trikaṭu, Viḍaṅga, Madhu and Ghee as per 'Rasendra-cintāmaṇi'.

**Dose**– 1. Niṣka (3 gms) must be with suitable Anupānas.

2. 4-6 ratti (500 mg - 750 mg).

**Loha-bhasma Colour**[56]–

1. Jaṁbūphalavat as per 'Ay. Prakāsa'. (Ay. Pr. 3/261)

2. Sindūrābhamayorajah. (Ay. Pr. 3/274)

**Apathyas**[57] (Which should be avoided during loha therapy) Kūṣmāṇḍa, Tila taila, Rājikā, Rasona, Madya and Amla rasa.

## Nāga (Lead) and Its Process : (Pb)

**Mythological Origin**[58]–

In acient times it is said about Nāga (Lead) that once Vāsukī (The King of serpents/snekes) saw a very beautiful girl of Bhogīsnake and discharged his semen due to over excitement and from that semen Nāga (Lead) got its origin. And probably due to this reason Nāga is considered to be a highly toxic metal and also very strength generating metal.

Its varieties are not mentioned in the text.

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55. **अनुपान–**

१. सम्यक्सिद्धरसायनं त्रिकटुकीवेल्लाज्यमध्वन्वितम् ।

२. इत्थंसिद्धमिदं लोहं वल्लद्वितयसम्मितम् । .....

३. त्रिफलामधुसयुक्तं सर्वरोगेषुयोजयेत् ॥

56. **भस्मवर्ण–**

स्याद्भस्मजम्बूप्रभम् । (आ.प्र. ३/२६१)

सिन्दूराममयोरजः । (आ.प्र. ३/२७४)

57. **अपथ्यानि–**

कूष्माण्डं तिलतैलं च रसोनं राजिका तथा । मद्यमम्लरसं चैव त्यजेल्लोहस्य सेवकः ॥ (र.सा.सं. १/३६४)

58. **नाग उत्पत्ति–**

दृष्ट्वा भोगिसुतां रम्यां वासुकिस्तु मुमोचयत् । वीर्यं जातस्ततो नागः सर्वरोगापहो नृणाम् ॥ (आ.प्र. ३/१८४)

**Physical Properties of Best Nāga[59]–**

It is Druta drāva (Melts early, means at low temp. i.e. 326°C-335°C), Mahābhāra (Very heavy in weight) high density 11.3, Sp. Gr.11.3, Chede Kriṣṇa Samujwala (On cutting looks shining black), Pūtigandha (Contains foul smell), Bahih Kriṣṇa (Black on outer surface). Lead heaving such properties is considered pure or of good quality. Some scholars have added snigdha (Smooth) and Mṛidu (Soft) also to this. Lead having other than the above properties is considered inferior.

**Modern Description–**

From modern point of view it is of two types. 'Native and mineral. Native lead is rare. Generally lead is obtained from its minerals.

**Mineral Lead–**

It is generally obtained from 'Galena' a sulphide mineral PbS. The other important mineral of lead is Cevosscite (Lead carbonate). Anglecite is another important mineral of lead from which it is obtained or extracted. Over a dozen lead minerals exhist, but only two of them are important. These are secondary minerals derived from 'Galena'. It occurs very rarely in crystals, thin plates and as small modular masses. Its minerals usually contains small quantities of silver and antimony. Hardness – 1.5, Sp. Gr. 11.3, melts at 326-335°C, boils at 1525°C. It is a dark white metal, very soft and may be scrapped by nails. It yields black line on paper when rubbed. It is one of the ingredients of Pencil. Though, the metal is brittle, thin sheet could be prepared from it. It is not affected by pure water and dry air but in impure water it is slightly soluble and the water mixed with lead may cause many diseases. It has multiple uses but for medicinal purposes it should be used with care and its prolonged use may cause lead poisoning.

**Synonyms of Lead and their importance–**

Its synonyms are– Nāga, Bhujaṅga, Drutadrāva, Mridūttamam, Sindūra Kāraṇam, Suvarṇāri, Yakṣmadhātu,

59. **नाग गुणाः–**

द्रुतद्रावं महाभारं छेदे कृष्णसमुज्ज्वलम् । पूतिगन्धं बहिःकृष्णं शुद्धसीसमतोऽन्यथा ॥ (र.र.स.)

Yavaneṣṭham, Rañjakam, Mahābhāram, Pūtigandham, Bahiḥ-Śyāmam, Dhātumalam.

**Nāga–** Which gives strength just like elephent.

**Bhujaṅgam–** It is produced from the snake (Vāsukī) or may cause toxic effects like snakes.

**Drutadrāva–** Melts at 326$^0$C (Low melting point)

**Mridūttamam–** Very soft metal and could be scrapped with nails or knife. Hardness is 1.5.

**Mahābhāram–** Very heavy in weight – Sp.Gr. 11.3, atomic wt. 207.2.

**Sindūra Kāraṇam–** May produce Sindūra (Red oxide of lead)

**Suvarṇāri–** It is an Arīloha of Suvarṇa, used in Suvarṇa māraṇa.

**Rañjakam–** Used in colouring lower metals to higher metals.

**Yakṣmadhātu–** May improve vitality of body in T.B.

**Yavaneṣṭam–** Muslims are found of using it as Anjana in eyes.

**Putigandham–** While melting a putrid smell is induced.

**Bahiḥ Śvāmam–** Externally looks blackish in colour.

**Dhātumalam–** Does not seem to possess metallic lustre and looks like mala of metal.

**Pharmacological and Therapeutic Properties[60-61]–**

**Rasa–** Tikta, Kaṭu, Lavaṇa & Kṣāra.

**Guṇa–** Uṣṇa, Guru/laghu, Snigdha, Sara.

**Vīrya–** Uṣṇa

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60. **नागगुणाः–**
नागःसमीरकफपित्तविकारहन्ता सर्वप्रमेहवनराजिकृपीटयोनिः ।
उष्णः सरो रजतरञ्जनकृद व्रणार्शो गुल्मग्रहण्यतिसृतिक्षणदोंशुमाली ।
नागस्तु नागशततुल्यबलं ददाति व्याधिं विनाशयति जीवनमातनोति ।
बह्निं प्रदीपयति कामबलंकरोति मृत्युंचनाशयति सततं सेवितः सः ॥ (आ.प्र.३/१८६-१८७)

61. **नाग गुणाः–**
अत्युष्णं सीसकं स्निग्धं तिक्तं वातकफापहम् । प्रमेहतोयदोषघ्नं दीपनं चामवातनुत् ॥
(र.चू. १४/१४७)

**Vipāka–** X

**Karma–** Balya, Śatanāga tulya balaprada (Produce strength like hundreds of elephants). Vīrya Vardhana, Āyuvardhana, Kānti Vardhana, Krimihara, Cakṣuṣya, Vilekhana, Rajata rañjaka).

**Doṣa Prabhāva–** Vātahara Kapha Vātahara, Vātapitta Kaphāpaha.

**Vyādhi Prabhāva–** Highly useful in Prameha, Dhanurvātadi Vātajaroga, Krimiroga, Śwāsa, Grahaṇī, Atisāra, Arśas, Gulma, Kuṣṭha, Vraṇa, Śoṣa, Viṣa, Tṛiṣṇā, Āmaśotha, Āmaśūla, Āmavāta, Medoroga, Pāṇḍu.

## Pharmaceutical Processes of Nāga (Lead)–

### Effects of Unpurified and Un-incinerated Lead[62]–

In 'Āyurveda Prakāśa' it is said that unpurified lead is likely to produce Prameha, Kṣaya and Kāmalā hence it should be incinerated after purification. It is said further in this context that unincinerated lead is likely to produce following diseases if used internally– i.e. it destroys or diminished the body complexion, produces Kuṣṭha, Kilāsa, Twak vikāra, Sandhirujā, Pakṣavadha, Gulma, Ānāha, Prameha, Śoṣa, Śūla, Agnimāndya, Bhagandara, Dāha, Aśmary, Mūtrakṛicchra, Apacī, Pāṇḍu, Kṣaya, Vidradhi, Jwara and Vātakaphaja roga. Hence should not be used without proper Śodhana and Māraṇa.

### Śodhana Process[63]–

Śodhana of Nāga is done just like Vaṅga. However as per 'Rasāmṛitam' it is said that lead should be purified first

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62. **अशुद्ध नागदोषाः–**
अशुद्धः कुरुते नागः प्रमेहक्षयकामलाः । तस्मात् संशुद्ध एवायं मारणीयो भिषग्वरैः ॥ (आ.प्र. ३/१८८)
पाकेन हीनौ किल नागवङ्गौ कुष्ठानि गुल्मांश्च तथातिकष्टान् ।
पाण्डुप्रमेहानलसादशोथभगन्दरादीन् कुरुतः प्रयुक्तौ ॥ (आ.प्र. ३/१८९)

63. नागवङ्गे च गलिते रविदुग्धेन सेचिते । त्रिवाराच्छुद्धिमायतः सच्छिद्रे हण्डिकान्तरे ॥
वङ्गं चूर्णोदके स्विन्नं यामार्धेन विशुद्धयति ॥ (र.सा.स. १/२८९-९०)
हरिद्राचूर्णसंयुक्ते रसे निर्गुण्डिकोद्भवे । द्रुते निर्वापयेन्नागं त्रिवारं शुद्धिमृच्छति ॥ (रसामृतम् १०३)

with general purification method and then it is subjected to specific Śodhana method as follows–

**Visesa Śodhana Method–**

For this melted lead is poured into Nirgunḍī (Vitex nirgundo linn) juice containing Haridrā (Curcuma longa linn) cūrṇa for three times. Using Piṭhara yantra for pouring melted metal in liquid.

In 'Rasendra Sāra Saṅgraha' it is mentioned that both Nāga and Vaṅga should be purified by pouring melted metal in Arka dugdha kept in earthen pot through the hole of Piṭhara yantra. It is further mentioned here that Vaṅga is purified by doing Svedana in Cūrṇodaka for $^{1}/_{2}$ yāma ($1^{1}/_{2}$ hours). Some scholars suggest to quench Vanga and Nāga both in Cūrṇodaka seven times. And in practice also this method (Curnodaka/Dhalan) of Śodhana is followed for all the Pūti lohas. By Śodhana treatment Arsenic type impurity is also removed.

**Māraṇa Process–**

For Pūtiloha group first Jāraṇa is done and then Māraṇa.

**Jāraṇa of Nāga–**

Jāraṇa is an intermediary process between Śodhana and Māraṇa. Through this treatment low melting point metals are converted into powder form.

**Procedure for Jāraṇa[64]–**

For this purified lead is put in Kaṭāha yantra (Wide mouth iron pan) and heated to melting then Aśwattha twak/Apāmārga Pañcāṅga or Ciñcā powder is added with melted lead in $^{1}/_{4}$th to equal quantity and then rubbed with Loha Darvī (Iron laddle) till melted lead completely converts to powder form. If necessary herbal powder is added to it again and again to get the

64. **जारणम्–**

चिञ्चाश्वत्थत्वचश्चूर्णं चतुर्थांशेन निक्षियेत् मृत्पात्रे विद्रुते नागे लोहदर्व्या प्रचालयेत् यामैकेन भवेद्भस्म ..... (आ.प्र. ३/१९०-९०$^{1}/_{2}$)

हण्ड्याभग्नौ द्रवीकृत्य वासापामार्गसम्भवम्। सारं विमिश्रयेत्तत्र चतुर्थांशं गुरुक्तितः॥
प्रहरं पाचयेच्चुल्यां वासा दर्व्या विद्यद्यन्। चूर्णीभूतं पिधायाथ कुर्यादग्निसंम पुनः॥
(आ.प्र. ३/१९४-८५)

melted metal to convert to powder form probably by oxidation process. At last it is collected at the centre of the pan and closed with earthen lid and applied strong heating to complete the reaction and convert whole metal into fine black powder. On cooling it is collected and seived to separate any metal particle if remains present.

**Māraṇa Procedure[65]–**

In this equal part of purified Manaḥśilā powder is added with Jārita lead powder and Triturate it either with Vāsārasa (Adhatoda vasica nees juice) or Kumārī juice, prepare its pellets and close in Sarāva saṁpuṭa after getting dried and apply laghu (Kukkuṭa) puṭa heat by puṭa system. On cooling repeat the whole process, from IInd puṭa onwards Manaḥśilā is added in $^1/_4$th part only. Such seven puṭas are to be applied to prepare good quality lead bhasma. Some scholars suggest that in Nāga at least 20 putas are to be given. In some texts even 60 puṭas are found recommended. With Māraṇa treatment lead should be converted into lead sulphide form, as lead sulphide is least toxic while lead oxide i.e. Nāga Sindūra is highly toxic. And as such lead bhasma prepared by adding Manaḥśilā upto last puṭa is advisable as Manaḥśilā may help in forming lead sulphide compound and reducing its toxicity on account of using Arsenic compound during Māraṇa process.

**Note–** It is the observation of author that Manaḥśilā and Haritāla (Which are Arsenic and Sulphur compounds) are found added in cases of Tāmra and Nāga both, which are though considered most toxic metals. But as per Āyurvedic concept 'Viṣasya Viṣamauṣadham' means one poison may be antagonised by the addition of another poison.

**Colour of Nāga-bhasma–**

The appearance of colour in Nāga-bhasma depends upon the method followed. If Manaḥsilā or Gandhaka is added while preparing Nāga-bhasma and applying Vāsa rasa, Kumārī rasa

65. त्रिभिः कुम्भीपुटैर्नागो वासारसविमर्दितः । सशिलो भस्मतांयाति तद्रजः सर्वमेहनुत् ॥
(आ.प्र. ३/२०१)
नागं खर्परके निधाय कुनटीचूर्णं ददीत द्रुते निम्बूत्थद्रवगन्धकेन पुटितं भस्मीभवत्याशु तत् ।
(आ.प्र. ३/२००)

or Nimbu rasa bhāvanā and Kukkuṭa puṭa heat then lead sulphide will be formed and in that case its colour will be either Kapota (Piegon) colour, grey or blackish colour but if no sulphur or its compound is added and strong heat is given then its colour may be red like Sindūra and in that case it may be oxide of lead and if less heat is given then it may be reddish yellow and that is also oxide form and in that case it is highly toxic to the body.

**Dose–** 1-2 ratti (125-250 mg) or $^1/_4$th - 1 ratti (30-120 mg).

## Vaṅga (Tin) and Its Process : (Sn)

**Mythological Origin–**

Mythologically Vaṅga is said to have its origin from the semen of Lord (God) Indra the King of Devas.

**Varieties[66]–**

| | | |
|---|---|---|
| As per 'Rasārṇava'– | 1. | Śveta – Superior |
| | 2. | Kṛiṣṇa – Inferior |
| As per 'Rasendra Cūḍāmaṇi'– | 1. | Khuraka – Superior |
| | 2. | Miśraka – Inferior (with impurities) |

Khura Vaṅga[67] is pure and considered best. It is white in colour in ancient times it was obtained from Varma and from there it was transported to India through Bengal hence it was named as Baṅga or Vaṅga.

**Modern Description–**

Tin is white shining crystalline metal. It is malleable and its sheets may be made. Open air does not affect its white shin-

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66. **वंगभेदाः–**

खुरकंमिश्रकश्चेति द्विविधं वङ्गमुच्यते । खुरकं श्रेष्ठमुद्दिष्टं मिश्रकं चावरं स्मृतम् ।
खुरकं चन्द्ररूप्याभं खुराकारं च कीर्त्यते । एतल्लक्षणमिन्नं तु वङ्गं मिश्रकनामकम् ॥
(आ.प्र. ३/१४८-१४९)

67. **खुरवंग–**

धवलं च मृदुस्निग्धं द्रुतद्रावं सगौरवम् । निःशब्दं खुरवङ्गंस्यात् मिश्रकं श्यामशुभ्रकम् ॥
(र.चू.१४/१३२-३३)

खुरकं चन्द्ररूप्याभं खुराकारं च कीर्त्यते । एतल्लक्षणभिन्नंतु वङ्गं मिश्रकनामकम् ॥
(आ.प्र. ३/१४९)

ing. It is harder than lead but may be cut with knife. It is lighter than lead. Sp. Gr. is 7.3, melting point 232°C, at 200°C becomes brittle, in cold air also it becomes brittle. It is not acted upon by atmosphere. The pieces of pure metal sheets when pressed produce a sound which is due to breaking of its atoms and is distinguished by this sound from other metals. Sometimes iron, lead, copper and arsenic are found mixed with it. Generally it is adulterated with lead for commercial reasons and in that case its colour is not so white and shining, rather becomes slight black. Probably this is a Miśraka variety of ancients. Nāga and Narasāra when mixed with it, lowers its melting point. It is employed for coating other metals either to prevent from rusting or to prevent from the action of chemical reagents. It is also used in the manufacture of tin plates, Tin amalgam, Gun metal and type metal.

From oldest times till today it has been used in making alloys like Bronze by mixing it with Copper and Zinc. It also forms alloys with Antimony, Bismuth & Lead.

Native tin is very rare. It is obtained only in few places and that too in very small quantities. It is obtained from the stream of clearance river in greyish white granules along with Platinum and Gold, Tin stone and corundum. Generally it is obtained in mineral form. The only mineral of Tin is cassiterite ($SnO_2$), Tin oxide which contains almost 80% Tin which may be Capala of ancients. It is commonly brown or black though occasionally red, grey or yellow. Cassiterite forms crystals but occurs more often as fibrous masses or as crusts or veins in granite and pigmatite rocks. It is distinguished from limonite by its high Sp. Gr. (7.0), most of Tin comes from Malaya and Bolivia. In India it is found in very small amounts mixed with other minerals. From its ore Tin is extracted by the simple process of reduction. The ore is heated with charcoal for its reduction. By this process the oxygen of the ore is combined with carbon to form $CO_2$ and the melted metal is found at the bottom.

**Physical Properties of Vaṅga–**

For superior variety[67]– As per ancient scholars Khuraka

67. See footnote 67 on the page 137.

Vaṅga is best and it should be as white as Moon or Silver, Mridu (Soft), Snigdha (Smooth), Laghu (light in weight) or as per 'Rasendra Cūḍāmaṇi' Guru (heavy), Niḥśabda (without sound), Sara (Straight), Śuddha (Pure) and Drutadrāva (Melts quickly) means have low melting point– (232$^0$C). The other variety is Miśraka which is impure and considered inferior. It is blackish in colour and not recommended for use.

## Pharmaceutical Processes of Vaṅga (Tin)–

### Effects of Unpurified and Unincinerated Vaṅga[68]–

Aśuddha and Apakva Vaṅga is likelty to produce Prameha, Gulma, Hṛdroga, Śūla, Arśa, Śwāsa, Kāsa and Vamana. As per 'Rasakāmadhenu'– It may produce Dāha, Aśmarī, Śotha, Meha, Kilāsa, Kuṣṭha, Apacī, Kṣaya, Bhagandara, Śūla, Gulma, Pāṇḍu, Raktasrāva, Mūtrakricchra, Kapha and Vātaroga, Vidradhi. Hence Vaṅga should be properly purified and incinerated before internal use.

### Pharmacological and Therapeutic Properties[69-70]–

**Rasa–** Tikta, Amla, Kaṭu, Kṣāra

**Guṇa–** Rukṣa, Śīta/Uṣṇa (R. Cu.), Sara and Laghu.

**Vīrya–** Uṣṇa/Śīta

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68. अशुद्धममृतं वङ्गं प्रमेहादिगणप्रदम्। गुल्महृद्रोगशूलार्शः कासश्वासवमिप्रदम्॥

69. **वङ्गगुणाः–**
वङ्गं तीक्ष्णोष्णरूक्षं कफकृमिवमिजिन्मेहमेदोऽनिलघ्नं
कासश्वासक्षयघ्नं प्रशमितहुतभुड् मान्द्यमाध्मानहारि।
बल्यं वृष्यं प्रभाकृन्मनसिजजनकं सर्वमेहप्रमाथि
प्रज्ञाकृद्वर्ण्यमुच्चैरलघुरतिरसस्यास्पदं बृंहणं च॥ (आ.प्र. ३/१५२)

70. **वङ्गगुणाः–**
वङ्गं लघु सरं रूक्षमुष्णमेहकफकृमीन्। निहन्ति पाण्डुकं श्वासं चक्षुष्यं पित्तलं मनाक्॥
सिंहो यथा हस्तिगणंनिहन्ति तथैव वङ्गोऽखिलमेहवर्गम्।
देहस्य सौख्यं प्रबलेन्द्रियत्वं नरस्य पुष्टिं विदधाति नूनम्॥ (आ.प्र.३/१५०-१५१)
वङ्गं तीक्ष्णोष्णरूक्षकफकृमिवमिजि न्मेहमोदोऽनिलघ्नं
बल्यं दीपनपाचनं रूचिकरं प्रज्ञाप्रदं शीतलं सौन्दर्यैकविवर्धनं हितकरं नीरोगताकारकम्।
धातुस्थौल्यकरं क्षयिक्षयहरं सर्वप्रमेहापहं वङ्गं भक्षयतो नरस्य नभवेद् स्वप्नेऽपि शुक्रक्षयः॥
(आ.प्र. ३/१५३)

**Karma**–Cakṣuṣya, Balya, Dīpana, Pācana, Rucikara, Medohara, Prajnākara, Dhātu Sthaulyakara, Varṇya, Saundaryakara, Āyuṣya, Vṛiṣya, Śaktidāyī, Puṣṭikara, Madanajanana (Vājīkara), Rasāyana, Dāhahara, Viṣahara, Saukhyakara, Vilekhana, Kṛimighna, Matiprada, Prabhākṛit, Bṛiṁhaṇa, Ratirasa Vardhana.

**Doṣa Prabhāva**– Kaphapitta hantā, Manāk-pittala, Iṣat Vāta Kopaṇa.

**Vyādhi Prabhāva**– Prameha, Pāṇḍu, Śwāsa, Kāsa, Kṛimi, Medoroga, Kaphaja roga, Viṣa roga, Aśīti-Vātaja roga, Udara roga, Jaṭharavyathā, Gulma, Grahaṇī, Vraṇa, Śoṣa, Śukrakṣaya, Kṣayaroga, Jarāroga, Mūtrakṛicchra, Śvetapradara, Vami, Agnimāndya, Ādhmāna, Āmavāta.

**Śodhana Process**[71]–

First it should be purified with Sāmānya Śodhana method prescribed for metals and then for Viśeṣa Śodhana it should be melted and poured either in Cūrṇodaka or in Niśāyukta Nirguṇḍī drava through Piṭhara yantra for seven times in each.

It is also purified by applying Svedana in Dola yantra with Cūrṇodaka for $^1/_2$ yāma ($1^1/_2$ hours). It should be poured in liquids very carefully to avoid bumping.

By treating Vaṅga with Sāmānya and Viśeṣa Śodhana method quite a good portion of Vaṅga turns into powder form and it should not be discarded considering it as mala of Vaṅga. It is due to the oxidation of Vaṅga during Śodhana process with effect of heat and cold treatment done for several times. By heat treatment some of the volatile impurities may also be removed.

The metal which is not turned to powder form through Śodhana treatment is then subjected to Jāraṇa process as follows–

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71. **वङ्ग शोधनम्:–**

खुराभिधानं खलु शुक्रलोहं निधाय दव्यांभिषजां वरेण्यः ।
चुल्लीगतं चाप्यथ गालयित्वा विशुद्धचूर्णोदकपूर्णगर्मे ।
गाढ़ं तु सच्छिद्रयिधानकेन क्षिपेत्समाच्छन्नमुखे तु कुम्मे ।
इत्थं निषिक्ते भिषजाश्ववारं वङ्गं विशुद्धिं समुपैति नूनम् । (र.त. १८/९)
वङ्गं चूर्णोदके स्विन्नं यामार्धेन विशुद्धयति ।। (र.सा.सं १/२४०)

**Jāraṇa of Vaṅga**[72]**–**

For this Vaṅga, after Śodhana is melted in an iron pan (Kaṭāha) then add $^{1}/_{4}$th part Apāmārga Pañcāṅga powder slowly and rub it with metal using Lohadarvī, while burning till whole metal is converted to fine ash form in an open atmosphere probably by oxidation process. Now whole ash is collected at the centre of the pan, cover it with Sarāva (Earthen lid) and apply strong heat for 2-3 hours to complete the process.

In another method $^{1}/_{16}$th part mercury is added to Śodhita Tin and Tālaka is also added. The mixture is then rubbed with Vanakārpasa wood till whole metal converts to powder form. In this method Arsenic and sulphur fumes of Tālaka produced during heating may prove harmful to the worker. And probably for this reason this method could not become popular for Vaṅga Jāraṇa.

**Māraṇa Process**[73]**–**

After completion of Jāraṇa treatment the metal ash is subjected to Kumārī rasa bhāvanā (Trituration). Then its pellets are prepared and closed in sarāva saṁpuṭa after drying. It is now subjected to Gajapuṭa heat or 700$^{0}$C temp. in Muffle furnace for one hour. On self cooling take out the saṁpuṭa and repeat the bhāvanā and Puṭapāka process several times till whitish brown colour bhasma is prepared. Generally within seven putas its good quality bhasma is prepared.

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72. **वङ्गजारणम्–**

शुद्धं वङ्गं क्षिपेद हण्ड्यां चुल्लीस्थायां शनैः शनैः । तदधोज्वालयेदग्निं द्रुते वङ्गेक्षिपेत् पुनः ।
अपामार्गं चतुर्थांशं चूर्णं संचालयेदिदम् । स्थूलाग्रया लोहदर्व्या यावद्भस्म प्रजायते ॥
चूर्णप्रक्षेपणं कार्यं स्वल्पं स्वल्पं मुहुर्मुहुः । यावद्भस्म भवेद्रङ्गं तावच्चूर्णं समापयेत् ॥
शरावपिहितं पश्चात् स्थापयेत्तत्रतद्भिषक् । रजः सर्वंततोऽधस्तात् कुर्यादग्निं तु तीव्रकम् ॥
यावदङ्गारवर्णं तद्रजः समुपजायते । स्वाङ्गशीतं ततो ग्राह्यं मारणाय रजः शुमम् ॥
(आ.प्र. ३/१५५-१५९)

मृत्पात्रे द्राविते वङ्गे चिञ्चाश्वत्थत्वचोरजः । क्षिप्त्वा वङ्गाच्चतुर्थांशमयोदर्व्याः प्रचालयेत् ॥
ततो द्वियाममात्रेण वङ्गभस्मप्रजायते ॥ (आ.प्र. ३/१७७)

73. **वङ्गमारणम्–**

अथ भस्म समं तालं क्षिप्त्वाऽम्लेन विमर्दयेत् । ततो गजपुटे पक्त्वा पुनरन्येनमर्दयेत् ॥
तालेन दशमांशेन याममेकं ततः पुटेत् । एवं दशपुटैः पक्वं वङ्गं भवति मारितम् ॥
(आ.प्र. ३/१७८-१७९)

**Bhasma Colour[74]–**

It is said to be similar to Śaṅkha, Kunda, Indu or Lavaṇa (Salt) i.e. white. It may contain Tin oxide with some other trace elements.

**Note–** Some scholars suggest washing after Jāraṇa while as per other scolars it is not necessary as it may not have any effect on final product.

## Yaśada Zinc and Its Pharmaceutical Processes : (Zn)

**Historical Background–**

Yaśada as an independent metal was known to ancient Indians since 14th cent. A.D. Madanapāla the author of 'Madanapāla- Nighaṇṭu' was the first scholar to mention it as the seventh Dhātu or metal in his text. Then Bhāvamiśra also followed him and included Yaśada in Dhātu (Loha) group.

The Pittala[75] (Brass) known as an alloy of Zinc and Copper (Yaśada and Tāmra) was known since ancient times which was being made with Rasaka or Kharpara Satva only. But Yaśada as an independent metal was came to be known in much later period (i.e since 14th A.D.). It is obvious by the synonyms used for Rasaka i.e. Rītikṛt, Rītihetu, Tāmra rañjaka. As regards the Rasaka and Kharpara these are known since ancient times i.e from the time Saṁhitā period (800-1000 B.C.).

**Modern Description of Yaśada–**

Zinc metal resembles Tin in many respects and is used for making Pittala (Brass) by mixing it with Copper. Zinc is white

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74. उत्तमं वङ्गभस्म स्यान्निरुत्थं खटिकाप्रभम् । (आ.प्र. ३/१६५)
कुन्देन्दुधवलं वङ्गभस्म ग्राह्यं स्वकार्यकृत् ॥ (आ.प्र. ३/१७३)
श्वेतं तु लवणाभासं सुसूक्ष्मं सर्वकार्यकृत् । (आ.प्र. ३/१७६)
रीतिः (पित्तलम्)– रीतिरप्युपधातुःस्यात्ताम्रस्य यशदस्य च ॥ (आ.प्र. ४/६७)

75. **यशदम्–**
यशदं रङ्गसंकाशं रीतिहेतुश्च तन्मतम् । (आ.प्र. ३/१८१)
यशदं रीतिहेतुश्च तथाखर्परसत्वकम् । (रसामृत १/११५)
**रसकम्–**
रसकः खर्परश्चापि रीतिकृत्ताम्ररञ्जकः । (रसामृतम्)
वङ्गाभं पतितं सत्वं समादाय प्रयोजयेत् । (चू. १०/)

with a bluish tinge. Its Sp.Gr. 7.1, melting point 429°C and boiling point 980°C. At normal atmospheric temp. it becomes brittle. At 150°C it becomes malleable and ductile but at 200°C it again becomes brittle and could be made into a powder. It is highly acted upon by acids and alkalies. Now a days it is used mostly for coating iron vessels to prevent them from rusting. In addition it is also one of the constituents of dry cell batteries. Zinc minerals are generally found associated with lead and copper minerals in the form of veins and replacement deposits in ignous or carbonate rocks.

**Zinc Minerals–**

Zinc is not found in native form rather it is obtained almost from minerals. According to Āyurveda Rasaka and Kharpara are the most important minerals of Zinc and are included in Mahārasa group. The description given for Rasaka and Kharpara in Āyurvedic texts greatly resembles with that of Zinc minerals given in modern literature. According to modern description Zinc is usually found in nature in the form of sulphides, oxide, carbonate and silicate. And Zinc is separated form these through chemical method.

**Corelation of Zinc Minerals With Rasaka Varieties[76]–**

1. Zinc sulphide (Sphelerite – SnS) is a yellowish, brick red, grey or blackish in colour, resinous lustre, hardness 3.5-4, Sp.Gr. 4, easily breakable. It may be taken as Guḍa Rasaka.

2. Zinc oxide (Zincite– ZnO)– It is yellowish red like orange in colour and looks like soil hence may be taken as Mṛitikā Rasaka.

3. Zinc carbonate (Smith sonite ($ZnCO_3$). It is usually mixed with crystalline crust, colour is dull like soil but it is harder then the above two hence may be taken as Pāṣāṇa Rasaka.

4. Zinc silicate (Hemimorphite– $ZnSiO_2$). It is a crystalline mineral which contains some amount of water also. These crystals may have various colours. These are also harder hence these may be taken as Pāṣāṇa Rasaka.

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76. **रसक भेदाः–**

मृत्तिकाःगुडपाषाणभेदतो रसकास्त्रिधा । पीतस्तु मृत्तिकाकारो मृत्तिकारसको वरः ।
गुड़ामो मध्यसोज्ञेयः पाषाणाभःकनिष्ठकः ॥ (रसामृतम् १/१२२-१२३)

रसको द्विविधः प्रोक्तो दर्दुरः कारवेल्लकः । सदलो दर्दुरः प्रोक्तो निर्दलः कारवेल्लकः ॥
सत्वपातेवरः पूर्वो द्वितीयश्चौषधादिषु ॥ (र.चू. १०/)

In some ancient texts Rasaka varieties are also described on the basis of scales and layers i.e. Sadala & Nirdala which from modern point of view may be carbonate or silicate and sulphide or oxide respectively.

**Physical Properties–**

In ancient texts there is no much description regarding physical properties. These have mentioned only Raṅga Saṅkāśam. 'Rasa Taraṅginīkāra' has mentioned following properties.

For good variety– which is bright and shining on cutting smooth, clear, soft, heavy and drutadrāva is considered best and recommended for use.

For inferior variety– which is hard, rough, light, dull coloured and melts with difficulty is inferior.

**Pharmacological & Therapeutic Properties[77]–**

**Rasa–** Tiktā, Kaṣāya and Kaṭu.

**Guṇa–** Śīta

**Karma–** Parama Cakṣuṣya, Bala-Vīrya-Buddhi-Vardhaka, Śleṣmakalā Saṅkocakara.

**Doṣa Prabhāva–** Kapha Pittanut.

**Vyādhi Prabhāva–** Prameha, Pāṇḍu, Śwāsa, Kāsa, Netra roga, Niśā sveda, Vraṇa srāva, Kampavāta, Rajaḥśrāva.

**Effects of Unpurified and Un-incinerated Yaśada[78]–**

Following diseases are produced if unpurified and unincinerated Yaśada is used internally – i.e. Prameha, Ajīrṇa, Gulma, Vātavyādhi, Kṣaya, Kuṣṭha, Vamana & Bhrama.

'Āyurveda Prakāśakāra'[79] has said that if any disease is produced with the use of Yaśada then use Balā and Abhayā mixed with Śarkarā for 3 days.

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77. **यशद गुणाः–**
यशदं तुवरं तिक्तं शीतलं कफपित्तहृत्। चक्षुस्यं परमं मेहान् पाण्डुं श्वासं च नाशयेत्॥
(आ.प्र. ३/१८३)

78. अपक्वं यशदं रोगान् प्रमेहाजीर्णमारुतान्। वमिभ्रमं करोत्येतत् शोधयेत्रागवच्च तत्॥

79. बलाभयां सितायुक्तां सेवते यो दिनत्रयम्। यशदस्य विकारस्तु शान्तिभायाति नान्यथा॥

**Śodhana Process**[80]**–**

As per the direction of 'Āyurveda Prakāśa' Yaśada Śodhana may be done just like Vaṅga. And as per the 'Rasāmṛitam' its Śodhana is done as follows–

It should be melted on heat and poured in either cūrṇodaka or in Nirguṇḍī juice for seven times and then collected.

**Process of Jāraṇa–**

It may also be done just like Vaṅga i.e. It is first melted in wide mouth iron pan (Kaṭāha) and added Apāmārga Pañcāṅga powder or the powder of the posta fruit coverings and rubbed with Loha darvī or with Nimba Kāṣṭha till whole metal turns into black powder. The powder of the herbal drugs is added slowly till it is required or to $^1/_4$th part of Yaśada as said in case of Vaṅga. In the end the whole powder is collected at the centre of iron pot, covered with earthen lid and applied strong heat for 2-3 hours and then allowed for self cooling. There after it is collected and seived and may be taken for Māraṇa.

**Māraṇa Process–**

For this Yaśada powder obtained after jāraṇa is subjected to Bhāvanā (Trituration) with Kumārī rasa and made into pellets which on drying are closed in Sarāva saṃpuṭa and applied Gajapuṭa heat. Repeat the Bhāvanā and Puṭapāka process for at least seven times or till a yellowish colour of Yaśada bhasma is prepared. Some scholars mention its colour as white, chemically this may be the oxide compound with traces of some other constituents.

**Dose–** $^1/_2$ to 1 ratti (60-120 mg) mixed with honey.

**Indications–** It is indicated in Prameha, Śwāsa, Kāsa and as Vṛiṣya and Balya. Experimentally it is found to improve spermatogenesis and effective in testicular regeneration.

**Note–** In ancient texts it has been included in Trivaṅga group also. Now a days the importance of Zinc has been accepted in modern medicine also. Its effect on Testes (in the pre-

80. यशदं गिरिजं तस्य दोषाः शोधनमारणे। वङ्गस्येव हि बोद्धव्या गुणांस्तु प्रवदाम्यहम्॥ (आ.प्र. ३/१८२)

vention of Testicular degeneration and in the regeneration of Testicular tissues) and for many other conditions has been found reported. In Ayurveda Trivaṅga group of drugs are considered best for Prameha group of diseases and specially Vṛiṣya and Balya purposes.

For making its bhasma 700°C temp. for one (1) hour is found necessary and such 7-10 heatings are found necessary to make its good quality bhasma (Yellowish colour). Experimentally it was also found to possess Androgenic property on oral administration.

## Pittala (Brass) and Its Processes

Pittal is one of the Miśra loha and known since ancient times. Initially it has been included in Loha group and later on in Miśra loha group along with Kāṁsya and Varta loha. As per Late Śri Yādavaji's view it is made by mixing 2 parts of copper with one part of Zinc and melted togather. In ancient times when Zinc as a separate metal was not known at that time it was being made by mixing Rasaka/Kharpara Satva with Copper. And probably for this reason Rasaka was said as Ritihetu or Rītikṛit. It is also included in Upadhātu group.

**Varieties[81]–**

Since ancient times two varities of Pittala are described i.e.–1. Rīti and 2. Kākatuṇḍī. And ancients have prescribed test also to recognise these varieties, viz.–

If Pittal[82] is heated and put in Kāñjika becomes red like Tāmra then that is considered Rīti, and if it becomes black then it is considered Kākatuṇḍī.

**Physical Properties–**

For superior variety[83]– It should be yellow in colour, soft, heavy, shining, malleable, can resist hammering, smooth and bright and recommonded for use.

81. **पित्तल भेदाः–** रीतिका काकतुण्डी च द्विविधं पित्तलं भवेत्।

82. **पितल परीक्षा–**

संतप्ता काञ्जिकेक्षिप्ता ताम्राभारीतिका शुभा। एवं प्रजायते कृष्णा काकतुण्डीति सा मता॥ (र.चू. १४/१६२)

83. **श्रेष्ठपित्तल गुणाः–**

गुर्वी मृद्वी च पीताभा साराङ्गी ताडनक्षमा। सुस्निग्धा मसृणाङ्गी च रीतिका तादृशीशुभा॥ (र.चू. १४/१६३)

Inferior variety[84]– Whitish or Pale, rough, not malleable, non-resistant to hammering, foul smelling and light in weight and not recommended for use.

**Pharmacological and Therapeutic Properties–**[85,86,87]

**Rasa–** Tikta, Kaṭu, Kaṣāya and Lavaṇa.

**Guṇa–** Rūkṣa, Śīta and Sara (uṣṇa).

**Vīrya–** Uṣṇa

**Karma–** Rasāyana, Vṛiṣya, Kṛimighna, Śodhana, Viṣahara, Jantughna, Nātilekhana.

**Doṣa Prabhāva–** Vātapīttajit, Śleṣmapittaghna

**Vyādhi Prabhāva–** Raktapitta, Kṛimi, Kuṣṭha, Pāṇḍu, Plīharoga and Visajanya roga.

It is said in 'Āyurveda Prakāśa' that Pittala may also have the properties of its constituents metals besides above properties.

The properties of Kākatūṇḍī Pittala as per RRS are as follows– i.e. It is rūkṣa in Guṇa, Tiktā in Rasa and Śīta in Vīrya, Kaphapitta nāśaka and Yakrid plīhahara in Karma.

**Pharmaceutical Processes–**

It should also be used after Śodhana and Māraṇa.

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84. **निकृष्टपित्तल गुणाः–**
पाण्डुराभा खरा रूक्षा वर्वराताडनाक्षमा। पूतिगन्धा तथा लध्वी रीतिर्नेष्टारसादिषु ॥
(र.चू. १४/१६४)

85. **रीतिका गुणाः–**
रीतिस्तिक्तरसा रूक्षा जन्तुघ्नी सास्रपित्तनुत्। कृमिकुष्ठहरा योगात् सोष्णावीर्या च शीतला ॥

86. **काकतुण्डी गुणाः–**
काकतुण्डी गतस्नेहा तिक्तोष्णा कफपित्तनुत्। कृमिकुष्ठाहरा योगात् सोष्णावीर्या च शीतला ॥
(र.चू. १४/१६५-१६६)

87. **रीति गुणाः–**
रीतिकायुगलं रूक्षंतिक्तं च लवणं रसे। शोधनं पाण्डुरोगघ्नं कृमिघ्नं नातिलेखनम् ॥
(आ.प्र. ४/७३)

**Śodhana Process[88]–**

First prepare fine sheets of Pittala and then these are heated strongly on fire and are quenched in Taila, Takra, Kāñjika, Gomūtra and Kulattha Kaṣāya three (3) times in each liquid for Sāmānya Śodhana.

For Viśeṣa Śodhana[89] Pittala sheets are heated and then quenched in Nirguṇḍi rasa mixed with Tṛivṛit powder or by heating in Amla drava. The process may be repeated for five times.

It is also said in 'Āyurveda Prakāśa' that Pittala can also be purified as per the method mentioned for Tāmra.

**Māraṇa Process–[90-91]**

Prepare a paste of sulphur with Arka Kṣīra or prepare a paste of Manaḥśilā and Gandhaka with lemon juice, apply this paste over Pittala sheets, close these in Sarāva saṁpuṭa and subject it to Gajapuṭa heating within 2-3 puṭas black colour pittal bhasma is prepared. The method mentioned for Tāmra Māraṇa could also be followed for its Māraṇa.

**Dose–** $^1/_2$ to 1 Guñjā (60-120 mg)

**Indications–** Kṛimi, Kuṣṭha and Plīharoga.

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88. **शोधनम् –**
तप्ताक्षिप्ता च निर्गुण्डी रसे श्यामारजोऽन्विते । पञ्चवारेण संशुद्धिं रीतिरायाति निश्चितम् ॥
(र.चू. १४/१६७)
पत्तलीकृतपत्राणि कांसरीत्योः प्रतापयेत् । निषिञ्चेत्तप्ततप्तानि तैले तक्रे च काञ्जिके ॥
गोमूत्रे च कुलत्थानां कषाये च त्रिधात्रिधा । एवं कांस्यस्य रीतेश्च विशुद्धिः सम्प्रजायते ॥
(आ.प्र. ४/७५-७६)

89. **विशेष शोधनम्–**
रीतिस्तप्ता तु निर्गुण्डीरसे श्यामारजोऽन्विते । निषिक्ता शुद्धिमायाति पक्का वाम्लद्रवेऽपि च ॥
(आ.प्र. ४/७८)

90. **मारणम् –**
अर्कक्षीरेण संपिष्टो गन्धकस्तेन लेपयेत् । समेन कांस्यपत्राणि शुद्धान्यम्लदवैर्मुहुः ॥
ततो मूषापुटे रुद्ध्वा पुटेद्गजपुरेन च । एवं पुटद्वयात् कास्यं रीतिश्च म्रियते ध्रुवम् ॥
(आ.प्र. ४/७९-८०)

91. कांस्यकं राजरीतिं च ताम्रवच्छोधयेत्भिषक् । ताम्रवन्मारणं चापि तयोरुक्तंभिषग्वरैः ॥
(आ.प्र. ४/८१)

## Kāṁsya (Bell metal) and Its Processes

Just like Pittala, Kāṁsya is also included in Miśra loha/ upàloha or upadhātu group in different texts. This alloy[92] is made of Copper 4 parts and Tin one part togather and then melting on fire. The Kāṁsya made in Saurastra is considered best. It is also called Ghoṣa, Ghana, Saurastraja.

Now a days Kāṁsya is made by mixing 78 parts of Copper with 22 parts of Tin.

**Varieties[93]–**

Its two varieties are mentioned in 'Āyurveda Prakāśa' of these the first one is better. It is .white in colour and used for medicinal purposes. Taila Kāṁsya is Kapiśa (Blackish red) in colour and not recommended for use in medicine.

**Physical Properties[94]–**

**For superior variety–** It produces a loud sound. It is soft, smooth and clear, white in colour but on heating becomes red. It is also bright and shining and could be made into thin wires and sheets.

**For inferior variety[95]–** It is yellowish or reddish in colour.

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92. **कांस्य निर्माण–**
अष्टभागेन ताम्रेण द्विभागं कुटिलं युतम् । विद्रुतेन भवेत्कांस्यं तत्सौराष्ट्रभवं शुभम् ॥ (र.चू. १४/१७४)
उपधातुर्भवेत्कांस्यं द्वयोस्तरणिरंगयो: । ताम्रत्रपुजभाख्यातं कांस्यं घोषं च कंसकम् ॥ (आ.प्र.४/६२)

93. **भेदा:–**
कांस्यं तु द्विविधं प्रोक्तं पुष्पतैलकभेदत: । पुष्पंश्वेततमं तत्र तैलिकं कपिशप्रभम् ॥
एतयो: प्रथमं श्रेष्ठं संसेव्यंरोगशान्तये ॥ (आ.प्र. ४/६५)

94. **कांस्य गुणा:–**
श्वेतं दीप्तं मृदुज्योति: शब्दाढ्यं स्निग्धनिर्मलम् । घनाग्निसहसूत्राङ्गं कांस्यमुत्तममीरितम् ॥ (आ.प्र. ४/७१)
तीक्ष्णशब्दमृदुस्निग्धमीषच्छ्यामलशुभ्रकम् । निर्मलं दाहरक्तं च षोढ़ा कांस्यं प्रशस्यते ॥ (र.चू. १४/१७५)

95. **हेय कांस्य–**
यत्पीतं दहने ताम्रं खरं रूक्षं घनासहम् । मन्दनादं गतज्योति: सप्तधाकांस्यमुत्सृजेत् ॥ (र.चू. १४/१७६)

rough, harsh, can not stand to hammering and not malleable, it produces low sound. It is considered inferior and not recommended for use.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Tikta and Kaṣāya.

**Guṇa–** Uṣṇa, Laghu, Viśada, Sara, Rūkṣa, Guru.

**Vīrya–** Uṣṇa

**Karma–** Dīpana, Lekhana, Vṛiṣya, Dṛik-Prasādana, Sātmyakara, Sukhakara, Ārogyakara, Dṛiḍha-dehadāyī, Swarya, Cakṣuṣya, Laghīya.

**Doṣa Prabhāva–** Kaphavātajit, Vātahara, Vātapittaghna, Kaphapittahara (Ay. Pr.)

**Vyādhi Prabhāva–** Durnāma (Arśas), Netraroga, Prameha, Kṛimi and Kuṣṭha.

As per 'R.P.S.' Mṛita Kāmsya is good for Vātaharaṇa and Pramehanāśana. In 'R. Cud.' and 'R.R.S.' it is said that all the substances than ghrita if kept or eaten in Kāṁsyapātra becomes Ārogyakara, Sukhakara, Hitakara and Sātymyakara to the body. But 'Rasa Prakāśa Sudhākara' has said that all food materials except Anna, Ghrita and Śāka becomes good for health if kept in Kāṁsyapātra.

## Pharmaceutical Processes–

### Śodhana Process–

Kāṁsya sheets heated to red hot are quenched in Taila, Takra, Gomūtra, Kāñjī and Kulattha Kaṣāya for 3-7 times in each liquid for samanya Shodha.

For Viśeṣa Śodhana Kāṁsya should be treated with Aśvamūtra.

### Māraṇa Process–

For this prepare a paste of sulphur and orpiment with lemon juice or prepare a paste of all three Kṣāras and five lavaṇas with lemon juice or Kāñjī. This paste is applied on the Kāṁsya patras, close these in Sarāva Saṁpuṭa and apply heat with Gajapuṭa fire. Repeat the process for 5 times. Its bhasma can also be prepared by giving the Bhāvanā with Arakapatra juice.

Bhasma colour is black like Kajjali.

Besides above a paste of Hiṅgula, Śilā and Gandhaka prepared with lemon juice can also be used for Kāṁsya māraṇa.

**Note–** Though, number of Kāṁsya māraṇa methods are found mentioned in the texts but Gandhaka and Tālaka method is widely used for Kāṁsya māraṇa and five putas are given to prepare Niruttha Kāmsyabhasma.

**Dose–** $^1/_2$-1 ratti (60-120 mg.)

## Varta Loha (An alloy made of five metals) and Its Processes

Varta loha is also included in Miśra loha, upaloha or upadhātu group. It is made of five metals (Kāṁsya, Tāmra, Pittala, Loha and Nāga). These are mixed in equal proportion and melted to make an alloy. It is also called Pañca loha and Biḍa loha.

Late Prof. D.A. Kulakarni and some other scholars are of the view that it may be taken as German silver but in my view it is not correct as the composition of German silver is – Copper 60 parts, Zinc 20 parts and Nickel 20 parts. As such it consists only three metals while Varta loha consists five metals.

It is said in 'R.R.S.' all the foods cooked in this vessel becomes Dīpana, Pācana and Hitakara except amla (acidic) materials.

### Pharmacological and Therapeutic Properties–

**Rasa–** Amla, Kaṭu. **Guṇa–** Hima/Śīta, Rūkṣa.

**Vīrya–** Śīta.

**Karma–** Rucya, Twacya, Krimighna, Netrya, Dīpana, Pācana, Malaviśodhana.

**Doṣa Prabhāva–** Kaphapittanāśana.

**Vyādhi Prabhāva–** Netraroga, Galaroga, Sarvaroga.

### Pharmaceutical Processes–

### Śodhana Process–

First with Sāmānya śodhana method i.e. Taila Takrādi Nirvāpa and for Viśeṣa Śodhana Ajāmūtra or Aśvamūtra Nirvāpa is done.

### Māraṇa Process–

Prepare a paste with Gundhaka and Tālaka with lemon juice or Arka Kṣīra. It is pasted on Vartaloha sheets and subject these to Gajaputapāka for 5 times. The colour of bhasma is not mentioned.

Its bhasma is claimed as Yogavāhī and may be used in preparing different Yogas. Generally its use is not common.

**Dose–** $^1/_2$ to 1 ratti (60-120 mg.)

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# CHAPTER-5
# DESCRIPTION OF MINERALS, THEIR GROUPS AND THEIR PHARMACEUTICAL PROCESSING TECHNIQUES

## Classification of Minerals of Medicinal Importance–

In Rasaśāstra a few minerals having their mercurial and medicinal importance are found mentioned. Though, these minerals are found used since ancient times but during ancient times their use was very much limited. Their frequent use in mercurial operations and Rasāyana purposes has started only after the development of Rasaśāstra i.e. 8th/9th cent. A.D. and onwords. In this period these minerals were grouped in following subgroups on the basis of their usefulness in mercurial operations. The groups are Mahārasa, Uparasa and Sādhāraṇa rasa.

The minerals found highly useful are included in Mahārasa group, less useful are in Uparasa group, very little useful are in Sādhāraṇa rasa group. Usually eight minerals are included in each group with little variation in their names.

## MINERALS OF I. MAHĀRASA GROUP

The Table showing the different minerals being included in Mahārasa group as per different Texts

| S. N. | Name of mineral | Name of the Texts | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rasā | R.H.T. | R.Cū | R.P.S. | R.R.S. | R.Pad. | R.K.D. |
| 1. | Abhraka | – | – | + | + | + | + | + |
| 2. | Vaikrānta | – | + | + | + | + | + | + |
| 3. | Mākṣika | + | + | + | + | + | + | + |
| 4. | Vimala | + | + | + | + | + | – | – |
| 5. | Śilājatu | + | + | + | + | + | + | + |
| 6. | Sasyaka | + | + | + | + | + | + | + |
| 7. | Capala | + | – | – | – | + | + | + |
| 8. | Rasaka | + | + | + | + | + | – | + |
| 9. | Rājāvarta | – | – | + | + | – | – | – |

| S. N. | Name of mineral | Name of the Texts | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Rasā | R.H.T. | R.Cū | R.P.S. | R.R.S. | R.Pad. | R.K.D. |
| 10. | Srotonjana | + | – | – | – | – | – | – |
| 11. | Hiṅgula | + | + | – | – | – | – | + |
| 12. | Kānta loha | – | + | – | – | – | – | – |
| 13. | Tuttha | – | – | + | – | – | + | – |

1. Rasā = Rasārṇava, 2. R.H.T. = Rasa Hṛidaya Tantra, 3. R.Cu.= Rasendra Cuḍāmaṇi, 4. R.P.S. = Rasa Prakāśa Sudhākara; 5. R.R.S. = Rasa Ratna Samuccaya, 6. R. Pad = Rasa Paddhati, 7. R.K.D. = Rasa Kāma Dhenu.

## Description of Abhraka (Mica)

**Mythological Origin**[1]– It is believed that once upon a time when lord Indra has taken up his weapan Vajra in his hand to kill a Demon Vṛitrāsura severe sparking is produced from Vajra along with loud (roaring) sound. A few sparks have fallen on some of the peaks of the hills on the earth and in due course of time these turned into ABHRAKA pieces.

**Groups**–Abhraka is included in Śaktivarga and Mahārasa[2,3] varga (groups) as per different texts.

**Varieties**– According to Ayurvedic Rasa texts Abhraka varieties are described as follows–

**(A) According to Colour**[4]–

1. Śveta – White – Useful in Śveta Karma

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1. **अभ्रक उत्पत्ति–**

पुराबधांयं वृत्रस्य वज्रिणा वज्रमुद्धृतम्। विस्फुलिङ्गास्ततस्तस्य गगने परिसर्पिता: ॥
ते निपेतुर्घनध्वाना: शिखरेषु महीभृताम्। तेभ्य एव समुत्पन्नं तत् गिरिषु चाभ्रकम् ॥
(आ.प्र. २/८८-८९)

2,3. **महारस द्रव्याणि–**

महारसा: स्युर्घनराजवर्त्तवैक्रान्तसस्या विमलाद्रिजाते।
तुत्थं च ताप्यञ्च रसायनास्ते सत्वानि चैषाममृतोपमानि ॥ (र.चू. १०/१)
क्रमेण गगनं ताप्यं वैक्रान्तं विमलं तथा। रसकं शैलसम्भूतं राजावर्त्तकसस्यके ॥
एते महारसाश्चाष्टावुदिता रसवादिभि: ॥ (र.प्र.सु. ५/२)

4. अभ्रभेदा:–

श्वेतं रक्तं च पीतञ्च कृष्णमेवं चतुर्विधम्। श्वेतं श्वेतक्रियासूक्तं रक्ताभं पीतकर्माणि ॥
(र.चू. १०/९)

2. Rakta – Red (Ruby)– Useful in Rakta Karma.
3. Pīta – Yellow – Useful in Pīta Karma.
4. Kṛiṣṇa – Black – Useful in Rasa and Rasāyana Karma.

All the four varieties are said to be useful in Rasāyana karma however black[5] one is highly useful for this purpose.

**(B) According to Form and Behavior towords Fire–**

1. Pināka[6]– On heating its layers seperate from each other.

2. Nāga[7]– On heating it produces hissing sound like snakes.

3. Maṇḍūka[8]– On heating it breaks into pieces which jumps like frogs.

4. Vajra[9]– On heating it remains unchanged.

**(C) According to Occurance[10]–**

1. Uttara Śailottha (Produced from North hills) – Good, Satvayukta

2. Dakṣiṇa Śailottha (Produced from South hills)–Inferior, Swalpa Satva.

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5. चतुर्विधं वरं व्योम यद्यप्युक्तं रसायने। तथापि कृष्णवर्णाभ्रं कोटि कोटिगुणाधिकम्॥ (र.चू. १०/१०)

6. **पिनाकादि भेदाः–**
पिनाकनागमण्डूकवज्रमित्यभ्रकमतम्। पिनाकं पावकोत्तप्तं विमुञ्चति दलोच्चयम्॥ (र.चू. १०/५)

7. तत्सेवितं मलं वह्नेषा मारयत्येव मानवम्। नागाभ्रं नागवत्कुर्याद् ध्वनिं पावकसंस्थितम्। तद्भुक्तं कुरुते कुष्ठं मण्डलाख्यं न संशयः॥ (र.चू. १०/६)

8. उत्प्लुत्योत्प्लुत्य मण्डूकं ध्मातं पतति चाभ्रकम्। तत्कुर्यादशमरीरोगमसाध्यं शस्त्रतोऽन्यथा॥ (र.चू. १०/७)

9. वज्राभ्रं बह्निसंतप्तं निर्मुक्ताशेषवैकृतम्। देहलोहकरं तच्च सर्वरोगहरं परम्॥ (र.चू. १०/८)
वज्रं तु वजवन्निष्ठेन चाग्नौ विकृतिं भजेत्। सर्वाभ्रेषु वरं वज्रं व्याधिवार्धक्यमृत्युजित्॥ (आ.प्र. २/९७)

10. **अभ्रक संग्रह-स्थान–**
अभ्रमुत्तरशैलोत्थं बहुसत्वं रसायनम्। दक्षिणाद्रिभवं स्वल्पसत्वमल्पगुणोत्तरम्॥ (आ.प्र. २/९९)

**Occurrence and Collection–**

Abhraka occurs[11] in both North and South mountains and should be collected from the depth of $22^1/_2$" from its mines.

**Physical Properties for Superior Variety[12]–**

It should be smooth, heavy, should have thick and easily seperable layers and unchanged on heating is considered best. Other than this is inferior.

**Modern Description–**

Although, the members of mica group vary greatly from chemical point of view. They possess neverthless many characteristics in common. This group comprises a series of silicates charateried by such perfect cleavages that have extremely thin lamillies which may be split from each other. The crystals of this group are apparently hexgonal or orthorhombic in development, but they all belong to the monoclinic group.

The micas are silicates of varying composition of aluminium and potassium containing hydroxyl, magnesium, iron, sodium, lithium and flourine. The silica content varies between 33-55%. All the micas yeild water content when heated in a closed tube. They fuse with difficulty.

Micas may be divided into four subgroups–

1. Magnesium–iron micas, 2. Calcium micas.

3. Lithium iron micas.

4. Alkali micas. Of the last there are three subdivisions– (1) Lithia mica (2) Potash mica and (3) Soda mica.

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11. अभ्रंगृहीतं खनितोभिषग्भिः संखन्य सम्यक् पुरुषप्रमाणम्।
तद्भारवत्सत्त्वफलप्रदं स्यादुणाधिकं स्वल्पगुणं ततोऽन्यत्॥ (आ.प्र. २/१००)

12. **प्रशस्ताभ्रक–**
स्निग्धं पृथुदलं वह्निसहं स्याद्भारतोऽधिकम्। सुखनिर्मोच्य पत्रं च तदभ्रंशास्तमीरितम्॥
(र.चू. १०/११)
अग्राह्याभ्रकलक्षमानि सचन्द्रं काचकिट्टाभं व्योमन ग्रासयेद्रसम्॥
ग्रसितश्चेन्न योज्योऽसौ लोहे चैव रसायने॥ (र.चू. १०/१२)

In alkali mica the principal metallic constituents, besides Aluminium are Lithium, Potassium and Sodium. The mica in which Lithium is predominent is known as 'Lepidolite'. That in which Potassium is most abundent is 'Muscovite' and that in which Sodium is most predominent is 'Paragonite'. Of these muscovite is the commonest.

The varieties of micas described in Āyurvedic Rasa texts based on colours may be corelated with the following varieties described in modern literature–

1. Śveta (White) with Muscovite.
2. Rakta (Red/Rose-red) with lepidolite.
3. Pīta (Yellow) with Phlogopite and
4. Krisṇa (Black) with Biotite.

**1. Biotite-Black Mica– Ferromagnesium Mica–**

Its crystals are generally found in plates or disseminated scales.

Hardness– 2.5-3, Sp.Gr. 2.7-3.2, Dark brown or black in colour, transparent to opaque. The composition varies greatly and may contain Titanium, Magnesium and Sodium. It fuses with difficulty. Slightly effected by Hcl, Completely decomposes by hot concentrated Sulphuric acid.

Biotite is an extemely common mica, being an important constituent with Muscovite. Commercially it is of little use.

**2. Muscovite-White or Potash Mica–**

Crystal are often large and rough, measuring at times several feets in diameter. Large crystals may show distinct partings. The term wadge mica is applied to the crystals which are thicker at one end and thin at the other end. Usually occurs in scaly and foliated aggragates. Highly perfect basal cleavage, permitting very thin transparent and elastic leaves. Hardness 2.3, Sp.Gr. 2.8-3.1, colour less, yellowish, brownish or reddish (Ruby mica). Transparent to translucent. Pearly to Vitrious lustre.

It frequently contains small amounts to Calcium, Lithium, Magnesium, Iron and Sodium. Muscovite is generally considered. to be the most common mica. The usual associates are feld spar, quartz, Turmaline, Scryl, spodumanes, Garnet, Apatite and Fluorite. Because of its transparancy it is employed for many purposes for which the darker 'Biotite' is not suitable.

**3. Lepidolite-Lithium or Ruby Mica–**

The crystals are usually scally granular masses often resembling granular limestone and in tabular cleavable plates. Hardness 2.4, Sp.Gr. 2.8 to 2.9, Rose-red and lilac in colour, also white, grey, greenish or brown. Pearly lustre, translucent.

Some varieties contain Rubidium and Calcium, on blow pipe colours the flame and fuses to a white gloss. After fusion easily acted upon by acids. 'Lepidolite' is an important source of lithium compounds. The common associates are Turmaline, Spodumane, Ambligonite, Cassiterite, Muscobite, Albite and Topaz. It occurs almost exclusively as aggregates of thin plates with hexagonal outline.

The rose or purple variety contain a little manganese. The streak of all lepidolite is white.

**4. Phlogopite–Magnesium or Amber Mica–**

Its crystals usually resemble those of Biotite in form and habit and are sometimes large and coarse. They may be hexagonal or rhombic in outline. Commonly found in disseminated scales, plates or aggregates.

Highly perfect basal cleavage. Thin laminates are tough and elastic. Sp. Gr. 2.8-3, Pearly to submetallic lustre. Colour may be silvery grey, yellow, brown, green, copper or bronze red. Thin leaves are transparent and after show asterisk.

Usually contain small amount of iron and sodium on blow pipe it whitens and fuses at thin edges. Slightly acted upon by Hcl. But readily decomposes by hot concentrated sulphuric acid.

It occurs in crystalline magnesium limestone, dolomites schists, serpentine, peridolite and leucite basalt.

**Reasons for the Purification of Abhraka[13]–**

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13. **शोधन हेतु–**

सत्वार्थं सेवनार्थं च योजयेच्छोधिताभ्रकम् । अन्यथा त्वगुणं कृत्वा विकरोत्येव निश्चितम् ॥ (र.चू. १०/१५)

पीडां विधत्ते विविधां नराणां कुष्ठं क्षयं पाण्डुगदं च शोफम् ।
हृत्पार्श्वपीडां च करोत्यशुद्धमभ्रं हितद्वद् गुरु वह्निहत्स्यात् ॥ (आ.प्र. २/१०३)

Unpurified Abhraka if used internally is likely to increase Kapha and Vāta doṣa and also causes Āyunāśa, Śarīra-Pīḍā, Kuṣṭha, Kṣaya, Pāṇḍu roga, Śopha, Hritpārśvapīḍā, Gaurava and Agni nāśa hence it should be purified before internal use.

**Method of Śodhana (Purification)–**

**A. Procedures Used for Abhrak Purification[14]–**

1. Heating to red hot and quenching into prescribed liquids for seven times into each liquid.

2. Bhāvanā (Trituration into prescribed liquids) for 8 yāmas.

**B. Drugs/Liquids Prescribed for Śodhana–**

Badari[15] Kvātha nimajjana (Considered best as it may convert Abhraka more fine than Dhānyābhraka.)

Kāñjī, Godugdha, Triphalā Kvātha, Kulattha Kvātha, Takra, Gomūtra, Bhṛiṅgrāja swarasa, Taṇḍulīya drava, Amla drava, Punarnavā rasa, Meghnāda rasa.

**Dhānyābhraka Nirmāṇa[16] Method–**

**(A) Procedure Used For–**

Purified Abhraka mixed with Dhānya (Paddy grains) is made into a poṭṭali (Bundle) and is kept immersed in Kāñjī for three days. On 4th day it is rubbed vigorously to allow most of the fine Abhraka particles to pass through into liquid (Kāñjī). The liquid is then filtered to collect fine particles of Abhraka.

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14. **अभ्रक शोधनम्–**

प्रतप्तं सप्तवाराणि निक्षिप्तं काञ्जिकेऽभ्रकम्। निर्दोषं जायते नूनं निक्षिप्तं वापि गोजले ॥
त्रिफला क्वथिते वापि गवां दुग्धे विशेषतः ॥ (र.चू. १०/१६-१६½)

वज्राभ्रकं धमेद्वह्नौ ततः क्षीरे विनिक्षिपेत्। सप्तधा भिन्नपत्रं तु तण्डुलीयाम्लयोर्द्रवैः ॥
भावयेदष्टयारं तदेवं शुद्ध्यति चाभ्रकम् ॥ (आ.प्र. २/१०९)

15. अथवा बररीक्वाथे ध्मातमभ्रंविनिक्षिपेत्। मर्दितं पाणिना शुष्कं धान्याभ्रादतिरिच्यते ॥ (आ.प्र. २/११२)

16. चूर्णाभ्रं शालिसंयुक्तं वस्त्रवद्बंहि काञ्जिके। निर्यातं मर्दनात् यावद् धान्याभ्रमितिकथ्यते ॥ (आ.प्र. २/११५)

पादांशशालिसंयुक्तमभ्रकं कम्बलोदरे। त्रिरात्रं स्थापयेन्नीरे तत्क्लिन्नं मर्दयेद्दृढम् ॥
कम्बलाद् गलितं श्लक्ष्णं वालुकारहितं चयत् ॥ तद्धान्याभ्रमिति प्रोक्तमभ्रमांरणसिद्धये ॥ (र.सा.सं. १/१५४)

**(B) Drugs and Their Proportion–**

Dhānya $^{1}/_{4}$th part, Abhraka purified 1 part, Kāñjī as required and a piece of blanket or jute piece, thrick cloth piece as required.

**Pharmacological and Therapeutic Properties[17]–**

**Rasa–** Kaṣāya, Madhura, **Vīrya–** Śīta

**Guṇa–** Snigdha, **Vipāka–** Madhura

**Karma–** Dīpana, Balya, Prajnābodhī, Praśamita ruja, Vṛiṣya, Āyuṣya, Sūtendra bandhi, Saukhya janana, Rūpaprada, Pācana, Rogaghna, Mṛityuharaṇa, Sarīra dārḍhyakara, Vīryastambhakara, Vīryabṛiddhikara, Smṛitikara, Sadhyaḥ Prāṇa vardhana, Yogavāhī, Pumstvakara, Santānakara, Rasāyana, Kāminīmada darpaghna, Dhātuvivardhana.

**Doṣa Prabhāva–** Vātapittaghna, Akaphakara, Tridoṣaghna.

**Vyādhi Prabhāva–** Kṣaya, Jarā, Balī, Palita, Pāṇḍu, Grahaṇī, ĀmaŚūla, Koṣṭhāmaya, Jwara, Aruci, Śwāsa, Kāsa, Mandāgni, Jaṭhara Vyathā, Pañcavidhagulma, Udara roga, Arśa, Mūtrakṛicchra, Bhūtaroga, Unmāda, Śophāmaya, Kāmalā, Mṛityu.

**Method for Abhraka Māraṇa (Bhasmīkaraṇa)–**

**Procedure Used–** 1. Bhāvanā and Puṭapāka.

**Drugs Used–** Herbal and mineral drugs (Ṭaṅkaṇa, Mercury & Sulphur)

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17. **अभ्रक गुणाः–**

अभ्रं कषायं मधुरं सुशीतंमायुष्करं धातुविवर्धनं च ।
हन्यात्त्रिदोषव्रणमेहकुष्ठ प्लीहोदरग्रन्थिविषक्रिमींश्च ॥ (आ.प्र. २/१०१)

गौरीतेजः परममृतं वातपित्तक्षयघ्नं प्रज्ञावोधि प्रशमितरुजं वृष्यमायुष्यमग्र्यम् ।
बल्यं स्निग्धं रुचिदमकफं दीपनं शीतवीर्यं तत्तद्भोगैः सकलगदहृद् व्योमसूतेन्द्रबन्धि ॥
(र.चू. १०/२)

रोगान्हन्ति दृढ़यति वपुं वीर्यवृद्धिं विधत्ते तारुण्याढ्यं रमयतिशतं योषितां नित्यमेव ।
दीर्घायुष्यान् जनयतिसुतान् विक्रमैः सिंहतुल्यान् मृत्योर्भीतिं हरति सततं सेव्यमानं मृताभ्रम् ॥
(आ.प्र. २/१०२)

कामिनीमददर्पघ्नं शस्तं पुंस्वोपघातिनाम् । वृष्यमायुष्करं शुक्रवृद्धिसन्तानकारकम् ॥
(आ.प्र. २/१२१)

**Bhāvanā Drugs Used–** Kāsamarda, Punarnavā, Matsyākṣī, Vāsā, Taṇḍulīya, Mustā, Haṁsapādī, Vaṭamūla-Kaṣāya, Eraṇḍamūla/Patra Kaṣāya, Gaḍa, Arka dugdha.

**Type and Number of Puṭas Used–** Ardha Gajapuṭa–Gajapuṭa 10-100-1000.

**Fuel Used–** Cow dung cakes about 50 K.G. for each puṭa.

**Apparatus Used–** Sarāva Saṁpuṭa.

**Colour and test of Bhasma–** Red/Aruṇa, Deep red, Brick colour, Sindūra Sadṛiśa. Niścandra, Locanāñjana Sannibha, Susūkṣma, Vāritara.

**Commonly Used Procedure[18]–**

For this Dhānyabhraka should be ground with Kāsamarda rasa, made into pellets, dried and closed in Sarāva Saṁpuṭa and applied Gajapuṭa fire. If ground properly good quality red coloured Abhraka bhasma is prepared within 10-100 putas.

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18. **अभ्रक मारणम्–**

धान्याभ्रं कासमर्दस्य रसेन परिमर्दितम्। प्रपुटेद्दशवारेण म्रियते नात्र संशयः॥
(आ.प्र. २/१२३)

प्रपुटेच्छतवारेण म्रियते नात्र संसयः॥ (र.चू. १०/२९)

तद्वन्मुस्तारसेनापि तण्डुलीयरसेन च। वटमूलत्वचः क्काथैस्ताम्बूलपत्रसारतः॥
वासामत्स्याक्षिकाभ्यां च मत्स्याक्ष्याः सकठिल्लया॥ (र.चू. १०/३१-३२)

पयसावटवृक्षस्य मर्दितं पुटितं घनम्। भवेद्विंशतिवारेणसिन्दूरसदृशंघनम्॥
(र.चू. १०/३३)

सटंकणं गवांदुग्धै पिष्टं प्रपुटितं घनम्। निश्चिन्द्रिकं भवेद्वारैस्त्रिंशद्भिर्गुणवत्तरम्॥
ततोधान्याभ्रकं कृत्वा पिष्ट्वामत्स्याक्षिकारसैः। चक्रीं कृत्वा विशोष्याथ पुटेदर्धमके पुटे॥
पुटेदेवं हि षड्वारं पौनर्नवरसेन च। अभ्रांशटंकणेनापि संमर्घकृतचक्रिकम्।
अर्धेभाख्यैः पुटैस्तद्वत् सप्तवारं पुटेत् खलु। एवं वासारसेनापि तण्डुलीयरसेन च॥
प्रपुटेत्सप्तवाराणि पूर्वप्रोक्तविधानतः। एवं सिद्धं घनं सर्वयोगेषु विनियोजयेत्॥
(र.चू. १०/१७-२०)

एवं सिद्धानि चाभ्राणि तालेन पुटितानि चेत्। भवन्त्यतीव तीव्राणि रसादप्यधिकानि च॥
(र.चू. १०/३५)

In this way Abhraka bhasma may be prepared by triturating it with following drug's juices, viz– Mustā rasa, Taṇḍulīya rasa, Vaṭamūla Kvātha, Tāmbūla patra rasa, Vāsā rasa, Matsyākṣīrasa, Vaṭa dugdha, Ṭaṅkaṇa, Godugdha and Punarnavā rasa.

As regards type of puṭa the texts have mentioned Ardha Gaja puṭa and Gajapuṭa. But as per our experience use always Gajapuṭa fire for preparing Abhraka bhasma.

As regards number of putas, as per[19] the texts 1 to 100 and 1000 puṭas have been mentioned depending upon the method and purposes the different drugs are used for but as per our experience Kāsamarda rasa is commonly used and with this bhāvanā if ground well and Gajapuṭa fire is used Niścandra and Aruṇa coloured bhasma is prepared within 10-20 putas. We may go for 100 putas to make it therapeutically more potent and useful. As regards 1000 putas the texts have recommended for this but 1000 putas need long duration and 64 types of different drugs have been mentioned for this purpose and the effectiveness of 1000 puty bhasma is also not properly established as such the author is not in a position to make any comment on this point.

As regards the qualities of Abhraka bhasma it should be free of any shining, very fine and should contain at least iron oxide along with Al, Magnessium, Silica etc. constituents.

It is also mentioned in the texts that to make Abhraka bhasma more powerful it should be mixed with Tālaka (Orpiment – $As_2S_3$) and applied puṭas. Author has no experience but there is a possibility of being more potent and powerful because of the presence of Arsenic in the bhasma though may be in traces only.

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19. **बहुपुटफलम् –**

रौक्ष्यं सौक्ष्यं जलप्लावः शोणवर्णसमुद्भवः । विचित्रगुणदीप्तिश्च जायते बहुभिः पुटैः ॥ (र.चू. १०/३६)

पुटसंख्यानुसारं फलम् –

दशादिस्तु शतान्तः स्याद् व्याधिनाशनकर्मणि । शतादिस्तु सहस्रान्तपुटा देया रसायने ॥ सहस्रपुटपक्षे तु भावनापुटनं भवेत् ॥

**Amritīkaraṇa Method[20]–**

Amritīkaraṇa is a process by which certain bhasmas are made just similar to Amṛita (Nactor) in properties and texts have mentioned that by this treatment remaining doṣas (Bad or side or toxic effects) of the Bhasmas are minimised or removed. It is done as follows–

**Procedure for Amritīkaraṇa–**

Mix 10 palas of Abhraka bhasma[20. a,b] with 10 palas of Triphalā Kaṣāya and 8 palas of Goghrita. The mixture is heated on mandāgni (slow fire) in an iron pan till the liquid evaporates. The remaining may be powdered and used as Abhraka bhasma.

In another method Abhraka bhasma[20. c] mixed with equal part of ghee and heated in an iron pot till ghee becomes Jirṇa. Then the remaining powder may be used for all purposes.

**Method for Internal Use of Abhraka Bhasma[21]–**

For internal use Abhraka bhasma may be used in one Valla 2-3 Guñjā (250-350 mg.) dose mixed with Viḍaṅga Cūrṇa and Trikaṭu Cūrṇa and also ghee in cases of Kṣay Pāṇḍu. Grahaṇī, Āmaśula, Koṣṭha roga, Jwara, Śwāsa, Prameha Aruci, Kāsaroga of severe type Mandāgni and Udara Śūla.

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20. **अमृतीकरणम् –**
अरुणभस्मस्तु पुनरमृतीकरणेन गुणवृद्धिर्वर्णहानिश्च भवति। (आ.प्र. २/१३५)

(a) त्रिफलोत्थ कषायस्य पलान्यादाय षोडश। गोघृतस्य पलान्यष्टौ मृताभ्रस्य पलान् दश। एकध्यं लोहपात्रेतु पाचयेन्मृदुवह्निना॥ द्रवेजीर्णे समादाय सर्वरोगेषु येजयेत्॥
(आ.प्र. २/१३७)

(b) वराम्बुगोघृतं चाभ्रं कलाषड्दिक्समांशकम्। मृद्वाग्निना पचेल्लौह्यममृतीकरणंत्विदम्॥
(आ.प्र. २/१३८)

(c) तुल्यं घृतं मृताभ्रेण लोहपात्रेविपाचयेत् घृते जीर्णेतश्चूर्णं सर्वयोगेषुयोजयेत्॥
(आ.प्र. २/१३९)

21. **प्रयोगविधि गुणाश्च–**
वेल्लव्योषसमन्वितं घृतयुक्तं वल्लोन्मितं सेवितं दिव्याभ्रंक्षयपाण्डुरुक् ग्रहणिकाशूलामकोष्ठाभयम्।
जूर्त्तिश्वासगदं प्रमेहमरुचिं कासामयं दुर्धरं मन्दाग्निं जठरव्यथां विजयते योगैरशेषामयान्॥
(र.चू. १०/५३)

**Satvapātana Method[22]–**

Satva pātana means the extraction of essential part (metal content) of mineral which is done by mixing mineral with certain Kṣāra, Amla, Herbal and a few animal drugs and by heating strongly in a Koṣṭhīyantra.

**Mineral drugs used for–** Ṭaṅkana, Sarjikṣāra, Saindhava lavaṇa. Mākṣika, Pārada and purified lead.

**Animal products used for–** small fishes, Mṛigasṛiṅga, Mahiṣīmala, Pañca gavya, Pañcāja, Pañcamāhiṣa, Gomūtra, Avidugdha, Urṇā etc.

**Herbal drugs used for–** Tila, Guñjā, Godhūma, Lakṣā, Sarṣapa, Yavakṣāra, Piṇyāka, Sūraṇa, Kadalīmūla. Musalīmūla, Punarnavā, Vāsā, Kāsamarda, Haṁsapādī, Matsyākṣī, Mustā etc.

**Procedure used for–** Mix some of the above prescribed drugs, grind well, prepare their piṇḍ/Vaṭaka, dry in sun rays, keep in Mūṣā and apply strong heat till melting of mixture, maintain the melting for specified duration and get the metal content separated on cooling.

**Nature of heat needed–** Strong heat through Satvapātana Koṣṭhī sufficient for melting the mixture and seperating Satva (metal content of mineral).

**Satva colour–** Lohanibha or Kāṁsya nibha Satva. (in case of Abhraka).

**Method for Satva Ekīkarana[23]–**

If Satva is obtained in small granules then collect these and mix these with the drugs of Mitrapañcaka group and apply strong heat in Mūṣā to make these to unit by mixing (melting).

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22. **अभ्रक सत्वपातनम् –**

पादांशटंकणोपेतं मुसलीरसमर्दितम् । रुन्ध्यात् कोष्ठ्यां दृढ़ध्मातं सत्वरूपं भवेद्घनम् ॥
(र.चू. १०/२१)

पादांशटंकणयुतं शफरैः समेतं पिण्डीकृतं तु बहुधा महिषीमलेन ।
संशोष्य कोष्टगतमाशुधमेद् हठाग्नौ सत्वं पतत्यतिरसायनजारणार्थम् ॥ (आ.प्र.२/१४१-१४२)
योग्यं भवेत्सकलोह गुणाधिकं च ॥

23. **सत्वैकीकरणम् –**

कणशोयत्भवेत्सत्वं मूषायां प्रणिधाय तत् । मित्रपञ्चकयुग्ध्मातमेकीभवति घोषवत् ॥
घृतमधुगुग्गुलुगुञ्जाटंकणमेतत्तु मित्रपंचकं नाम । मेलयतिसप्तधातूनङ्गाराग्नौ तु ध्मानेन ॥
(आ.प्र. २/१४३-१४४)

**Method for Satva Mṛidūkaraṇa[24]–**

For this Satva should be heated strongly till melting and the same may be quenched in Madhu, Taila, Vasā and ghee for several times. Thus, very hard satva (metal) gets converted into soft.

**Method for Satva Śodhana and Māraṇa[25]–**

As iron like metal is obtained as Satva from Abhraka hence that should also be treated with Śodhana and Māraṇa method before it is used internally.

Its Śodhana and Māraṇa should be done just like iron (loha).

**Uses of Abhraka Satva[26]–**

So processed and obtained Abhraka Satva is considered to posses best properties and may be used either for Jāraṇa Karma of Rasa (Mercury) or for internal use as Rasāyana.

**Properties of Abhraka Satva[27]–**

Abhraka Satva is considered Śīta in guṇa and Vīrya, Tridoṣa nāśana in karma, it is said to improve male sex power, checks ageing process. There is no better medicine known which may improve male sexual power or male fertility power. And those who use Satva internally will certainly get their ageing process checked.

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24. **सत्वमृदूकरणम् –**
मधुतैलवसाज्येषु द्रावितं परिवापितम् । मृदुस्याद्दशवारेण सत्वं लोहादिकं खरम् ॥
(र.चू. १०/४६)

25. **सत्वशोधनम् –**
अथ सत्वकणांस्तान् तु क्वाथयित्वाम्लकांजिकैः । शोधनीयगणोपेतं मूषामध्ये निरुध्य च ।
सम्यक् द्रुतं समाहृत्य द्विवारं प्रधमेत्पुनः ॥ इति शुद्धं भवेत्सत्वं योज्यं रसरसायने ॥
(र.चू. १०/४४-४५)

**सत्वशोधनमारणम्–**
अयोवच्छोधनंतस्य मारणं तद्वदेवं तु (र.चू. १०/)

26. **सत्वप्रयोग–**
एवं संसाधितं व्योमसत्वं सर्वगुणोत्तरम् यथेष्टं विनियोक्तव्यं जारणे च रसायने ॥
(र.चू. १०/५२)

27. **सत्वगुणाः–**
शिशिरंसत्वमस्त्रस्य त्रिदोषघ्नं रसायनम् विशेषात्पुंमस्त्वकारिस्यात् वयसः स्तम्भनं परम् ॥
नानेन सदृशं किञ्चिद्भैषज्यं पुस्त्वकृत्परम् सत्वसेवी वयस्तम्भं लभते नात्रसंशयः ॥
(आ.प्र. २/१४७-१४८)

Besides this it is said in texts that Abhraka satva is considered best material for Rasa Pakṣa Kartana (for cutting the wings of mercury) means making mercury thermostable.

## VAIKRĀNTA (Manganese ore or Turmalin) VARṆANAM

**Mythological Origin**[28]– It is said in ancient texts that Vaikrānta got its origin from the blood of Mahiṣāsura. It is also said about Vaikrānta that it got its origin from the unformed or deformed diamonds.

**Groups–** It is included in Mahārasa and Uparasa groups as per ancient texts.

**Occurance–** Vaikrānta occurs in the northern and southern parts of Vindhyācala.

**Varieties**[29]– In 'Rasārṇava' and 'Rasa Mañjary' its seven varieties are found mentioned, viz–

1. Śweta (White)
2. Rakta (Red)
3. Pīta (Yellow)
4. Nīla (Blueish)
5. Pārāvataprabha (grey)
6. Śyāmala (Reddish black)
7. Kṛiṣṇa (Black)

But in 'Rasendra Cintāmaṇi'[29] its eight varieties are found mentioned. It has added 'Karbura' to the above seven varieties.

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28. **वैक्रान्त उत्पत्तिः–**

देव्याहते महादैत्ये महिषासुरसंज्ञके । तद्देहरुधिरोद्भूताविन्दवो यत्र यत्र हि ॥
पतिता विन्ध्यकाद्रेस्तु दक्षिणोत्तरतो रणे । वज्राकारास्तु ते जाता वैक्रान्ता इति विश्रुताः ॥
(आ.प्र. २/१६०-१६१)

विकृता वज्रखण्डा ये वैक्रान्ताख्यां भजन्ति ते । जातयः शोधनं हिंसा गुणास्तेषां तु वज्रवत् ॥
(आ.प्र. २/१६२)

29. **भेदाः–**

श्वेतो रक्तश्च पीतश्च नीलः पारावतच्छविः । श्यामलः कृष्णवर्णश्च कर्बुरश्चाष्टधा हि सः ॥
(र.चू. १०/६२)

30. **स्वरूपम्–**

अष्टास्रश्चाष्टफलकः षटकोणो मसृणो गुरुः । शुद्धमिश्रितवर्णैश्च युक्तो वैक्रान्त उच्यते ॥
(र.चू. १०/६१)

वैक्रान्तः कृष्णवर्णो यः षट्कोणो वसुकोणकः । मसृणो गुरुतायुक्तो निर्मलः सर्वसिद्धिदः ॥
(आ.प्र. ५/१६५)

Of these Śweta, Kṛiṣṇa and Tāmra varṇa Vaikrāntās find their uses in therapeutics.

**Nirukti– (Root meaning)**

'विकृन्तयति लोहानि रोगाणि दोषाण्यि वेति वैक्रान्तः।' It can change the form or shape of Lohas (metals) Rogas (diseases) and doṣas (humers) hence it is called Vaikrānta.

**Properties of Vaikrānta**[30]**–**

**Physical Properties–** It has eight edges (Aśra/Dhāra), eight surfaces (Phalakas), six angles (Koṇas), Masṛiṇa (Smooth), Guru (Heavy), Kṛiṣṇa (Black colour) and Nirmala (clean). Such Vaikrāntas are considered to be of superior quality. In addition to that which can not resist heating/hammering, that which could remove the impurities of metals and that which possess all the characteristics of diamonds is also considered as the best one.

**Pharmacological and Therapeutic Properties**[31]**–**

**Rasa–** Ṣaḍ-rasa (Possess all the six rasas), **Vīrya–** Śīta

**Guṇa–** Guru, Śīta, **Vipāka–** Madhura

**Karma–** Āyuprada, Balavarṇakara, Ativṛiṣya, Prajnāprada, Sakaladoṣahārī, Sakala gadāpahārī, Agnidīptikara, Pavi samāna guṇa, Tarasvī, Lohakārī, Rasāyana of high potency, Vapurbalakārī, Vegaprada, Vīryakārī, Rasabandhakara, Deha dārḍhyakara, Viṣaghna, Rasarāja, Sarvarogahartā. It is one of the best amongest all Rasāyanas. Pratapavān.

**Doṣa Prabhāva–** Tridoṣaghna, Sakaladoṣahara.

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30. See footnote 30 on the page 165.

31. **गुणाः–**

आयुप्रश्च बलवर्णकरोऽति वृष्यः प्रज्ञाप्रदः सकलदोषगदायहारि।
दीप्ताग्निकृत् पविसमानगुणस्तरस्वी वैक्रान्तकः खलु वपुर्बललोहकारी ॥ (र.चू.१०/६३)
रसायनेषु सर्वेषु पूर्वगण्यः प्रतापवान्। वज्रस्थाने नियोक्तव्यो वैक्रान्तः सर्वरोगहा ॥
(र.चू. १०/६४)
वैक्रान्तस्तु त्रिदोषघ्नः षडरसो देहदार्ढ्यकृत्। पाण्डूदरज्वरश्वासकासयक्ष्मप्रमेहनुत् ॥
(आ.प्र. ५/१६७)
वैक्रान्तो वज्रसदृशो देहलोहकरो मतः। विषध्नो रसराजश्च ज्वरकुष्ठक्षयप्रणुत् ॥
(आ.प्र. ५/१६६)

**Vyādhi Prabhāva–** Sakalaroga, Pāṇḍu, Jwara, Śwāsa, Kāsa, Yakṣmā, Prameha, Kṣaya, Arśa, Duṣṭa grahaṇī, Urahkṣata, Kuṣṭha, Udara roga.

**Method for Śodhana[32]–**

**Necesity for Śodhana–** It is said in 'Āyurveda Prakāśa' that Aśuddha (impure) Vajra (Diamond) and Vaikrānta (Turmaline) may cause Kilāsa, Dāha, Pārśvapīḍā and Pāṇḍu roga hence these should be purified before internal use.

**Procedure for Śodhana[33]–**

It should be subjected to Svedana in boiling Kulattha Kvātha or quenched in horse urine after heating to red hot.

**Procedures–** 1. Svedana (Heating in boiling liquid)

2. Siñcana (Heating and quenching in liquids for several times)

**Method for Māraṇa[34]–**

**Procedure–** It should be mixed with equal part of Gandhaka and triturated with Nimbu (Lemon) juice and then subjected to puṭapāka with Gajapuṭa fire, within eight puṭas its bhasma is made.

**Drugs Used–** Gandhaka, **Bhāvanā Drug–** Nimbu juice

**Type and Number of Puṭa–** Gajapuṭa pāka for 8 times

**Bhasma Colour–** Not mentioned

**Note–** Its māraṇa may also be done as per the methods mentioned for Vajra (Diamond). And it may be used in place of Vajra (Diamond).

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32. **शोधन हेतुः–**
अशुद्धौ वज्रवैक्रान्तौ किलासंदाहसन्ततिम् । पार्श्वपीडां तथा पाण्डुं कुरुतस्तौ विशोधयेत् ।। (आ.प्र. ५/१६८)

33. **शोधनम्–**
कुलत्थक्काथसंस्विन्नो वैक्रान्तः परिशुद्ध्यति । (आ.प्र. ५/१७०)
वैक्रान्तो बज्रवच्छोध्यो ध्मातः सिम्तोऽश्वरमूत्रके । (आ.प्र. ५/१६९)

34. **मारणम्–**
म्रियतेऽष्टपुटैर्गन्धनिम्बुकद्रवसंयुतः । (र.चू. १०/६५)
वज्रवन्मृतिमाप्नोति वज्रस्थाने प्रयोजयेत् ।। (आ.प्र. ५/१६९)

**Method for Satvapātana**[35]**–**

**Procedure–** Mix Satvapātasna drugs with Vaikrānta, triturate it with prescribed liquids, prepara its balls, put these in Mūṣā after drying, apply strong heat through Koṣṭhī yantra. Through this method Satva (Metal content of Vaikrānta) may be extracted. About the Satva colour the ancient scholars are not unanimous. Some call it similar to Indragopa (Red), some Loha nibha (Black) and others Śaṅkha Kundendu Saṅkāśa (White) probably because of its identity is uncertain.

**Drugs Used–** Ṭaṅkaṇa $^1/_4$th part. Guñjā, Piṇyāka, Citrakamūla.

**Bhāvanā Drugs–** Arka dugdha, Śigrudrava.

**Procedure–** Vaṭaka nirmaṇa

**Apparatus–** Mūṣā and Koṣṭhī yantra.

**Heat–** Strong heat.

**Satva Colour–** Red, black or white.

## MĀKṢIKA (Pyrite) VARṆANAM

**Mythological Origin**[36]**–** (I) Lord Viṣṇu has made a Golden liquid (exudate) comming out of Suvarṇa Śaila as Mākṣika in Tāpi river, Kirāta, Yavana deśa and China. In Tāpī river this Golden liquid when heated by sun heat converts in Suvarṇa Mākṣika having the Golden shining just like Gold. It is Madhura in rasa and that which gives shining just like silver is Amla in Rasa.

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35. **सत्वपातनम्–**

सत्वपातनयोगेन मर्दिश्च बटीकृतः । मूषास्थो घटिकाध्मातो बैक्रान्तः सत्वमुत्सृजेत् ॥
(र.चू. १०/६६)

वैक्रान्तानां पलं चैकं कर्षैकं टंकणस्य च । रविक्षीरैर्दिनं भाव्यं मर्द्यं शिग्रुदवैर्दिनम् ॥
गुञ्जापिण्याकबह्वीनां प्रतिकर्षाणि योजयेत् । एतेन गुटिकां कृत्वा कोष्ठयन्त्रे धमेद्दृढम् ॥
शंखकुन्देन्दुसंकाशं सत्वं वैक्रान्तजं भवेत् ॥ (आ.प्र. ५/१७२-१७३$^1/_2$)

**सत्ववर्णम्–**

शोधमित्वा धमेत्सत्वमिन्द्रगोपनिभं भवेत् । (रसार्णव)
पतति वैसत्वम् – अभ्रवैक्रान्तप्रभृतीनां तत्र लोहनिभम् । (र.ह.त.)

36. **माक्षिक उत्पत्तिः–**

सुवर्णशैलप्रभवो विष्णुना काञ्चनो रसः । ताप्यां किरातचीनेषु यवनेषु च निर्मितः ॥
ताप्यां सूर्यांशुसंतप्तो माधवे (वैशाखे) मासि जायते । मधुरः काचनाभासः साम्लो रजतसन्निभः ॥
(अ.सं.उ.त. ४९/)

(II) Mākṣika is said to have its origin from the drops of blood falling from the injured foot sole of Lord Kṛiṣṇa.

**Group**[37]– It is included in Mahārasa group (R.C./R.R.S.) and in 'Updhātu' group by 'Āyurveda Prakāśa'.

**Synonyms**[38]– Suvarṇa Mākṣika, Dhātu Mākṣika, Tāpya, Tāpīja.

**Nirukti**[39]–

1. It is called Suvarṇa Mākṣika either due to its Golden appearance or due to the presence of Gold in traces and in place of Gold swarṇamākṣika is used.

2. As the mineral resembles Madhu (honey) in its colour and behaviour or reaction towards fire it is called Mākṣika.

3. As it is formed by being dried due to intense sun rays heat in Vaiśakha (April-May) it is called Tāpya.

4. As it occurs on the banks of Tapatī or Tāpī river hence it is called Tāpīja.

**Occurence**[40]–.

As per ancient texts it is said to occur in Kānya Kubja deśa Tapatītīra, Kirāta, Chīna and Yavanadeśa. But now a days it is

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37. **वर्गनिर्देशः–**
अभ्र वैक्रान्त माक्षीक विमलाद्रिजसस्यकम्
चपलो रसकेश्चेति ख्यातास्तेतुमहारसाः ॥
उपधातुः सुवर्णस्य किंचित्स्वर्ण गुणैः समम् । (आ.प्र. ४/२)

38. **पर्यायाः–**
स्वर्णमाक्षिकमाख्यातं तापीजं मधुमाक्षिकम् । ताप्यं माक्षिकधातुश्च माक्षिकं चैवतन्मतम् ॥

39. **निरुक्तिः–**
किंचित्सुवर्णसाहित्यात् त्स्वर्णमाश्रिकमीरितम् । (आ.प्र.)
ताप्यः सूर्यांशुतंतप्तो माधवे मासि जायते ॥ (अ.सं.)
तपतीतीरतोऽपिस्यात्

40. **उत्पत्तिःस्वरूपम्–**
सुवर्ण शैलप्रभवो विष्णुना काञ्चनो रसः । तापीकिरातचीनेषु यवनेषु च निर्मितः ॥
(अ.सं. उ.त. ४९/)
तत्राद्यो माक्षिकः कान्यकुब्जोत्थः स्वर्णसन्निभः । तपतीतीरसम्भूतः पञ्चवर्णसुवर्णवत् ॥
पाषाणबहुलः प्रोक्तस्ताराख्योऽसौगुगाल्पकः ॥ (र.चू. १०/१२९-३०)

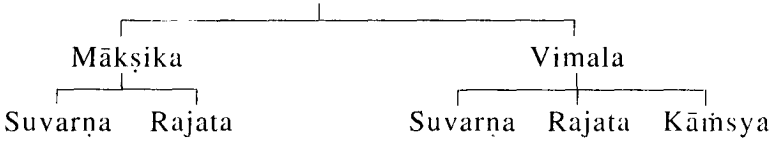
mainly obtained from Japan, Spain, U.S.A., Portugal, Italy, Norway and Cyprus.

The Kānya Kubjottha Suvarṇa Mākṣika is Golden yellow in colour just like Gold. The Tapatītīrja Mākṣika is just like five coloured Gold. It is Pāṣāṇa bahula and alpaguṇa and called Tāramākṣika.

**Varieties**[41]**–**

As per colour– 1. Hema Mākṣika– Golden yellowish
2. Tāra Mākṣika – Whitish like Silver
3. Kāṁsya Mākṣika – Reddish grey.

As per appearance– Tāpīja




As per occurance–1. Kānyakubjottha– Swarna Sannibha
2. Tapatī tīrasaṁbhūta – Tārasannibha.

**Modern Description of Pyrite–**

Pyrite mineral is brittle. Its hardness is 6.5-6; Sp.Gr. about 5; lustre very brilliant & metallic; colour-brassy yellow, streak greenish or brownish black, good conductor of electricity and strongly thermo-electric. It burns with characteristic blue flame.

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41. **भेदाः–**

माक्षिको द्विविधो हेममाक्षिकस्तारमाक्षिकः । तत्राद्यो माक्षिकः कान्यकुब्जोत्थःस्वर्णसन्निभः ॥
तपतीतीरसम्भूतः पञ्चवर्णसुवर्णवत् । पाषाणबहलः प्रोक्त स्ताराख्योऽसौ गुणाल्पकः ॥
(र.चू. १०/१२९-१३०)

स्वर्णमाक्षिकमाख्यातं तापीजं ताप्यमाक्षिकम् । किञ्चित्सुवर्णसाहित्यात्स्वर्णमाक्षिकमीरितम् ॥
उपधातुः सुवर्णस्य किञ्चित्स्वर्णगुणैः समम् । द्रव्यान्तरस्य संयोगात्सन्त्यन्येऽपि गुणा यतः ॥
तथापि काञ्चनाभावे दीयते स्वर्णमाक्षिकम् । कान्यकुब्जाख्यविषये जायते स्वर्णमाक्षिकम् ॥
तततीतीरतोऽपिस्यादित्येवंतद् द्वियेनिकम् ॥ कान्यकुब्जोद्भवं ताप्यं विज्ञेयं स्वर्णवर्णकम् ।
तपतीतीरगं यत्तु पञ्चवर्णसुवर्णवत् ॥ (आ.प्र. ४/१-६)

माक्षिको द्विरिहादिमकनकरुक् दुर्वर्णवर्णोऽपरः ।
कांस्यश्रीकमुशन्ति केचन परं सर्वेऽपि पूर्वत्विशः ॥ (आ.प्र. ४/३२)

तापीजं द्विरुदाहरन्ति विमलामाक्षीकभेदादिह । (आ.प्र.)

The globule remaining after heating is magnetic. The mineral is dissolved in nitric acid. Pyrite in some of its forms resembles Gold so closely that it is often known as fool's Gold. Chalcopyrite is scratched readily with knife, blade or a foil, while pyrite resists both as it does not contain copper.

**Physical Properties**[41A]**–**

Mākṣika are said to be Niṣkoṇa (no angles), Guru (Heavy), Snigdha (Smooth), Suvarṇa Varṇa (Bright golden yellow colour with slight bluish tinge). When rubbed on Nikaṣa (Touching stone) produce golden lining but if rubbed on hand produce black colour on hand. On fracture it seems to be golden in colour, it is soft, brittle and could be cut with a knife. On extraction (Strong heating) it yeilds Satva (Metal) similar to copper in colour.

**Pharmacological & Therapeutic Properties**[42]**–**

**Rasa–** Tiktā, Madhura. **Vīrya–** Śīta

**Guṇa–** Śīta, Laghu **Vipāka–** Kaṭu

**Karma–** Balya, Yogavāhī, **Ras**āyana, Parama Vṛiṣya, Cakṣuṣya, Sakalāmayaghna, Rasendra prāṇa, Guṇottara, Viṣaghna, Durmela loha dvayamelana panam.

**Doṣa Prabhāva–** Tridoṣaghna, Kaphapittahara.

**Vyādhi Prabhāva–** Kṣaya, Pāṇḍu, Prameha, Kuṣṭha, Grahaṇī, Arśa, Kṛimi, Viṣa, Udararoga, Śotha, Kaṇḍu, Mandāgni, Kāmalā, Śoṣa, Swarabhaṅga, Aruci, Āmadoṣa, Viṣūcikā, Nānārūpajwara, Jīrṇajwara, Vastirujā, Apasmāra, Arocaka, Anidrā, Sarvavyādhi- Vināśana.

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41A. **भौतिक गुणाः–**

स्वर्णाभं स्वर्णमाक्षिकं निष्कोणं गुरुतायुतम्। कालिमां विकिरेत्ततु करे घृष्टं न संशयः ॥
स्वर्णवर्णं गुरु स्निग्धमीषन्नीलच्छविः स्फुटम्। कषे कनकवद् घृष्टं तद्वरं हेममाक्षिकम् ॥
(आ.प्र. ४/७-८)

निष्कोणा गुरवः किरन्ति निभृतं घृष्टां करे कालिमाम्। (र.प.) आ.प्र. ४/३२

42. माक्षिकधातुः सकलामयघ्नः प्राणो रसेन्द्रस्य परं हि वृष्यः।
दुर्मेललोहद्वयमेलनश्च गुणोत्तरः सर्वरसायनाग्र्यः ॥ (र.चू. १०/१३१)

स्वर्णमाक्षिकं स्वादु तिक्तं वृष्यं रसायनम्। चक्षुष्यं वस्तिहृत्कण्ठपाण्डुमेहं विषोदरम् ॥
अर्शः शोफं विषं कण्डूं त्रिदोषमपि नाशयेत् ॥ (आ.प्र. ४/९-१०)

वृष्याः पाण्डुपरीयसो बलकरा योगोपयुक्ताः पुनः। (र.प. (आ.प्र. टीका)

**Diseases Caused by Impure Mākṣika[43]–**

As impure and unincinerated Mākṣika is likely to cause following diseases if used internally. It produces Mandāgni, Ugra (very much) Balahāni, Viṣṭaṁbha, Netra roga, Kuṣṭha and Gaṇḍamālā etc. diseases.

**Method for Śodhana[44]–**

**Procedure–** 1. Pācana in Lohapātra with prescribed liquids till redness.
2. Svedana by Dolāyantra in boiling liquid for one Yāma.
3. Puṭapāka in prescribed Kalka or Kanda.

**Drugs Used for–** Luṅgāṁbu, Amla drava, Takra, Kulatha Kvātha, Varākvātha, Kadalīkanda toya, Gomūtra, Jaṁbira rasa, Āranāla, Kodrava Kvātha, Śigrumūla Kalka, Sūraṇa Kanda, Kṣāra, Amla, Taila Eraṇḍa, Ghṛita.

**Method for Māraṇa[45]–**

**Māraṇa Drugs–** Gandhaka, Eraṇḍa taila, Goghrita.

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43. **अशुद्धामारित दोषाः–**
मन्दानलत्वं बलहानिमुग्रां विष्टम्भितां नेत्रगदान्सकुष्ठान्।
मालां विधत्तेऽपिच गण्डपूर्वां शुद्ध्यादिहीनं खलुमाक्षिकं च ॥ (आ.प्र.४/११)

44. **शोधनम्–**
एरण्डतैललुङ्गाम्बु सिद्धं शुद्ध्यति माक्षिकम्। सिद्धं च कदलीकन्दतोये च घटिकाद्वयम् ॥
तप्तं क्षिप्तं वराक्वाथे शुद्धिमायाति माक्षिकम् ॥ (र.चू. १०/१३२)
माक्षिकस्य त्रयोभागा भागैकं सैन्धवस्य च। मातुलुङ्गद्रवैर्वाऽथ जम्बीरस्यद्रवैः पचेत् ॥
चालयेल्लोहजे पात्रे यावत्पात्रं सुलोहितम्। भवेत्ततस्तु संशुद्धं स्वर्णमाक्षिकमत्र तु ॥
(आ.प्र. ४/१२-१३)

45. **मारणम्–**
मातुलुङ्गाम्बुगन्धाभ्यां पिष्टं मूषोदरे स्थितम्। पञ्चक्रोडपुटैर्दग्धं म्रियते माक्षिकं खलु ॥
एरण्डतैलगव्याज्यैर्मातुलुङ्गरसेन च। खर्परस्थं दृढं पक्वं जायते धातुसन्निभम् ॥
एवं मृतं रसे योज्यं रसायनविधावपि ॥ (र.चू. १०/१३३-१३५)
माक्षिकस्य चतुर्थांशं दत्वा गन्धं विमर्दयेत्। उरुवूकस्य तैलेन ततः कार्यास्य चक्रिकाः ॥
शरावसम्पुटे धृत्वा पुटेद्गजपुटेन च। सिन्दूराभं भवेद्भस्म माक्षिकस्य न संशयः ॥
(आ.प्र. ४/१४-१५)
कुलत्थस्य कषायेण घृष्ट्वा तैलेन वा पुटेत्। अजामूत्रेण वा नूनं म्रियते स्वर्णमाक्षिकम् ॥
(आ.प्र. ४/१६)

**Bhāvanā Drugs–** Matuluṅga rasa, Bijapūra rasa, Ajāmūtra, Kulattha kvātha.

**Apparatus–** Mūṣā, Kharpara, Sarāva saṁputa.

**Type and Number of Puṭa–** Kroḍa (Varāha) puṭa – 5, Gajapuṭa– 10, only Agnipāka in Lohapātra till redness.

**Bhasma Colour–** Rakta like Gairika or Sindūra.

**Method for Satva-pātana[46]–**

**Satvapātana Drugs–** 30th part of Nāga, Bhasma, Kṣāra Traya, Amla Varga, Guñjā, Madhu, Ṭaṅkaṇa, Eraṇḍa taila, Mūtra varga, Eraṇḍa taila.

**Procedure Used–** Bhāvanā, Grinding, Vaṭaka nirmāṇa, Sūryātapa Śoṣaṇa.

**Apparatus Used–** Mūṣā (Prakaṭa), Koṣṭhiyantra, Vaknanāla.

**Agnimātrā–** Tīvrāgnidhmāpana.

**Satva Colour–** Śulva nibha, Guñjābija Samacchāyam.

## Rajata Mākṣika (Iron Pyrite – Marcasite) Varṇanam

**Group–** Mahārasa group.

**Utpatti (Origin)[47]–** Tapatītīra Saṁbhūta. It accurs on the

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46. **सत्वपातनम्–**

त्रिंशांशनागसंयुक्तं क्षारैरम्लैश्च मर्दितम्। ध्मातं प्रकटमूषायां सत्वं मुञ्चति माक्षिकम्॥

नाग नाशनम्–

सप्तवारं परिद्राव्य क्षिप्तं निर्गुण्डिकारसे। माक्षिकसत्वसंमिश्रं नागं नश्यति निश्चितम्॥

सत्ववर्णम्–

गुञ्जाबीजसमच्छायं द्रुतद्रावं च सीसवत्। ताप्यसत्वं विशुद्धं तु देहलोहकरं परम्॥

(र.चू. १०/१३६-१३८)

एरण्डोत्थेन तैलेन गुञ्जा क्षौद्रं च टंकणम्। मर्दितं तस्य वापेन सत्वं माक्षिकजं भवेत्॥

मूत्रवर्गाम्लवर्गैश्च द्विसप्ताहं विभावयेत्। माक्षिकं तीव्रधर्मेण दिनमम्लैश्च मर्दयेत्॥

मूत्रपञ्चकसंयुक्तं वटीं कृत्वा दृढं धमेत्। व्योमवद्रक्रनालेन सत्वं शुल्वनिभं पतेत्॥

(र. रत्नाकर)

47. **तारमाक्षिकम्–**

तारमाक्षिक मन्यत्तु तद्भवेद्रजतोपमम्। किंचिद्रजतसाहित्यात्तारमाक्षिकमुच्यते॥

न केवलं रौप्यगुणा वर्त्तन्ते तारमाक्षिके। द्रव्यान्तरस्य संयोगात्सन्त्यन्येऽपि गुणा यतः॥

(आ.प्र. ४/१८-१९)

तपतीतीरसम्भूतः पञ्चवर्णसुवर्णवत्। पाषाणबहुलः प्रोक्त स्ताराख्योऽसौगुणाल्पकः॥

(र.चू. १०/१३०)

banks of Tapatī river. It resembles with Pañcavarṇa Suvarṇa in colour (very little golden shining) and just like Silver white. It may contain silver in some amount hence it is called Tāramākṣika. This does not contain only silver like properties rather due to the presence of other contents in major amount, its properties differ. As per 'Rasendra Cūḍāmaṇi' it contains more amount of stony portion hence it may have less therapeutic properties.

**Modern Description–**

Its crystals – orthorhombic, usually twinned, commonly massive, hardness 6-6.5; Sp.Gr. 4.8-4.9; lustre-metallic,

**Colour–** Pale brass yellow to steel grey, darker on exposer, usually brighter in colour then pyrite, streak-greenish black.

**Composition–** Fe 46.6-53.4% may contain at times Arsenic and Copper also, powder Marcasite dissolves inconcen-trated nitric acid with separation of sulphur while py rite does not. It is not found so abundently as pyrite. When massive difficult to distinguish from Pyrite, Galena, Calcite, Florite and Sphelerite.

**Physical Properties[48]–**

As it contain more of stony portion it yeilds less Satva (metal) when heated. Its colour is said to possess brilliant white colour very much similar to Kāṁsya (Bell-metal). When rubbed on Nikaṣa (Touching stone) gives linnings similar to Silver. It is heavy, smooth and white in colour.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Slightly Tikta **Vipāka–** Madhura
**Guṇa–** Rūkṣa, Uṣṇa **Karma–** Vṛiṣya, Rasāyana, Cakṣuṣya

**Reasions for Its Śodhana[49]–**

It also possess undesired effects (doṣas) like that of swarṇa mākṣika hence to remove those doṣas it should be subjected to Śodhana.

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48. **भौतिकगुणाः–**
कांस्यवच्चाकचिक्याढ्यं कषे घृष्टं तु रूप्यवत् । गुरु स्निग्धं सितं यत्तच्छ्रेष्ठं स्यात्तारमाक्षिकम् ॥
(आ.प्र. ४/२१)

49. स्वर्णमाक्षिकवद्दोषा विज्ञेयास्तारमाक्षिके । अतस्तद्दोषशान्त्यर्थं शोधनं तस्य कथ्यते ॥
(आ.प्र. ४/२२)

**Śodhana & Māraṇa[50]–**

The Śodhana and Māraṇa of Tāra Māksika may be done just like Swarṇa Mākṣika.

## VIMALĀ (Iron Pyrite) VARṆANAM

**Group–** Mahārasa varga (R.R.S.), Upadhātu Varga (A.P.)

**Utpati[51]–** As per 'Rasa Pakāśa Sudhākara' and 'Āyurveda Prakāśa' Tāpīja is said to be of two types, viz– Vimalā and Mākṣīka. Of the two Vimalā has three types on the basis of its shining i.e. Suvarṇa, Kāṁsya and Rajatacchāya.

**Varieties[52]–** Vimala is of three types– viz–

1. Suvarṇa Vimala 2. Kāṁsya Vimala

3. Rajata Vimala.

These are recognised with the shining of above three metals. It is also said in 'Āyurveda Prakāśa' that it is found in the hills at the vicinity of Tapatī river banks. And some scholars are of the opinion that according to 'Rasārṇava' following three varieties of Vimala are described, viz– 1. Śukla, 2. Pīta and 3. Lohita.

Their uses– 1. Hema Vimalā – Hema Karma – best

2. Raupya Vimalā – Raupya Karma – better

3. Kāṁsya Vimalā – Auṣadhi Karma – good.

**Modern Description–**

As per ancient scholars it is obtained in the hills situated in the vicinity of Tapti tīra. But now a days in India it is available in Assama, Orissa, Bangal, Bihar, Hyderabad, Mysore and Madras. Its crystals are common often large and in cubes, also

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50. स्वर्णमाक्षिकवज्ज्ञेयं तारमाक्षिकमारणम् ।।

51. तापीजं द्विरुदाहरन्ति विमलामाक्षिकभेदादिह त्रेधाऽधातु सुवर्णकांस्यरजतच्छायानुकारादमूः । (र.प्र.सु.)

विमलस्तपतीतीरवर्त्तिन्यद्रिविभागके उत्पद्यते परैः कांस्यमाक्षिकोऽयमिति स्मृतः ।। (आ.प्र. ४/२८)

52. त्रेधास्याद्विमल्लः स्वर्णपूर्वकः कांस्यपूर्वकः । रूप्यपूर्वश्च विख्यातस्तत्तत्कान्त्या स लक्षते ।। (आ.प्र. ४/२७)

massive and disseminated. Fracture-uneven, hardness– 6-6.5, Sp. Gr.– 5-5.2, lustre– metallic or opaque. Mineral is brittle, colour–pale, brassy or golden yellow. Streak-greenish to brownish black. It contains Fe 46.6% and S 53.4%, may contain Cobalt, Nickle, Copper, Arsenic and Gold in varying amounts. Decomposes readily specially in moist atmosphere. Pyrite is the most common sulphide mineral hence it is found very widely distributed. It is usually associated with other sulphides, such as Galena, Chalcopyrite, Sphelerite, and Arsenopyrite. Commonly found in quartz with native Gold.

**Physical Properties**[53]**–**

That which is Vartula (round), Koṇa saṁyukta (with angles), Phalakānvita (with cubes), Snigdha (smooth), Dhārayukta (with edges) and which have the brilliancy is considered best.

From modern point of view it may have three to four surfaces, chemically it is a combination of Iron and Sulphur mainly may contain Nickle, Cobalt in small amounts to which its different colours may be attributed like-white, yellow or reddish. It is also called **cubic sulphide of Iron**. It may contain one molecule of Iron and two molecule of Sulphur. It gives the smell of Sulphur dioxide when put into fire.

**Pharmacological and Therapeutic Properties**[54]**–**

| | |
|---|---|
| **Rasa–** X | **Vipaka–** X |
| **Guṇa–** Snigdha, Guru | **Karma–** Vṛiṣya, Atirasāyana. |
| **Virya–** X | **Doṣa Prabhāva–** Marut pittahara. |

**Vyādhi Prabhāva–** Pāṇḍu, Prameha, Śūla, Aruci, Grahaṇī, Jwara, Yakṣmā, Kāmalā, Arśa, Bhagandara.

**Method for Śodhana–**

**Procedure used for–** 1. Bhāvanā in Sun-rays.
2. Svedana in Dolāyantra.

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53. **भौतिक गुणाः–**
त्रिस्रोऽप्यस्रयुता चतुस्रिफलकावृत्ताः स्वनामश्रियः ।
वर्तुलः कोणसंयुक्तः स्निग्धश्चफलकान्वितः ।

54. **गुणाः–**
मरुत्पित्तहरो वृष्यो विमलोऽति रसायनः ॥ (आ.प्र. ४/३०)

**Drugs used for–** Karkoṭī drava, Meṣaśriṅgī drava, Jaṁbīra drava, Raṁbhā toya, Āranāla, Kṣāra drava, Amla drava.

**Method for Māraṇa–**

Procedure for. Māraṇa– Bhāvanā and Puṭapāka.

Drugs used for– Gandhaka, Niṁburasa, Lakuca drava,

Apparatus used for– Sarāva Saṁpuṭa.

Type and number of Puṭa used– 10 – Gajapuṭas.

Bhasma colour– Reddish.

**Satvapātana Method–**

**Procedure used–** Bhāvanā, Mardana, Vaṭaka Nirmāṇa. Mūṣodarasthāna, Lepana, strong heating

**Drugs used for–** Ṭaṅkaṇa, Kāṁkṣī, Kāsīsa, Vajra Kanda, Lakuca drava, Mocaka kṣāra.

**Apparatus used for–** Mūṣā, Koṣṭhi yantra.

**Agnimātrā–** 6 Prastha Kokila. Tibrāgnidhmāpana

**Satva colour– Sīsasannibha, Candrārka Saṁkāśa.**

**Method of use**[55]**–** It should be used with Viḍaṅga, Trikaṭu cūrṇa, Triphalā cūrṇa and ghee in Bhagandara etc. diseases.

## ŚILĀJATU (Mineral pitch/Asphalt) VARṆANAM

**Group**[56]**–** Mahārasa group.

**Origin**[57]**–** It is an exudate comming out of mountains of Himālaya on being heated through the intense sun heat during summer. This exudate is just like Lākṣā in properties and it possesses a smell similar to cow's urine, hence it is called Gomūtra gandhi. The other variety of Silajatu occurs in Alkaline earth, it burns in fire and produce sparkings, it is white in colour just like Karpūra and granular.

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55. **सेवन गुणाः–**
वेल्लत्र्योषवराज्येन विमलः परिसेवितः। भगन्दरादिकान् रोगान् नृणांजयतिदुस्तरान्॥
(आ.प्र. ४/३१)

56. See footnote 2,3 on the page 153

57. **शिलाजतु उत्पत्तिः–**
ग्रीष्मेतीव्रार्कतप्रेभ्यः पादेभ्यो हिमभूभृतः। स्वर्णरूप्यार्कगर्भेभ्यः शिलाधातुर्विनिः सरेत्॥
निदाघे सूर्यसंतप्ता धातुसांर धराधराः। निर्यासबत् प्रभुञ्जन्ति तच्छिलाजतुकीर्त्तितम्॥

**Varieties[58]–** Two main varieties of Śilājatu are described in the texts, viz. – Gomūtra Gandhi Śilājatu, it is blackish in colour just like Coal Tar.

2. Karpūra Śilājatu. It is white like Karpūra (Camphur) and burns in fire and produce sparking.

A. On the basis of its origin it is of two types — Acalodbhava (Sasatva, Niḥsatva); Ūṣarodbhava

B. On the basis of its metallic content it is of four or six types, viz–

1. Hemagarbha
2. Tāragarbha
3. Tāmragarbha
4. Lohagarbha

'R.R.S'

5. Nāgagarbha
6. Vaṅgagarbha

'R. Cint.' 'R.K.D.'

**Nirukti–** As it is obtained from the Śilas (stones) as an exudate and burns in fire just like Lākṣā which is also an exudate of some kind of herbs hence it is known as Śilājatu.

**Physical Properties[59]–**

**1. Hemagarbha Śilājatu–** It is red just like Japāpuṣpa, Guru (heavy in wt.) and Gomūtra gandhi.

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58. **भेदाः–**

शिलाजतु द्विधा प्रोक्तो गोमूत्राद्योरसायनः। कर्पूरपूर्वकश्चान्यस्त त्राद्यो द्विविधः पुनः॥
ससत्वश्चैव निःसत्वस्तयोः पूर्वो गुणाधिकः॥ (र.चू. १०/९५)
शिलाजतु द्विधाप्रोक्तं तत्राघं गिरिसम्भवम्। द्वितीयं क्षारभूम्यांस्यान्मृत्तिकाजलयोगतः॥
(आ.प्र. ४/९३, ९५)
सौवर्णं राजतं ताम्र मायसञ्च प्रकीर्तितम्। (आ.प्र. ४/९५)

59. **प्रत्येक लक्षणानि–**

स्वर्णगर्भ गिरेर्जातं जपापुष्पनिभं गुरु। स स्वल्पतिक्तं सुस्वादु परभतद्रसायनम्॥
रूप्यगर्भगिरेजति मधुरं पाण्डुरं गुरु। शिलाजं पित्तरोगघ्नं विशेषात्पाण्डुरोगहृत्॥
ताम्रगर्भगिरेर्जात नीलवर्णं घनं गुरु। शिलाजं कफवातघ्नं तिम्तोष्णं क्षयरोगनुत्॥
(र.चू. १०/९७-९९)
यत्तुगुग्गुलु संकाशं तिक्तं च लवणान्वितम्। विपाके कटुशीत च सर्वश्रेष्ठं तदायसम्॥
(आ.प्र. ४/१००)
सौवर्णं तु जपापुष्पवर्णं भवति शैलजम्। मधुरं कटुतिक्तं च शीतलं कटुपाकि च॥
राजतं पाण्डुरं शीतं कटुकं स्वादुपाकि च। ताम्रं मयूरं कण्ठाभं तीक्ष्णमुष्णं च जायते॥
लोहं जटायुपक्षाभं सतिक्तं लवणं भवेत्।

**2. Tāragarbha Silajatu–** It is Pāṇḍu (Pale- light white) and Guru and Gomūtra gandhi.

**3. Tāmragarbha Śilājatu–** It is Barhi Kaṇṭhābha (Blue in colour), Ghana, Guru and Gomūtra gandhi.

**4. Lohagarbha Śilājatu–** It is just like Guggulu, Jaṭāyu-pakṣābha– Guru, Mridu and Kriṣṇa.

**Pharmacological Properties of Each Variety[60]–**

**Hema Garbha Śilājatu–**

**Rasa–** Madhura, Tikta, Kaṭu. **Vipāka–** Kaṭu
**Guṇa–** Guru, Śīta **Karma–** Parama rasāyana
**Vīrya–** Śīta **Dosa Prabhāva–** Vātapittahara

**Raupya Garbha Śilājatu–**

**Rasa–** Tikta, Kaṭu **Vipāka–** Madhura
**Guṇa–** Guru Śīta **Karma–** Pittarogaghna
**Vīrya–** Śīta **Doṣa Prabhāva–** Śleśma Pittaghna
**Vyādhi Prabhāva–** Pāṇḍuroga

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60. **गुणाः–**

विपाके कटुकं शीतं सर्वश्रेष्ठ मुदाहृतम् ।। गोमूत्रगन्धि यत्कृष्णं स्निग्धं मृदुतथा गुरु ।
तिक्तं कषायंशीतं च सर्वश्रेष्ठं तदायसम् ।। (आ.प्र. ४/९६-९९)

नूनं सज्वरपाण्डुशोफशमनं मेहाग्निमाद्यापहं मेदःच्छेदकरं च यक्ष्मशमनं मूत्रामयोन्मूलनम् ।
गुल्मप्लीह विनाशनं जठरहृच्छूलघ्नमामांपहं सर्वत्वग्गदनाशनं किमपरं देहे च लोहे हितम् ।।
रसोपरससूतेन्द्ररत्नलोहेषुये गुणाः । वसन्ति तेशिलाधार्ती जरामृत्युजिगीषमा ।।
(र.चू. १० (१०१-१०२)

शिलाह्वं कटुतिक्तोष्णं कटुपाकं रसायनम् । छेदि योगावहं हन्ति कफमेहाश्मशर्कराः ।।
मूत्रकृच्छ्रं क्षयं श्वासं वाताशर्सि च पाण्डुताम् । अपस्मारं तथोन्मादं शोथकुष्ठोदरकृमीन् ।।
(आ.प्र. ४/१०३-१०४)

न सोऽति रोगो भुवि साध्यरूपो जत्वश्मजं यं न जयेत्प्रसह्य ।
तत्कालयोगै र्विधिवत्प्रयुक्तं स्वस्थस्य चोर्जां विपुलां दधाति ।। (आ.प्र.४/१२८)

शिलाह्वं कटुतिक्तोष्णं कटुपाकं रसायनम् । छेदियोगावहं हन्ति कफमेहाश्मशर्कराः ।।
मूत्रकृच्छ्रं क्षयंश्वासं वातास्त्राशर्सि पाण्डुताम् । अपस्मारं तथोन्मादं शोथकुष्ठोदरकृमीन् ।।
(आ.प्र. ४/१०३-१०४)

**Tāmra Garbha Śilājatu–**

**Rasa–** Tikta **Vīrya–** Uṣṇa

**Guṇa–** Tīkṣṇa, Uṣṇa, Guru, **Vipāka–** Kaṭu

**Doṣa Prabhāva–** Kapha Vātaghna

**Vyādhi Prabhāva–** Kṣayaroga.

**Loha Garbha Śilājatu–**

**Rasa–**Madhura, Lavaṇa, (R.P.S.) Tikta, Kaṭu, Kaṣāya, Lavaṇa (B.P.)

**Guṇa–** Guru, Snigdha, Mṛidu, Śīta

**Vīrya–** Śīta, **Vipāka–** Kaṭu

**Karma–** Rasāyana– Yogavāhī, Jarāvyādhi Praśamana, Dehadārḍhyakara, Medhāsmṛitikara, Chedī, Medaḥcchedakara, Driṣada Vilayana, Mūtrāmayotsādana, Vayasthairyakara, Yakṣmā Praśamana, Balīpalitanāśana, Sarva Twakgadanāśana, Āmāpaha.

**Doṣa Prabhāva–** Kaphahara, Tridoṣaghna

**Vyādhi Prabhāva–** Kaphajaroga, Kṣaya, Udararoga, Arśa (Vātika), Vastirujā, Prameha, Gulma, Plīharoga, Aśma Śarkarā, Mūtrakṛicchra, Śwāsa, Kāsa, Pāṇḍu, Apasmāra, Unmāda, Hṛicchūla, Twak-doṣa, Kuṣṭha, Kṛimi, Apacī, Sajwara Pāṇḍu, Śopha, Agnimāndya Āmadoṣa.

**Śilājatu Parikṣā[61] (Test for Genuineness)–**

1. When put on fire it must burn without producing smoke and should erect just like a Liṅga.

2. When put into water through a thin stick must go down towards bottom just like a thread without being dissolved in water.

3. It should look Malina (blackish) and should smell like a Gomūtra (Cow's urine).

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61. **शिलाजतु परीक्षा–**

बह्नौ क्षिप्तं भवेत्यतु लिङ्गाकारमधूमकम्। सलिलेऽप्य विलीनं च तच्छुद्धं हि शिलाजतु॥ (र.चू. १०/१००)

तृणाग्रेणाम्भसिक्षिप्तमधोगलति तन्तुवत्। गोमूत्रगन्धि मलिनं तच्छुद्धं हि शिलाजतु॥ (आ.प्र. ४/११६)

Śilājatu having all the baove mentioned characteristics is considered as Śuddha (Genuine) Śilājatu.

**Method of Śodhana–**

As Aśuddha (impure) Śilājatu produces following diseases in the body on internal use hence it should be purified before internal use.

The diseases produced with aśuddha Śilājatu–

Dāha, Mūrcchā, Bhrama, Pittajroga, Raktajaroga, Śoṣaroga and Agnimāndya etc. diseases/symptoms.

**Procedures for Śodhana[62]–**

1. Washing with plain water– The Lohaja Śilājatu associated with above mentioned characteristics should first be washed with water to remove its Bahirmalas (external impurities).

2. Svedana in Svedani yantra with Kṣārīya (Alkaline) and Amliya (Acidic) liquids mixed with Guggulu. Śilājatu mixed with these liquids and applied heat with boiling liquids. So that the soluble materials will go into liquid and unsoluble stony and other impurities will be separated.

3. So obtained soluble Silājatu is then put in Lohapātra (Iron pan) should be applied Bhāvanā to improve its therapeutic properties with the following liquids :

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62. **शोधनम् –**

शिलाजतुं समानीय लोहजंलक्षणान्वितम्। बहिर्मलमपाकर्तुं क्षालयेत्केवलाम्बुना ॥
(आ.प्र. ४/१०६)

क्षाराम्लैर्गुग्गुलूपेतैः स्वेदनीयन्त्र मध्यगैः। स्वेदितं घटिकामानाच्छिलाधातुर्विशुद्धयति ॥
(र.चू. १०/१०३)

गोदुग्धत्रिफलाभृङ्गद्रवैः पिष्टं शिलाजतु। दिनैकं लोहजे पात्रे शुद्धिमायात्यसंशयम् ॥
(आ.प्र. ४/११९)

लोहस्थितं निम्बगुडूचिकेन्द्रयववैर्यथावत् परिभावयेत्तत्।
सन्तानिकाकीटपतङ्गदंशदुष्टौषधीदोषनिवारणाय ॥ (आ.प्र. ४/१०७)

त्रिफलावारिगोदुग्धैर्मूत्रैभव्यिं शिलाजतु। स्वल्पं स्वल्पं विधानेन स्थापयेद् काचभाजने ॥
(आ.प्र. ४/१२०)

अगुर्वादि शुभैर्धूपैर्धूपयेत्तत्प्रयत्नतः।

**Bhāvanā liquids–** Godugdha, Triphalā Kvātha, Bhriṅgarāja Juice, Gomūtra, Nimbapatra rasa, Guḍūcī rasa and Indrayava Kvātha.

Śilājatu made pure with the above mentioned procedures and the Bhāvanā drugs should be stored in glass bottles.

It is observed in the present times that two types of Śuddha Śilājatu i.e. Sūrya Tāpī and Agnitāpī are popular amongst Vaidyas. In these types a creamy layer being accumulated over the Śilājatu liquid is collected till it comes over the liquid of Śilajatu which is when subjected to sun heat, it is called Sūrya Tāpī Śilājatu and when it is subjected to fire heat, it is called Agnitāpī Śilājatu.

**Procedures–** For this Śilājatu purified by simple water is mixed with the above liquids and kept either in sun light or on fire for getting heated. Due to slow heating a creamy layer appears on the surface of Śilājatu liquid, it is collected till it appears on the surface. In this creamy layer only soluble part of Śilājatu comes and unsoluble part is left in the bottom of the tray containing Śilājatu liquid. During this process the liquids used to potentiate Śilājatu properties are added several times to get maximum extraction from raw sample of Śilājatu. The potentiating liquids may be used on the basis of the purposes for which Śilājatu is required.

**Doses and Duration**[63]**–** Śuddha Śilājatu may be used in 1 Karṣa, $^1/_2$ Pala and one pala dose for one week, three weeks and seven weeks and on the basis of dose and duration the use of Śilājatu is known as Hina yoga, Madhya yoga or Uttama yoga.

**Potentiation of Silājatu for Rasāyana Purpose**[64]**–**

For this (Rasāyana) purpose Śilājatu should be treated with

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63. **सेवनावधि:–**
मात्रयाशीलयेत्पश्चात् त्स्निग्धशुद्धो यथाविधि ॥
एकत्रिसप्तसप्ताहं कर्षमर्धपलं पलम् । हीनमध्योत्तमो योग: शिलाजस्य क्रमान्मत: ॥
(आ.प्र. ४/१२१-१२२)
एकत्रिसप्त सप्ताहं कर्षमर्धपलं पलम् । हीनमध्योत्तमोयोग: शिलाजस्य क्रमान्मत: ॥

64. **क्षीरप्रयोगफलम्–**
क्षीरेणालोडितं कुर्याच्छीघ्रंरासायनं फलम् । हन्याद्रोगानशेषांश्च जीर्णे हितभिताशिन: ॥
(आ.प्र. ४/१२२-१२३)

Kṣīra (Godugdha). It also cure all other diseases if suitable diet is taken in prescribed quantity after the proper absorption of drug.

It is also mentioned[65A] about Śilājatu that there is no any Sādhya type disease on the earth which could not be cured by the use of Śilājatu if the same is used as per the prescribed dose and method. And in addition it improves general strength and the vitality of the healthy persons.

It is said further[65B] in this context that if Śilājatu is used for longer duration with prescribed specific Anupanas it is likely to cure all the diseases. It is beyond any doubt.

**Method for Śilājatu Māraṇa[66]–**

Generally Śilājatu is used internally after proper Śodhana only however its Māraṇa is done as follows–

For its Māraṇa Śuddha Śilājatu is mixed with Manaḥśilā and Gandhaka and then triturated with Mātuluṅga (Big variety of lemon) juice and applied puṭa (heat) with eight Giriṇḍa (Dung cakes) to become Mrita.

**Method for Satvapātana[67]–**

Śilājatu mixed with the drugs of Drāvaka varga and triturated with any Amla drava should be kept in Mūṣā and subjected to strong heat with the help of Charcoals yeilds its Satva (Metal content) which is similar to Loha in character.

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65. **शिलाजतुगुणप्रशंसा–**

A. न सोऽस्ति रोगो भुवि साध्यरूपो जत्वश्मजं यं न जयेत्प्रसह्य ।
तत्कालयोगैर्विधिवत्प्रयुक्तं स्वस्थस्य चोर्जां विपुलां दधाति ॥ (आ.प्र. ४/१२८)

B. सर्वानुपानैः सर्वेषु रोगेषु विनियोजितम् । जयंत्यभ्यासतो नूनं तान्स्तान् रोगान्न संशयः ॥ (आ.प्र. ४/१२९)

66. **मारणम्–**

शिलयागन्धतालाभ्यां मातुलुङ्गरसेन च । पुटितं हि शिलाधातुर्म्रियतेऽष्टपुटैः खलु ॥ (र.चू. १०/१०४) (आ.प्र. ४/१३१)

67. **सत्वपातनम्–**

पिष्टं द्रावकवर्गेण साम्लेन गिरिसम्भवम् । क्षिप्त्वा मूषोदरे रुद्ध्वा गाढैर्ध्मातं हि कोकिलैः ॥
सत्वं भुञ्जेच्छिलाधातुतत्क्षणाल्लोहसन्निभम् ॥ (र.चू. १०/१०७)

**Drāvāṇa Varga[67A]–**

Guḍa, Guggulu, Guñjā, Ghee, Madhu and Ṭaṅkaṇa these are included in Drāvaṇa varga which when used with metals may cause their Drāvaṇa (Liquification) which is otherwise considered difficult.

**Karpūra gandhi Śilājatu[68] : (Potassium Nitrate)–**

There is another variety of Śilājatu which is white and known as Soraka (सोरा). It is also called Karpūra Śilājatu as it is white like Karpūra (Camphur).

It is Pāṇḍura (Pale) in colour, granular in appearance similar to Karpūra (Camphur) in appearance/from, it is known as Karpūra Śilājatu.

**Origin[69]–** It occurs in special type of soil and water (Alkaline earth).

It is useful[70] in Mūtra Kṛiccha, Aśmarīroga, Prameha, Kāmalā and Pāṇḍuroga. It is also useful in fire works and Mūtra rogas.

**Śodhana[71]–** It is purified by subjecting it to Svedana with Elā toya and then dried. Its Māraṇa and Satva pātana are not advised.

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67A. **द्रावणवर्ग–**

गुडगुग्गुलुगुञ्जाज्यसारधैष्टंकणान्वितैः । दुर्द्रावाखिललोहादे द्रीवणाय गणोमतः ॥
(र.चू. १०/२९७)

68. **कर्पूरशिलाजतु–**

द्वितीयं सोरकाख्यं स्याच्छ्वेतवर्णं शिलाजतु । (आ.प्र. ४/१३३)
पाण्डुरं सिकताकारं कर्पूराभं शिलाजतु ॥ (आ.प्र. ४/१०८)

69. **उत्पत्तिः–**

उत्पत्तिस्तु मृत्तिका विशेषाज्जलविशेषाज्जायते ॥ (आ.प्र. ४/)

70. **गुणाः–**

अग्निवाणोपयुक्तं तद्धितं मूत्रामयेषु च । (आ.प्र. ४/१३३)
मूत्रकृच्छ्राश्मरी मेहकामला पाण्डुनाशनम् ॥ (आ.प्र. ४/१०८)

71. **शोधनम्–**

एलातोयेन संस्विन्नं शुष्कं शुद्धिमुपैतितत् ॥ नैतस्य मारणं सत्वपातनं कथितं बुधैः ॥
(र.चू. १०/१०९)

## SASYAKA/TUTTHA (Copper Sulphate) VARṆANAM

**Group**[72]– Mahārasa Varga. Upadhātu.

**Mythological Origin**[73]– It is said in ancient texts that Sasyaka is a solidified vomitted material of Garuḍa (a kind of ancient bird) which he vomitted in Marakata mountain after drinking Amṛita first and then Hālāhala poision. It is a mixture of Viṣa and Amṛita hence possess the properties of both.

As per 'Āyurveda Prakāśa' Tuttha is an Upadhātu[74] of Tāmra and may have the properties of Tāmra and Sasyaka both.

Actually Sasyaka[75] is a mineral form of Copper sulphate while Tuttha presently available is artificially prepared material (Copper sulphate).

**Varieties**[75]–

As per source – 1. Swabhāvaja – (Sasyaka)
2. Kṛitrima – (Tuttha)

As per colour– 1. Rakta (Red) – Śreṣṭha
2. Kālika (Blackish) Adhama.

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72. **सस्यकम्–**
अभ्रवैक्रान्तमाक्षिकविमलाद्रिज सस्यकम्। (र.र.स.)
तुत्थं ताम्रोपधातुः स्यात् ..... । (आ.प्र. ४/३५)

73. **उत्पत्तिः–**
पीत्वा हालाहलं वान्तं पीतामृतगरुत्मता।
विषेणामृतयुक्तेन गिरौ च मरकताह्वये ॥
तद्वान्तं हि घनीभूतं संजातं सस्यकं खलु ॥ (र.चू. १०/७१-७२)
गरुडेनामृतं पीत्वा पश्चात्पीतं विषं पुरा।
वान्तं मरकताद्रौ तु तद्धनं शिखितुत्थकम् ॥ (आ.प्र. ४/३४)

74. तुत्थं ताम्रोपधातुः स्यात् किञ्चित्ताम्रेण तद्भवेत्। किञ्चित्ताम्रगुणं तस्माद्वक्ष्यमाणगुणं च तत् ॥ (आ.प्र. ४/३५)

75. स्वभावजं सस्यकं हि तुत्थकं कृत्रिमं मतम्। एकाभावे परं ग्राह्यं नात्र कार्या विचारणा ॥ (र.प. (आ.प्र. टीका)

**Appearance**[76]**–**

It looks like Mayūra Kaṇṭha or Piccha (Peacock's neck or feathers) i.e. it is greenish red or blue with peculiar shining. It is smooth and heavy also, only such Sasyaka or Tuttha is considered good. Otherwise inferior.

**Modern Description–**

This is a hydrous sulphate of copper combined with water. Its mineral is known as chalcenthite which is an ore of copper. It is Triclinic, rarely as small flat crystals. Generally in crust or fibrous imperfect structure. Crystals possess imperfect and prismatic cleavages. Fracture–conchoidal. Hardness– 2.5, Sp.Gr. 2.1-2.3, lustre vitrious to dull. Colour– deep blue, sky blue or greenish blue. Streak– white to light blue, translucent. Taste–disagreeable, metallic.

**Composition–** $CuSO_4\,5H_2O$, Percentage Cu 31.6% $SO_4$ 32.1%, $H_2O$–36.1% may contain Iron. Readilly soluble in water yeilding a blue solution.

It is an alteration product of Copper minerals and occurs in the mines of Germany, Czechoslovakia, Sweden, Spane, France, England and Ireland. Formerly it was found in considerable amount in Nevada, Chile mines. Also found in the waters, Copper mines and is recovered by precipitation with scrap iron. It is natural as well as artificial. Natural is Sasyaka and artificial is Tuttha. It occurs along with Copper pyrite in small quantities.

**Synonyms**[77]**–** Śikhigrīva, Śikhi Tuttha, Mayūra Tuttha and Tāmragarbha. Mayūraka, Vitunnaka.

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76. **भौतिकगुणाः–**

मयूरकण्ठसच्छायं भाराढ्यमतिशस्यते। (र.चू. १०/)

शिखिकण्ठसदृक्छछायं भाराढ्यं तुत्थकं च यत्। गुणवत्तत्परिज्ञेयमन्यद्हीनगुणं मतम्॥ (आ.प्र. ४/३७)

77. **पर्यायाः–**

तुत्थं वितुन्नकं चापि शिखिग्रीवं मयूरकम्। शिखितुत्थं तथा चापि॥ (आ. प्र. ४/३५)

**Pharmacological and Therapeutic Properties[78]–**

**Rasa–** Kaṭu, Kaṣāya, Madhura and Kṣāra also.

**Guṇa–** Laghu/Guru, Uṣṇa, **Vīrya–** Uṣṇa, **Vipāka–** Kaṭu

**Karma–** Lekhana, Bhedana, Vāmaka, Krimighna, Balya, Cakṣuṣya, Medohara, Rasāyana, Saṅkocanakara, Nāḍībalakara, Rucira, Twak-doṣahara, Vahnikara, Recana, Vayastaṁbhakara, Garaghna.

**Doṣa Prabhāva–** Kapha Pittahara, Tridoṣa Śamana.

**Vyādhi Prabhāva–** Śūla, Kuṣṭha, Kaṇḍū, Kṛimi, Prameha, Arśa, Medoroga, Świtra, Twak Vikāra, Viṣajanya roga, Amlapitta, Vraṇa, Guda Śūla, Vibandha, Hricchūla, Sarvavidharoga.

**Method for Śodhana[79]–**

**Procedures–** 1. Svedana in Dolāyantra for 3 Prahara/2 Yāma.

2. Bhāvanā with Rakta varga dravya rasa or kvātha

3. Tāpana and Nimajjana

**Drugs Used–** Bījapūra rasa, Takra, Kāñjika, Naramūtra, Meṣamūtra. Mahiṣīmūtra, Ajāmūtra, Vājimūtra, Gomūtra.

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78. **शारीरिगुणाः–**

विषं द्रव्ययुतं यद्वत् द्रव्याधिकगुणं भवेत्। हालाहलं सुधायुक्तं सुधाधिकगुणं तथा ॥
निःशेषदोष विषहृद् गुदशूलदुष्टाम्लपित्त कफविवन्धहरं हितञ्च।
रासायनं बमनरेककरं गरघ्नं श्वित्रापहं गदित मत्र मयूरतुत्थम् ॥ (र.चू. १०/७४)

तुत्थं तु कटुकं क्षारं कषायं बामकं लघु। लेखनं भेदनं शीतं चक्षुष्यं कफपित्तहत्।
विषाश्मकुष्ठकण्डूघ्नं खर्परं चापितद्रुणम् ॥ (आ.प्र. ४/३८-३९)

**अशुद्धतुत्थ दोषाः–**

वान्तिं भ्रान्तिमशुद्धं तत्कुरुते शोधितं शुभम्। (आ.प्र. ४/३९)

**सस्यकगुणहेतवः–**

विषं द्रव्ययुतं यद्वद् द्रव्याधिकगुणं भवेत्। हालाहलं सुधायुक्तं सुधाधिकगुणं भवेत् ॥
(र.चू. १०/७३)

79. **शोधनम्–**

दोलायन्त्रेणसंस्विन्नं सस्यकं प्रहरत्रयम्। गोमहिष्याजमूत्रैश्च शुद्धत्येवं हि सस्यकम् ॥
(र.चू. १०/७५)

लुचितं चाम्लवर्गेण स्नेहसिक्तं हि तुत्थकम्। दोलायां वाजिगोमूत्रे दिनंपक्वं विशुद्धयति ॥

**Method for Māraṇa[80]–**

Mix Sasyaka with Gandhaka and Ṭaṅkaṇa in equal parts then triturate it with Lakuca drava, close the mixture in Mūṣā and apply Kukkuṭa puṭas. Repeat the process for two/three times to convert Sasyaka in bhasma form.

In this method bhasma colour is not mentioned. But due to presence of copper in the material its bhasma should be of black colour and Tamra bhasma tests may be performed.

**Method for Satvāpatana[81]–**

For this Śuddha Sasyaka is mixed with $^1/_4$th part of Ṭaṅkaṇa and Triturated with Nimbu rasa (Lemon juice), made into small balls, closed in Mūṣā (Andhamūṣā) if heated strongly yeilds Satva which is just like Tāmra (Copper).

**Tuttha Mudrikā[82]–**

It is mentioned in Rasa texts that with this Satva a Mudrikā (Ring) should be prepared by mixing it with Bhūnāga (Earth worm)

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80. लकुचद्रवगन्धाश्मटंकणेन समन्वितम्। निरुध्यमूषिकामध्ये म्रियते कौक्कुटैः पुटैः ॥
(र.चू. १०/७६)
गन्धाश्म टंकणयुतं लकुचद्रवमर्दितम्। अन्धमूषागतं द्वित्रि कुक्कुटैमृतिमाप्नुयात् ॥
(आ.प्र. ४/४३)

81. **सत्वपातनम्–**
निम्बूद्रवाल्पटंकाभ्यां मूषामध्ये निरुध्य च। ताम्ररूपं परिध्मातं सत्वं मुञ्चति सस्यकम् ॥
(र.चू. १०/७७)
शुद्धं सस्यं शिखिक्रान्तं पूर्वभेषजसंयुतम्। नलिकाध्मानयोगेन सत्वं मुञ्चति निश्चितम् ॥
(र.चू. १०/७८)
तुत्थं टंकणसंयुक्तं निम्बूद्रवविमर्दितम्। अन्धमूषागतंध्मातं सत्वं मुञ्चतिताम्रकम् ॥
(आ.प्र. ४/४४)

82. **सत्वमुद्रिकागुणाः–**
सत्वमेतत्समादाय वरभूनागसत्वयुक्। तन्मुद्रिका कृतस्पर्शा शूलघ्नीतत्क्षणाद् भवेत् ॥
चराचरं विषं भूतं डाकिनींद्यगतं जयेत् ॥
मन्त्र–
हिमालयोत्तरे पार्श्वे अश्वकर्णो महाद्रुमः। तत्रशूलं समुत्पन्नं तत्रैव विलयं गतम् ॥
मन्त्रेणानेन मुद्राम्भो निपीतं सप्तमन्त्रितम्। सद्यःशूलहरं प्रोक्तम् इतिभालुकिभाषितम् ॥
अनयामुद्रया तप्तं तैलमग्नौ सुनिश्चितम्। लेपितं हन्ति वेगेन शूलं यत्रक्वचिद्भवेत् ॥
सद्यःसूतिकरं नार्याः सद्योनेत्ररूजापहम् ॥ (र.चू. १०/७९-८४)

Satva. Mere touch of this Mudrikā immediately relieves pain and also viṣa prabhāva (Effect of poision) and Bhūtabādhā (Effects of evil spirits).

Further it is said in this context that as per the claims of Bhālukī if a water chanted with this Mudrikā and Mantra for seven times becomes associated with following properties, Viz– Sadyaḥ Śūlahara, Sadyaḥ Prasavakara for ladies and Sadyaḥ Netra rujāhara i.e. quickly relieved from the pain in any part of body, helps in quick delivery in cases of difficult labour and also relieves Glucoma pain.

It is further claimed in this context that if a oil heated along with this ring if applied on the body immediately relieves pain felt in any part of the body.

These claims are most valuable and needs to be varified by preparing such Mudrikā and using it clinically.

## CAPALA (Bismuth ore) VARṆANAM

**Group–** Mahārasa[83], Uparasa.

**Origin–**1. Mythologically it is an excreta of the Nasal cavity of Iśwara. (R.K.D.)

2. From the mines of Mākṣika (Pyrite).

**Varieties–**

As per colour– 1. Gaura (Yellow) Rasabandhakara

(Rasārṇava) 2. Śweta (White) Ciradrāva

3. Aruṇa (Red) Lākṣāvat-Śīghradrāvī

4. Kriṣṇa (Black) Niṣphala.

(Rasa Paddhati) 1. Śīta } 2. Aśīta } – Ciradrāva, Guṇavat.

3. Harita } – Lākṣāvat-Āśudrāva

4. Śoṇa } Niṣphala.

These varieties may be equated with the following varieties of Bismuth (mineral) described in modern literature.

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83. **वर्ग–**

अभ्रवैक्रान्तमाक्षीक विमलाद्रिज सस्यकम्। चपलो रसकस्चेति ज्ञात्वाऽष्टौ संग्रहेद्रसान्॥ (र.र.स.)

Śweta – with Native Bismuth

Pīta – with Bismuth oxide or Bismuth Ochre

Aruṇa – with Bismuth Sulphide or Iron oxide

Kriṣṇa – with Bismuth Sulphide.

**Note–** 1. As per the reference of 'Rasarāja lakṣmī' quoted by 'Rasakāma Dhenu' following varieties of Capala are described–

Swarṇa Capala, Tāra capala, Tāmra Capala, Nāga Capala, Vaṅga Capala and Tīkṣṇa Capala.

These varieties probably based on the metallic content of the mineral.

2. Capala is considered as rare mineral since ancient times hence descriptions regarding its artificial preparations are available, Viz– Nāga Saṁbhūta Capala & Vaṅga Suṁbhūta Capala.

3. Various colours of Capala described in ancient texts may be attributed to the presence of trace elements in the mineral such as Sulphur, Antimony, Iron, Copper, Arsenic etc.

It is also mentioned about this mineral that it is called Capala because it melts at low temperature like Vaṅga (Tin metal).

**Modern Description–**

Bismuth available in nature is called Native Bismuth. Its hardness is 2-2.5; Sp.Gr. 9.7. It is Brittle, slightly malleable when heated. Lustre– metallic, opaque, colour– reddish white often with brassy turnish. Streak– shiny lead grey.

Native Bismuth often contains traces of Arsenic, Sulphur, Selenium and Tellurium. Usually found in veins associated with Silver, Cobalt, Lead, Zinc and Tin ores.

It is available in Sexony, Bolivia, England & Canada. Metallic Bismuth is obtained from Native Bismuth and Bisuthinite ($Bi_2S_3$) which closely resembles with Stibnite ($Sb_2S_3$) but heavier then stibnite. The metal is used in the manufacture of easily fusible alloys with Lead, Tin, Copper, Antimony and Cadmium. The melting point of some of these alloys is as low as 64°C. The other salts of Bismuth like Nitrates, Carbonates and Oxides are also found and used.

**Physical Properties**[84]**–**

That which is as white as sphatika and has six edges and six rasas and which is smooth and heavy is considered best.

**Pharmacological and Therapeutic Properties**[84]**–**

**Rasa–** Tikta, Madhura. **Vīrya–** X

**Guṇa–** Uṣṇa, Snigdha, Guru. **Vipāka–** X

**Karma–** Lekhana, Ativriṣya, Rasa bandhakara, Dehalohakara and Yogānuga.

**Doṣa Prabhāva–** Tridoṣaghna

**Vyādhi Prabhāva–** Not mentioned

**Method for Śodhana–**

**Procedures–** 1. Swedana– by Dolāyantra for seven times
2. Bhāvanā– Trituration for one time.
3. Majjana– quenching in liquids after heating strongly.

**Drugs Used–**Jambīra rasa, Śriṅgavera rasa, Karkoṭaka rasa.

**Method for Māraṇa–**

**Procedure–** Mix Soraka (Girimastaka) or Suta with Capala triturate it with Nirguṇḍī juice and applied heat either with Puṭa system or with Vālukā yantra system with this method Rakta colour bhasma is prepared. If needed the procedure may be repeated for two three times.

**Satvapātana**[85]**–**

Śodhita Capala is mixed with Viṣa or Upaviṣa group of drugs and Triturated with Dhānyāmla, made into small piṇḍs,

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84. **चपल गुणाः–**
चपलो लेखनः स्निग्धो देहलोहकरो मतः। (रसा. ७/२७)
चपलः स्फटिकच्छायः षडस्रः स्निग्धको गुरुः। त्रिदोषघ्नोऽति वृष्यश्च रसवन्ध विधायकः॥ (आ.प्र. ४/१४०)
वंङ्गवद् द्रवते बह्नौ चपलस्तेन कीर्त्रितः। अयं तूयरसे कैश्चित्पठितोऽन्यै रसेषु च॥ (आ.प्र. ४/१३८)

85. **सत्वपातन–**
विषोविषधान्याम्लैर्मर्दितश्चपलस्ततः। अन्धमूषागतो ध्मातः सत्वं मुञ्चति कार्यकृत्॥ (आ.प्र. ४/१३९)

closed in Andhamūṣā and finally subjected to strong heating in Koṣṭhī yantra yeilds satva. Satva colour is not found mentioned in any text.

**Druti–** As per texts its druti may be prepared just like Abhraka.

## RASAKA/KHARPARA (Zinc ores) VARṆANAM

**Group–** Mahārasa varga.

Rasaka is a most important mineral of Rasa Śāstra. It is also called Rītikṛit (Used to make Pittal/Brass) in ancient times. Which indicate that it is a Zinc mineral and its Satva was used to prepare Pittala (Brass) by mixing it with Copper.

**Varieties**[86]**–**

According to form (Rasārṇava)
1. Mrittikā– Yellow in colour – Good
2. Guḍābha– Yellow in colour – Medium
3. Pāṣāṇābha– Yellow in colour– Adhama (Inferior)

According to form (Rasendra Cūḍāmaṇi)
1. Dardura– Sadala (Having layers/lemileas)
2. Kāravellaka-Nirdala (without layers) Massive.

Of these Dardura is considered good for Satvapātana while Kāravellaka is good for medicinal uses. The varieties mentioned in Rasārṇava may be corelated with the following Zinc ores described in modern literature.

1. Mṛittikā Rasaka – Zinc oxide
2. Guḍābha Rasaka – Zinc sulphide
3. Pāṣāṇābha Rasaka– Zinc silicate or Carbonate.

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86. **रसक भेदाः–**
रसकोद्विविधः प्रोक्तो दर्दुरः कारवेल्लकः । सदलो दर्दुरः प्रोक्तो निर्दलः कारवेल्लकः ॥
सत्वपाते शुभः पूर्वो द्वितीयश्चौषधारिषु ॥ (र.चू. १०/११०-१११)
रसकस्तुत्थभेदः स्यात् खर्परं चापि तत्स्मृतम् । (आ.प्र. २/२७५½)
मृत्तिकागुड़पाषाणभेदतो रसकस्त्रिधा । पीतस्तु मृत्तिकाकारो मृत्तिका रसको वरः ॥
गुड़ाभोमध्यमो ज्ञेयः पाषाणाभः कनिष्ठकः ॥ (रसा. ७/२८-२९)

**Synonyms**[87]– Kṣitikiṭṭa, Rasodbhava, Rītikṛit, Tāmra rañjaka and Netra rogāri.

**Historical Background–**

Rasaka or Kharpara is considered as Zinc ore of ancient times. It yeild metallic zinc as its Satva. This is on the basis of its synonyms– 'Rītikṛit'. Here 'Rīti' is used to denote Pittala (Brass) which is known and made in India since ancient times.

In ancient texts Pittala was found included in Loha group. 'Rasa Ratna Samuccaya' has included it in 'Misra Loha' group probably it is prepared by mixing metals like zinc and copper. While historically zinc as an independent metal was known and described in about 14th century A.D. and afterwards. Then in absence of zinc how Pittala was made in ancient times. The answer to this was the knowledge about Rasaka/Kharpur to ancient scholars, which contain zinc metal. It is possible that they might be extracting zinc metal as its Satva by Satva pātana method and that Satva might be in use for Pittal making.

Thus, it could be said in short that though, the metal zinc may not be known to ancient scholars as an independent metal however its mineral was known to them which might have served as the source of zinc for preparing 'Pittala' as it is an alloy of zinc and copper.

**Modern Description of Zinc Ores–**

**1. Zinc oxide** mineral is Zincite, which contains Zn– 80.34% and O– 19.65%. It also contain some Manganese and Iron. It occurs at Frenklin and Sterlin hill, New Jarsy. Its natural crystals are very rare, usually compact, granular or foliated masses. Perfect basal cleavage, hardness– 4.4.5, Sp.Gr. 8.7, lustre sub-admentine to vitrious, translucent to opaque. Colour dark red to orange yellow or yellow. Streak– reddish to orange yellow.

**2. Zinc Sulphide (ZnS)–** Zinc sulphide mineral is known as sphelerite, Zinc blend or black jack. Cubic crystals are common, often highly modified and distorted or rounded. Tetrahe-

87. **पर्यायाः –**
खर्परो नेत्ररोगारि रीतिकृत्राम्ररञ्जकः । (रसा. ७/३७)
रसकस्तुत्थभेदः स्यात्खर्परं वापि तत्स्मृतम् । ये गुणाः तुत्थके प्रोक्ता स्त्रेगुणाः रसके स्मृताः ॥ (आ.प्र. २/२७६)

drons (O) with cubs (h). twins according to special low. Generally in fine to Coarse granular and compact masses, also bibrous and batry-oidal. Highly perfect cleavage, lustre-resinous to admentine. Brittle, hardness 3.5 to 4; Sp.Gr. 3.9-4.2; colour varies greatly when pure white, commonly yellow, red, black or green. Varieties with high Iron content have darker colour. Transparent to translucent. Streak– white, pale, yellow or brown. Chemically contains Zn 67% and S 33%, usually contains Iron upto 26%. Also Manganese, Cadmium, Thallium, Indium, Tin or Mercury. Occurs extensively in dolomite, lime stones and other sedimentary and crystalline rocks.

**Localites–** Saxona, Bohemia, Swet-Zerland, England, Japan, and U.S.A.; sphelerite is the chief source of Zinc.

**Zinc Carbonate ($ZnCO_3$)–** Zinc carbonate mineral is known as Smith sonite, Calamine. Hexagonal crystals are usually small and rough or curved.

Rhombohedral cleavage, fracture–uneven to spilntery–hardness– 5; Sp.Gr. 4.1 to 4.5; colour commonly grey or brown also white, yellow, blue, green and pink. Translucent to opeque, lustre– vitrious to pearly.

Chemically contains Zn 64% and $CO_2$ 35.2%, Iron, Copper, Maganese, Calcium, Magnasium, may also be present.

Smithsonite is a secondary mineral and occurs extensively in the upper sevels in lime stones and dolomite. Occurs at broken hill, New South Wales, Greece, Germany, Italy, Rhodesia, South West Africa, Scatlend and Maxco.

**Zinc Silicate (ZnSiO4)–** Zinc silicate mineral is known as Willemite. Hexagonal crystals are either slender or thick, prismatic in habit but generally quite small. Basal cleavage, fracture-uneven. Hardness– 5-6; Sp.Gr. 3.9 to 4.3; lustre– greasy-vitrious. Colour commonly yellow, green, brown or reddish, more rarely blue, black, white or colourless. Transparent to opeque.

Chemically Zinc silicate contains ZnO 70% and $SiO_4$ 27%, Manganese and Iron may also be present. Fuses with difficulty. Geletinizes with HCL.

**Localities–** Frankline and Vicinity, Sussex county, New Jerssy. Dardura variety of Rasaka is obtained from Varma. In India it is obtained from Udaipur, Kasmir, Punjab, Bengal and Madras. Also from Nepal.

**Pharmacological and Therapeutic Properties[88]–**

**Rasa–** Katu, Kaṣāya, Ksāra. **Virya–** X

**Guṇa–** Rukṣa, Laghu. **Vipāka–** X

**Karma–** Rañjaka (Tāmra rañjaka), Kledi, Loha Pārada rañjana, Cakṣūṣya.

**Doṣa Prabhāva–** Kapha pitta vināśana, Vātakṛit, Śleṣmanāśana, Rasakasatva ..... Tridoṣaghna.

**Vyādi Prabhāva–** Netra roga, Kṣaya, Sarva Prameha, Madhumeha, Pāṇḍu, Vātaja roga, Yoniroga, Striroga, Jwara, Viṣama jwara, Śwāsa, Kāsa, Kṣavathu, Gulma, Hikkā, Pradara, Somaroga, Raktagulma, Rajoroga, Pittaroga.

**Necesscity for Its Śodhana[89]–**

As Aśuddha (Impure) Kharpara is likely to cause Vānti (Vomitting) and Bhrānti (Vertigo) hence it should be purified first till it becomes free from Vāntidosa.

**Method for Rasaka Śodhana[90]–**

**Procedures–** 1. Agni tāpana and Drava Nimajjana for seven times.

**Drugs used for–** Bijapūra rasa, Nara mūtra, Meṣa (Sheep) mūtra Takra and Kāñjika.

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88. **रसकगुणाः–**

रसकः सर्वमेहघ्नः कफपित्तविनाशनः । नेत्ररोगक्षयघ्नश्च लोहपारदरञ्जनः ॥
(र.चू. १०/११२)

खर्परं कटुकंक्षारं कषायं वामकं लघु । लेखनं भेदनं शीतं चक्षुष्यं कफपित्तनुत् ॥
विषाश्मकुष्ठकण्डूनां नाशनंपरमंस्मृतम् ॥ (आ.प्र. २/२८०)

रसक महत्वम् –

नागार्जुनेन संदिष्टौ रसश्च रसकावुभौ । श्रेष्ठौसिद्धरसौ ख्यातौ देहलोहकरौमतौ ॥
रसश्च रसकश्चौभौ येनाग्निसहनौकृतौ । देहलोहमयी सिद्धिर्दासी तस्य न संशयः ॥
(र.चू. १०/११३-११४)

89. **अशुद्ध दोषाः–**

अशुद्धखर्परः कुर्याद्भ्रान्तिं भ्रान्तिं विशेषतः । तस्माच्छोध्यः प्रयत्नेन यावद्भ्रान्तिविवर्जितः ॥
(आ.प्र. २/२८३)

90. **शोधनम् –**

रसकः परिसंतप्तः सप्तवारं निमज्जितः । बीजपूररसस्यान्तर्निर्मलत्वं समश्नुते ॥
नृमूत्रे मेषमूत्रे वा तक्रे वा काञ्जिके तथा । प्रताप्य स्वेदितं सम्यक् यावद्भ्रान्तिविवर्जितः ॥
(र.चू. १०/११५-११६)

**Treatment for Rasaka Rañjana[91]–**

If Rasaka is kept in Naramūtra (Man's urine) for one month it may certainly change the colour of pure Copper, Mercury, Silver into Golden colour just like Gold.

**Method for Rasaka Māraṇa[92]–**

Māraṇa drug– Pārada (Mercury)

Type of heat– Puṭapāka for one day in Bālukā yantra.

Bhasma colour– Red coloured bhasma.

**Method for Satvapātana[93]–**

**Procedure–** Mix Kharpar with prescribed drugs apply Bhāvanā of Amla drava, prepare their Golakas, close these in a mūṣā and apply strong healt with Angāras. Repeat the process for 3-4 times. In this Vaṅgābha or Sisopama Satva of Rasaka may be obtained.

**Satva Māraṇa[94]–**

Drugs– Tālaka

Apparatus– Kharpara, Loha daṇḍa

Agni Matrā– Aṅgāra Bhajana

**Note–** The detailed description of Rājāvarta is given along with Uparatnas. As in number of texts it is included in Uparatna group.

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91. **रसकरञ्जन–**
नरमूत्रे स्थितो मासं रसको रञ्जयेद् ध्रुवम्। शुद्धं ताम्रं रसं तारं शुद्धस्वर्णप्रभं यथा॥
(र.चू. १०/११७)

92. **रसक मारणम् –**
खर्परं पारदेनैव चूर्णयित्वादिनं पचेत्। बालुकायन्त्रमध्यस्थं शोणं (शोभनं) भस्म (प्र)जायते॥
(आ.प्र. २/२८९)

93. **सत्वपातन–**
हारिद्रत्रिफलारालसिन्धुधूमैः सटंकणैः। सारुष्करैश्च पादांशैः साम्लैः सम्मर्धग्नर्परम्।
क्षिप्तं वृन्ताकमूषायां शोषयित्वा निरुध्य च। ..... खर्परं प्रधमेत्ततः॥
वंगाभं पतितं सत्वं तमादाय नियोजयेत्। एवं हि द्विचतुर्वारैः सर्वं सत्वंविनिःसरेत्॥
(र.चू. १०/११८-१२१)

94. **रसक सत्वमारण–**
तत्सत्वं तालकोपेतं निक्षिप्य खलुखर्परे। भर्जयेल्लोहदण्डेन भस्मीभवति निश्चितम्॥
(र.चू. १०/१२७)

## II. UPARASA VARṆANAM

'Uparasa' is also a group of minerals used in Rasaśātra. In this group those minerals are included which are found useful in mercurial processes and potentiation. But these are comparatively less useful than the minerals of 'Mahārasa' group. According to some Rasa texts the minerals found used for mercury process and potentiation are grouped as 'Uparasas'. These texts did not classified them in Mahārasa, Uparasa and Sādhāraṇa rasa groups. In this case the number of drugs (minerals) is not limitted to eight only.

In the present context the minerals included in 'Uparasa' group are eight only.[1,2,3,4,5] And these are– Gandhaka (Sulphur), Gairika (Red ochre/Heamatite), Kāsīsa (Ferrous sulphate), Kāṅkṣī (Alum), Tāla/ Haritāla (Orpiment), Śilā/Manaḥśilā (Realger), Añjana-Rasāñjana, (Artificially prepared from Dāruharidrā Kvātha and Ajākṣīra Nīlāñjana (Galena/Lead sulphide) and Kaṅkuṣṭha (Solidified watery extract of Mysore gambose trea i.e. Rhubarb).

Table showing the drugs of Uparasa group as per different texts–

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1. गन्धाश्मतालतुवरीकुनटीसुवीरकंकुष्ठखेचरकगैरिक नामधेया: ।
   उक्ता बुधैरुपरसाश्च रसायनास्ते तैर्बद्धपारदवरो न(हि)रसायन:स्यात् ॥ (र.चू.११/१)
2. गन्धकस्तालकशिलासौराष्ट्रीखगगैरिकम् । राजावर्त्रश्चकंकुष्ठ अष्टौउपरसा: स्मृता: ॥
   (रसार्णव ७/५६)
3. गन्धो हिङ्गुलमभ्रतालकशिला: स्रोतोऽञ्जनं टंकणं ।
   राजावर्तकचुम्बकौ च स्फटिका शङ्खखटी गैरिकम् ॥
   कासीसं रसकंकपर्दसिकलाबोलाश्च कंकुष्ठकं
   सौराष्ट्री च मता अमी उपरसा: सूतस्य किञ्चिद्गुणै: ॥
   तुल्या: स्युर्यदि ते विशोध्य विधिना संसाधिता: सेविता–
   स्तत्तद्रोगहरानुपानसहितैर्योगैश्चिरायु:प्रदा: ॥ (आ.प्र. २/१)
4. गन्धाश्मगैरिकासीसकांक्षीतालशिलाञ्जनम् । कुंकुष्ठं चेत्युपरसाश्चाष्टौ पारदकर्मणि ॥ (र.र.स.)
5. गन्धाश्मगैरिकासीसकांक्षीतालशिलाञ्जनम् । कंकुष्ठं चेत्युपरसा: (१ र.र.स.)

| S. N. | Name of Drugs | Name of the Texts | | | | | |
|---|---|---|---|---|---|---|---|
| | | Rasar. | R.H.T. | R.Cū | R.Pr.S. | R.R.S. | Rasa K.Đ. |
| 1. | Gandhaka | + | + | + | + | + | Kharpara |
| 2. | Gairika | + | + | + | + | + | Śikhi Tuttha |
| 3. | Kāsīsa | + | + | + | + | + | Varāṭa |
| 4. | Kāṅkṣī (Sphaṭikā) | + | + | + | + | + | Śaṅkha |
| 5. | Tālaka (Haritāla) | + | + | + | + | + | Taṅkaṇa |
| 6. | Śilā (Manaḥśilā) | + | + | + | + | + | Hiṅgula |
| 7. | Añjana | Rājā-varta | + | Sauvi-rāñjana | Sauvi-rāñjana | + | Añjana |
| 8. | Kaṅkuṣṭha | + | + | + | + | + | Bhūnāga |

## GANDHAKA VARṆANAM (Sulphur)

**Group–** Uparasa group.

### Mythological Origin[6]–

Mythologically Gandhaka got its origin during the time of 'Kṣīrābdhi Manthana' (Churning of milk occean) along with Amṛita (Nector). It has a very pleasent smell from which all the Gods and Demons present there became very happy and named it as Gandhaka. And made it associated with the effect of Rasa Bandhana and Rasajāraṇa.

Ancient Rasaśāstra scholars have also said about Gandhaka that it is related with Goddess Pārvatī – Devī Bhagavatī i.e. it got its origin from the menstrual flow of Goddess and it is further said in this context that Abhraka is the Śukra (Reproductive discharge) of Goddess. As both these are the products of God-

6. **गन्धक उत्पत्तिः–**
क्षीराब्धिमथने चैतदमृतेन सहोत्थितम्। निजगन्धेन तान् सर्वान् हर्षयन् देवदानवान्॥
ततो देवगणैरुक्तं गन्धकाख्यो भवत्वयम्। रसस्य बन्धनार्थाय जारणाय भवत्वयम्॥
(रसार्णव ७/६३-६६)
ये गुणाः पारदे प्रोक्तास्ते चैवात्र भवन्त्विति॥ (आ.प्र. २/५-७)

dess[7] hence these can mix up with mercury which is claimed to be Retas (Reproductive discharge) of Lord Śiva. Means Gandhaka and Abhraka are highly important and essential to potentiate mercury in many ways. Gandhaka for Jāraṇa and Mūrcchanā and Abhraka Satva for making mercury Agnisthāyī (Thermostable).

**Modern Description–**

Its crystals are common but also available in granular, fibrous, earthy, powdery or stalactitic masses. Cleavage-undistinct, fracture uneven. Hardness 1.5-2.5; Sp. Gr. 1.9-2.1; lustre-admentine to resinous on crystal faces, otherwise resinous to greasy. Transparent to translucent. Streak-white to yellow. Usually sulphur is yellow in colour, also honey yellow or yellow brown and due to impurities reddish, greenish or greyish. Non conductor of heat.

Practically pure sulphur may contain traces of Solanium, Tellurium and Arsenic, sometimes mixed with Bitumen and clay. Melts at 114.8$^0$C and at 270$^0$C burns with blueish flame and release Sulphur dioxide. Insoluble in water and acids. Soluble in carbon disulphide, Turpentine oil and in Chloroform.

Large deposits occur in sedimentary rocks and are generally the result of the reduction of Sulphate minerals notably Gypsum. The common associates are Celestite, Anhydrite, Oragonite and Calcite.

Sulphur is also found as a result of sublimation or interaction of Sulphurous vapours. Further more it occurs as a result of decomposition of pyrite and other sulphide minerals. 92% of native sulphure is produced in United States. The type of sulphur which crystallize in monoclinic system is rare in nature.

In minerology it is called Brimstone. Sulphur occurs in nature as a lemon coloured powder, as spherical or globular masses and in crystals. Its colour varies from yellow to yellowish brown, greenish, grey etc. according the character and amount of impurities it contains.

7. देव्या रजोभवेद्ग्रन्थो धातुः शुक्रं तथाऽभ्रकम्। आलिङ्गने समर्थौ द्वौ प्रियत्वाच्छिवरेतसः॥

**Varieties–**

As per 'Rasārṇava'[8] three –

1. Śuka Cañcunibha – Red – Best
2. Pītavarṇa – Yellow – Better
3. Śveta varṇa – White – Inferior

As per 'Rasendra Cūḍāmaṇi'[9] – four–

1. Rakta – Śukatuṇḍa nibha– For Dhātuvāda
2. Pīta – Śuka Picchanibha– For Rasāyana Karma
3. Śveta – Khaṭikākāra – For loha māraṇa
4. Kṛiṣṇa– Durlabha – For Jarā Mṛityu Nāśana

As per 'Rasendra Sāra Saṅgraha' four–

1. Rakta – For Hemakriyā.
2. Pīta – For Rasāyana Karma.
3. Śveta – For Uraḥ lepana.
4. Kriṣṇa – Durlabha – Best.

**Synonyms–** Śulvāri, Śulvaripu, Pāmāri, Gaurī Puṣpabhava, Balivasā, Kīṭagna, Kuṣṭhārī, Saugandhika.

**Importance of Balivasā Term[10]–**

In ancient times King Bali has used it for obtaining immense strength. But when (During the time of Kṣīrābdhi manthana) Balī was pulling Vāsukī (The serpent king) a flame came out of Vāsuki mouth which due to high heat caused the melting of the fat of Bali which was full of Gandhaka smell and

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8. स चापि त्रिविधो देवि? शुकचञ्चुनिभो वरः । मध्यमः पीतवर्णस्याच्छुक्लवर्णोऽधमः प्रिये? ॥ (रसार्णव ७/६७)

9. चतुर्धा गन्धको ज्ञेयो वर्णैः श्वेतादिभिःखलु । श्वेतोऽत्र खटिका प्रोक्तो लेपने लोहमारणे ॥
तथा चामलसारः स्याद् यो भवेत्पीतवर्णवान् । शुकपिच्छः स एव स्याच्छ्रेष्ठो रसरसायने ॥
रक्तश्च शुकतुण्डाख्यो धातुवादविधौ वरः । दुर्लभः कृष्णवर्णश्च स जरामृत्युनाशनः ॥ (र.चू. ११/२-४)

10. वलिवसाशब्द माहात्म्यम् बलिना सेवितः पूर्वं प्रभूतबलहेतवे ।
वासुकिं कर्षतस्तस्य तन्मुखज्वालया द्रुता ॥
वसा गन्धकगन्धाढ्या सर्वतो निःसृता तनोः । गन्धकत्वं च सा प्राप्ता गन्धोऽभूत्सविषस्ततः ॥
तस्माद्वलिवसेत्युक्तो गन्धकोऽति मनोहरः ॥ (र.चू. ११/६-७)

came out in the form sweat from the body of Bali. That smelling material became known as Gandhaka and from that time onwards Gandhaka also became poisonous and known as Balivasā.

**Physical Properties**[11]**–**

Good variety of Sulphur should be clear, yellow in colour just like Haridrā, transparent or translucent, smooth and glistering like butter. It is known as 'Āmala Sāra Gandhaka' and recommended for use in Rasa Karma and Rasāyana Karma. Sulphur having the properties other than above is not recommended for use. From commercial point of view it is known as 'Nenua Gandhaka'.

**Pharmacological & Therapeutic Properties**[12]**–**

**Rasa–** Kaṭu, Tikta and Kaṣāya

**Guṇa–** Uṣṇa, Sara

**Vīrya–** Uṣṇa

**Vipāka–** Madhura (R. Cūd.), Kaṭuka (Ay. Prak.)

**Karma–** Dīpana, Pācana, Viṣahara, Jantughna, Kṛimihara, Agnikārī, Āmonmocana Śoṣaṇa, Rasa Śoṣaṇa, Bhedi, Rasāyana, Sūta mūcchanākara, Sūtendr Vīrya Prada, Sūtajit, Bala Vīrya Vardhaka, Dīrghāyuṣkara, Driṣṭi Śakti Vardhaka, Jantu, Kaṇḍū-Visarpajit, Gaurīpuṣpabhava, Rasāyana. Surūpakara, Divya driṣṭikara.

**Doṣa Prabhāva–** Pittala, Kapha Vātahara.

**Vyādhi Prabhāva–** Kaṇḍu, Kuṣṭha, Visarpa, Dadru, Twak-doṣa, Āmadoṣa, Viṣadoṣa, Bhūta doṣa, Kṛimiroga, Plīharoga,

11. **भौतिक गुणाः–**

शुकपिच्छसमच्छायो नवनीतसमप्रभः । मसृणः कठिनः स्निग्धः श्रेष्ठो गन्धक उच्यते ॥
(आ.प्र. २/२०)

12. **गुणाः–**

गन्धाश्मातिरसायनः समधुरः पाके कटूष्णान्वितः । कण्डूकुष्ठविसर्पदद्रुदमनो दीप्तानलः पाचनः ।
आमोन्मोचनशोषणो विषहरः सूतेन्द्रवीर्यप्रदो । गौरीपुष्पभवस्तथा कृमिहरः सत्त्वात्मकः सूतजित् ॥
(र.चू. ११/५)

गन्धकः कटुकस्तिक्तो वीर्योष्णस्तुवरोरसः । पित्तलः कटुकः पाके कण्डूवीसर्पजन्तुजित् ॥
हन्ति कुष्ठं क्षयं प्लीहकफवातान् रसायनः ॥ (आ.प्र. २/१५-१६)

Kṣaya roga, Jarāroga, Netra roga, Jwara, Mṛityu, Kāsa, Āmājīrṇa, Mandāgni, Balakṣaya, Urdhwangasakala roga, Kṛimiroga, Sarvaroga.

**Method for Gandhaka Śodhana–**

**Necessity for Śodhana[13]–** As Gandhaka contains two types of impurities, such as–

1. Śilā cūrṇa (stones and clay/soil) 2. Viṣa (Arsenic etc.)

hence to remove these doṣas (impurities) it should be subjected to Śodhana. Not only this it may cause following diseases if not subjected to Śodhana before internal use.

**The Diseases[14]–** Kuṣṭha, Tāpa (Burning sensation in the body), Paittika diseases, Bhrama, Clama, Bala varṇahāni, Sukhanāśa, Vīryahāni. Besides this Śuddha Gandhaka destroys Kuṣṭha, Mṛityu and Jarā etc. diseases and it improves Agni and promots Bala and Vīrya.

Besides above some patients proove allergic to sulphur in such cases it should immediately be withdrawn or discontinued.

**Procedure for Śodhana[15]–**

It should be mixed with ghee and melted on slow fire then it may be filtered through a cloth into prescribed liquids repeat-

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13. **शोधन कारणम्–**
गन्धेमलद्वयं दृष्टं शिलाचूर्णं विषं तथा । शोधितव्यस्ततोयत्नात् ..... ॥ (र.ज.नि.)

14. अशुद्धगन्धः कुरुते च कुष्ठं तापं भ्रमं पित्तरुजं तथैव ।
रूपं सुखं वीर्यबलं निहन्ति तस्माद्विशुद्धो विनियोजनीयः ॥ (आ.प्र. २/१८)
**शुद्ध गन्धक का प्रयोग–**
शुद्धो गन्धो हरेद्रोगान् कुष्ठमृत्युजरादिकान् । अग्निकारी महानुष्णो वीर्यवृद्धिं करोति हि ॥ (आ.प्र. २/१७)

15. **शोधन विधि–**
पयःस्विन्नो घटीमात्रं वारिधौतो हि गन्धकः । गव्याज्यैर्विद्रुतो वस्त्रगालितः शुद्धिमृच्छति ॥
एवं संशोधितः सोऽयं पाषाणानम्बरे त्यजेत् । घृते विषं तुषाकारं स्वयं पिण्डत्वमेति च ॥
इति शुद्धो हि गन्धाश्मा नागजां विकृति त्यजेत् । अपथ्यादन्यथा हन्यात् पीतं हालाहलं यथा ॥ (र.चू. ११/८-१०)
गन्धको द्रावितो भृङ्गरसे क्षिप्तो विशुद्ध्यति । तद्रसैः सप्तधा स्विन्नो गन्धकः परिशुद्ध्यति ॥ (र.चू. ११/११)

ing the process three to seven times and lastly washed with hot water to clean it from oily and other contents. Some scholars suggest to give Bhāvāna for 3-21 times and some suggest Kūrma-Puṭa application for its Śodhana.

**Drugs Prescribed–** Goghrita, Gokṣīra, Bhṛiṅgarāja rasa, Palāṇḍu rasa, Eraṇḍa taila, Karañja taila and Uṣṇodaka.

**Agni mātrā–** Badarāṅgāra Tāpana, Mridu–Agni sufficient for melting of sulphur. Strong heating is contra indicated.

**Apparatus–** Darvīyantra, Steel pot, Kūrma Puta yantra.

**Repeatition of Procedure[16]–**

It may be repeated for 3-7 times depending upon the purpose for which it is to be used. As per 'Āyurveda Prakāśa' it is for one-three times only.

**Apathyas–** During Śuddha Gandhaka Therapy one should avoid to use Kṣāra, Amla, Taila, Sauvīraka, Vidāhi materials and Dvidalas (Pulses).

**Dose–** It should be used in 4 to 8 Guñjā dose twice daily with milk or with suitable anupānas (Adjuvents).

**Indications–** It is advised to be used in all the skin disorders and specially in Kuṣṭha roga. It may also be used as Rasāyana.

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स्थाल्यां दुग्धं विनिक्षिप्य मुखे वस्त्रं निबध्य च । गन्धकं तत्र निक्षिप्य चूर्णितं सिकताकृतिम् ॥
छादयेत्पृथुदीर्घेण खर्परेणैवगन्धकम् । ज्वालयेत् खर्परस्योर्ध्वं वनच्छाणैस्तथोपलैः ॥
दुग्धे निपतितो गन्धो गलित्वा परिशुद्ध्यति ॥ (र.चू. ११/१२-१४)

गन्धः सक्षीरभाण्डस्थो वस्त्रे कूर्मपुटाच्छुचिः । अथवा काञ्जिके तद्वत् सघृते शुद्धिमाप्नुयात् ॥
(आ.प्र. २/१९)

शीतो निष्कासितो धौतो जलं वस्त्रेण शोषयेत् । एवं नैर्मल्यमापन्नो गन्धकः शुद्ध उच्यते ॥
(आ.प्र. २/२३)

16. **शोधन संख्या–**
एवं वारत्रयं शोध्यो भिन्ने दुग्धे प्रयत्नतः । भक्षणार्थं हि भिषजा योगार्थं सकृदेव च ॥
(आ.प्र. २/२४)

**Kuṣṭhahara Prayoga[17]–**

As per 'Rasendra Cūḍāmaṇi' Gandhaka mixed with equal part of Marica (Black piper) and six times Triphalā Cūrṇa and Triturated with Āragbadha mūla Kvātha may be given in all types of Kuṣṭhas and also apply Āragbadha mūla paste prepared with water daily on the body affected parts. It is an experienced ramedy and may be tried.

**Another Use–**

So purified sulphur mixed with equal parts of Triphalā, ghee Bhṛiṅgarāja powder and honey may be used in one Śāṇa dose to make the eyeshight very strong and to prolong the life span without any diseased state.

**Gandhaka Druti–**

In 'Rasendra Cūḍāmaṇi'[18] and 'Rasa Ratna Samuccaya' the preparation method for Gandhaka Druti is as follow–

Mix $^{1}/_{16}$th part of Vyoṣa (Trikaṭu) powder with Gandhaka powder, it is spread over one Aratni (18") breadth cloth piece.

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17. **कुष्ठहर प्रयोग–**

गन्धकस्तुल्यमरिचः षड्गुणस्त्रिफलान्वितः । घृष्टं शम्पाकमूलेन पीतश्चाखिलकुष्ठहा ॥
तन्मूलं सलिले पिष्टं प्रत्यहं लेपयेहं तनौ । दृष्टप्रत्ययोयोगोऽयं सर्वत्राप्रतिवीर्यवान् ॥
(र.चू. ११/२४-२५)

इत्थं विशुद्धस्त्रिफलाज्यभृङ्गमध्वन्वितः शाणमितो हि लीढ़ः ।
गृध्राक्षितुल्यं कुरुतेऽक्षियुग्मं करोति रोगोज्झितदीर्घमायुः ॥ (र.चू. ११/१५)

**प्रयोगविधिः–**

इत्थं विशुद्धस्त्रिफलाज्यभृङ्गमध्वन्वितः शाणमितो हि लीढ़ः ।
गृध्राक्षितुल्यं कुरुतेऽक्षियुग्मं करोति रोगोज्झितदीर्घमायुः ॥ (र.चू. ११/१५)
शुद्धो गन्धो निष्कमात्रः सदुग्धःसेव्यो मासं शौर्यवीर्य्यप्रवृद्धयै ।
षण्मासात्स्यात्सर्वरोगप्रणाशो दिव्यादृष्टिर्दीर्घमायुःसुरुपम् ॥ (आ.प्र. २/३५)

18. **गन्धक द्रुति निर्माण विधिः–**

कलांशव्योषसंयुक्तं गन्धकं श्लक्ष्णचूर्णितम् । अरत्निमात्रे वस्त्रे तद्विप्रकीर्य विवेष्ट्य तत् ॥
सूत्रेण वेष्टयित्वाऽथ यामं तैले निमज्जयेत् । घृत्वा संदंशतो वर्तिं सर्वां प्रज्वालयेत्ततः ॥
द्रुतो विनिपतेद्गन्धो विन्दुशः काचभाजने । तां द्रुतिं प्रक्षिपेत्पत्रे नागवल्ल्यास्त्रिविन्दुकाम् ॥
बल्लेन प्रमितं शुद्धं रसेन्द्रं च प्रमर्दयेत् । अङ्गुल्याऽथ सपत्रां तां द्रुतिं सूतं च भक्षयेत् ॥
(र.चू. ११/१६-१९)

Role the cloth with drug mixture and tie it with a thread. It is then immeshed in Tila (Sesamum) oil for one Yāma. Catch it with a Sandanśi (Forcep) and apply fire to it all around. Due to heat sulphur will melt and fall drop by drop down in the glass vessel and collect it till whole sulphur roll burns.

**Method of Using Druti–**

Put three drops of this druti in a leaf of Nāgaballī (Betal) mix three ratti (360 mg) of Śuddha Pārada in it and rub it with a finger and use it along with betal leaf.

**Indications of Gandhaka Druti[19]–**

It improves digestive fire and Cures Kṣaya, Pāṇḍu, Kāsa, Śwāsa, Śūlaroga, severe Grahaṇī roga and Āmadoṣa and produce Laghutva (Lightness) in the body.

**Method (Improved) for Preparing Gandhaka Druti–**

Take oil in a steel pot, put it on fire, add 5% śuddha sulphur powder in it, apply mild heat stirring sulphur mixed with oil continuously till it dessolvs in oil.

**Test for Gandhaka Druti (Preparation)–**

Take a glass of water, put a few drops of oil over water. In the biginning these drops will immediately spreads over water surface. But on completion of the process if the drops of prepared Gandhaka druti are put on water surface. These will constrict instead of spreading over water surface. Till this test is not acheived heating on mild fire and stirring should be continued. When whole sulphur first gets melted in hot oil and then gets dissolved in oil changing pure oil into a solution.

## TĀLAKA (Orpiment ($As_2S_3$) VARṆANAM

**Group–** Uparasa group[20].

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19. **द्रुतिगुणाः–**
करोति दीपनं तीव्रं क्षयं पाण्डुं च नाशयेत् । कासं श्वासं च शूलार्त्तिं ग्रहणीमतिदुस्तराम् ॥
आमं विनाशयत्याशु लघुत्वं प्रकरोति च ॥ (र.चू. ११/२०-२०½)

20. **हरिताल वर्ग–**
गन्धाश्म ताल तुवरी कुनटी सुवीर कंकुष्ठ खेचर गैरिकनामधेयाः ।
उक्ता बुधैरुपरसाश्च ..... (र.चू. ११/१)

**Utpatti[21] (Mythological Origin)–**

1. According to ancient texts Tālaka is said to be originated as a result of the discharge produced during the sexual acts of Lord Śiva and Devī Pārvatī.

2. As a result of the chemical combination of Arsenic with sulphur in nature.

**Modern Description–**

Orpiment though abundant than realgar, is not a common mineral. It is usually found in foliated or columnor masses with a bright yellow colour. The pure mineral contains 39% sulphur and 61% Arsenic, corresponding to formula $As_2S_3$. It thus contains 9% more Sulphur than Realgar.

The monoclinic crystals of orpiment have the symmetry of the prismatic class. Though, small always they are distinctly prismatic with orthorhombic habit. It is usually in foliated or granular masses, sometimes as crusts.

Cleavage is perfect, folias are flexible but not elastic slightly sectile. Hardness– 1.5-2; Sp.Gr. 3.5; Lustre– resinous to pearly i.e. Pearly on cleavage faces and ressinous on other surfaces. Lemon yellow colour and streak translucent to opaque. Very much like Realger, but differs in colour. When heated to 100$^0$C it becomes red, it however, resumes its original colour on cooling, but when heated to 150$^0$C the change is permanent.

It is often formed with Realgar with which it is commonly associated. The mineral is non-conductor of electricity. Its sublimate in close tube is yellow. It is found in nature and prepared artificially also by the treatment of Arsenic acid with $H_2S$ under high pressure.

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21. **उत्पत्तिः–**
शिवयोः सुरतानन्दरसजंतालकं स्मृतम् ।
रसजलनिधि– चत्वारो भेदाः
पर्यायाः–
हरितालं तु तालं स्यादालं तालकमित्यपि । (आ.प्र. २/१७३)

**Varieties[22]–**

It is of two types– I. 1. Patra Tāla Uttama (Best)
2. Piṇḍa Tāla – Adhama (Inferior)

II. 1. Patala – Best
2. Piṇḍa – Inferior

**Physical Properties[23]–**

**1. Patra Tāla–** It is snigdha, Guru, Swarṇa Varṇa (Golden in colour), Bhāsura (Bright), have many thin lemilias.

Such Tālaka is considered best, as it does not contain impurities.

**2. Piṇḍa Tāla–** It is in the form of Piṇḍa (Mass), Patra rahita (Without lamilleas); laghu (Light in wt.), Swalpa Satva (Have less metal content), and Niṣprabha (Dull). It is considered inferior as it contains many impurities.

As per 'Rasajala Nidhi'. If it is of four types i.e.–

1. Patra Tāla
2. Piṇḍa Tāla
3. Godanti Haritāla } last two varieties are rare.
4. Baka Tāla

**Synonyms–** Śailūṣa bhūṣaṇa, Roma haraṇa, Naṭa bhūṣaṇa, Āla, Piñjara, Malla gandhaja.

**Pharmacological & Therapeutic Properties[24]–**

**Rasa–** Kaṭu, Tikta, Kaṣāya.

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22. **हरिताल भेदाः–**
हरितालं द्विधा प्रोक्तं पत्राख्यं पिण्डसंज्ञितम् । (र.चू. ११/३२)
स्वर्णवर्णं गुरु स्निग्धं तनु पत्रं च भासुरम् ।
तालकः पटलः पिण्डो द्विधा तत्राध उत्तमः । (रसा. ७/७४)

23. **लक्षणानि–**
स्वर्णवर्णं गुरु स्निग्धं तनुपत्रं च भासुरम् । तत्पत्रतालकं प्रोक्तं बहुपत्रं रसायनम् ॥
निष्पत्रं पिण्डसदृशं स्वल्पसत्वं तथा गुरु । (लघु)
स्त्रीपुष्पहरणं तत्तु गुणाल्पं पिण्डतालकम् ॥ (र.चू. ११/३२-३३)

24. **हरिताल गुणाः–**
श्लेष्मवातविषरक्तभूतनुत् केवलं च खलु पुष्पहृत्स्त्रियः ।
स्निग्धमुष्णकटुकं च दीपनं कुष्ठहारि हरितालमुच्यते ॥ (र.चू. ११/३४)

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**Guṇa–** Uṣṇa, Guru, Snigdha **Vīrya–** Uṣṇa

**Vipāka–** X

**Karma–** Kuṣṭhahara, Viṣa-Rakta-Bhūtanut, Strīpuṣpaharaṇa, Romahāraka, Dīpana, Aṅga Dīpti Kāntikara, Vṛiṣya, Balakara, Puṣṭikara, Ojaskara, Agnikara, Mṛityuhara.

**Doṣa Prabhāva–** Vāta Śleṣmahara, Tridoṣaghna. (R.T.)

**Vyādhi Prabhāva–** Vāta roga, Kapha roga, Rakta pitta, Vāta- rakta, Kuṣṭha, Kaṇḍu, Vīsarpa, Dadru, Pāmā, Slīpada, Śwāsa, Kāsa, Viṣa, Jwara, Kaṭigraha, Gudāmaya, Kṣaya, Prameha, Āsyaroga, Vraṇa, Raktavikāra, Kaphapittaja roga, Kāca and Mṛityu.

**Method for Śodhana[25]–**

**Procedures Used–** 1. Svedana in Dolāyantra for 1 yāma to 3 days.
2. Vastra Poṭṭalī bandhana & Pācana.
3. Kṣālana

**Drugs Used–** Kūṣmāṇḍa Toya, Cūrṇodaka, Tila Kṣārajala Sacūrṇa Kāñjika, Tila Taila, Triphalā Kvātha, Kaṭutumbī Rasa, Sālmalikṣāra Jala.

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हरितालं कटुस्निग्धं कषायं च विसर्पनुत्। तालकं हरते रोगान् कुष्ठमृत्युजरादिकान्॥
(र.सा.सं. १/१८७)

हरितालं कटु स्निग्धं कषायोष्णं हरेद्विषम्। कण्डूकुष्ठादिरोगास्रकफपित्तकचव्रणान्॥
(आ.प्र. २/१७६)

राजयक्ष्मादिकान् रोगान् विजित्य कुरुते वपुः। वज्रतुल्यं जरां हत्वा नृणां पथ्याशिनां ध्रुवम्॥

25. **शोधनम् –** (आ.प्र. २/२०८)

स्विन्नं कूष्माण्डतोये वा तिलक्षारजलेऽपि वा। तोये वा चूर्णसंयुक्ते दोलायन्त्रेण शुद्धयति॥
(र.चू. ११/३५)

तालकं कणशः कृत्वा बद्ध्वा पोटलिकां ततः। दोलायन्त्रेण यामैकं सचूर्णे काञ्जिके पचेत्॥
यामैकं दोलया तद्वत् कूष्माण्डस्वरसे ततः। तिलतैले पचेद्यामं यामं च त्रैफले जले॥
दोलायन्त्रे चतुर्यामं पक्वं शुद्ध्यति तालकम्॥ (आ.प्र. २/१८२-१८३)

तालक मात्रा–

रोगी तण्डुलपरिमितां मात्रां सितोपलाजीरकचूर्णानुपानेन सह भक्षयेत्। पथ्यं पूर्वोक्तं षष्टिकौदनं गोदुग्धं वा। अष्टभागेन तस्य तु रक्तिपरिमिता मात्रा, गुणास्तु पूर्वस्मादधिकतराः।
(आ.प्र. २/२०७)

**Aśuddha Tāla Doṣaḥ**[26]– Destroys Āyu, Provokes Kapha and Vāta, cause Prameha, Tāpa, Sphoṭa and Aṅga Saṅkoca, Śarīra Cārutā, Kuṣṭha roga.

**Dose**– One Taṇḍula, $^1/_8$th part to one guñjā.

**Method for Tālaka Māraṇa**[27]–

Take Śuddha Patra Tāla, Triturate it with Punarnavā rasa. For one day and allow it to dry. Prepare its Golaka (Bolus) or Cakrikā, Put it in a Sthālī (Wide mouth pot) filled with Punarnavā Ksāra upto half. Remaining part of Sthālī may also be filled with Punarnavā Kṣāra. Keep the Sthālī on fire and apply heat for five days increasing heat slowly. After five days stop heating and remove Golaka or Cakrikā from the Sthālī on self cooling. In this way Tālaka bhasma can be prepared. Its dose is prescribed as one Ratti with suitable Anupānas.

**Apathyas**[28]–

During this therapy avoid Lavaṇa, Amla and Kaṭu rasa Padārthās, also avoid Tāpa and Ātapa (Sun) If any patient can not avoid salt in diet he may use little Saindhava Lavaṇa as its Uparasa is Madhura.

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26. **अशुद्धदोषाः–**

अशुद्धंतालमायुर्घ्नं कफमारुतमेहकृत्। तापस्फोटाङ्गसंकोचान् कुरुतेऽतो विशोधयेत्॥
(आ.प्र. २/१७९)

हरति च हरितालं चारुतां देहजातां सृजति च बहुतापानङ्गसंकोचपीडाः।
वितरति कफवातौ कुष्ठरोगं विदध्यादिदमशितमशुद्धं मारितं वाऽप्यसम्यक्॥
(आ.२/१७७)

27. **मारणम् –**

पत्राख्यं तालकं शुद्धं पौनर्नवरसेन तु। खल्वे विमर्दयेदेकं दिनं पश्चाद्विशोषयेत्॥
संशोष्य गोलकंकृत्वा चक्राकारमथापि वा। ततः पुनर्नवाक्षारैः स्थल्यामर्धं प्रपूरयेत्॥
तत्र तद्गोलकं कृत्वा पुनस्तेनैव पूरयेत्। स्थालीं चुल्ल्यां समारोप्य क्रमाद्वह्निं विवर्धयेत्।
दिनान्यन्तरशून्यानि पञ्चवह्निं प्रदीपयेत्॥ एवं तन्म्रियते तालं मात्रा तस्यैकरक्तिका।
अनुपानान्यनेकानि यथारोगं प्रयोजयेत्॥ (आ.प्र. २/१८४-१८७)

28. **अपथ्यानि–**

एतद्भेषजसेवी तु लवणाम्लौ विवर्जयेत्। तथा कटुरसं वह्निमातपं दूरतस्त्यजेत्॥
लवणं यः परित्यक्तुं न शक्नोति कथञ्चन। स तु सैन्धवमश्नीयान्मधुरोपरसो हि सः॥
(आ.प्र. २/१९१-१९२)

**Method for Satva Pātana[29]–**

Mix Lākṣā, Rājī, Tila, Śigrumūla, Saindhava lavaṇa, and Guḍa with Śuddha Tālaka in half quantity. Keep it in Chidra mūṣā, close its mouth properly and apply heat with Pātāla yantra. In this way its Satva (Arsenic) may be extracted certainly. In 'Rasendra Cūḍāmani' its Satva colour is mentioned as white i.e. Arsenic.

## MANAḤ ŚILĀ (Realger ($As_2S_2$) VARṆANAM

**Group–** Uparasa group[30].

**Modern Description–**

Realger occurs as a bright-red in-crustations and coatings on other subtances as compact and granular masses and as crystals implanted on other minerals. Its crystals are short, monoclinic and prismatic. Cleavage distinct. It is sectile and soft, fracture conchoidal, lustre-resinous. Its colour is Aurelian red to orange yellow. Streak has a higher shade, hardness– 1.5-2; Sp.Gr. 3.5; Transparent to Translucent or opeque. Contains As– 70.1% and S- 29.1%.

Alters to orpiment. Non-conductor of electricity. When heated on charcoal it catches fire and burns with a light blue flame giving of dense cloud of Arsenic fumes and the odour of burning Sulphur ($SO_2$) when heated in a closed tube it melts, volatilises and yeilds transparent red sublimate in the cold parts of the tube. Its bright red colour and its reactions for sulphur distinguish it from other minerals and from cinnabar by its softness, its low sp.Gr. and the Arsenic fumes.

On exposure to the air and to the light realger oxidises yeilding orpiment ($As_2S_3$) and Arsenolite ($As_2O_3$).

It occurs with the ores of Silver, Lead and Antimony and is usually associated with orpiment. Also as a sublimation

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29. **सत्वपातनम् –**
लाक्षा राजी तिला: शिग्रुष्टंकणं लवणं गुडम् । तालकार्धेन संमिश्र्य छिद्रमूषानिरोधितम् ॥
पुटेत् पातालयन्त्रेण सत्त्वं पतति निश्चितम् ॥ (आ.प्र. २/२१०)

30. **मनःशिला वर्ग–**
गन्धाश्म ताल तुवरी कुनटी सुवीर ..... ॥

product and as a deposit from hot spring. In most cases it is a product of the interaction of Arsenic with Sulphur vapours. Realgar occurs in native form and also prepared artificially. It is red in colour.

**Varieties**[31]**–**

Its three varieties are mentioned– (R. Cūḍamaṇi)

1. Śyāmāṅgī – Uttama
2. Kaṇa Vīrikā – Madhyama
3. Khaṇḍākhyā – Adhama

According to 'Āyurveda Prakāśa' 'Śyāmāṅgī' is red in colour just like Hiṅgula (Cinnabar), looks slightly yellowish also and very bright. Kaṇavīrikā is red in colour just like Tāmra (Copper), it is in powder form and heavy in wt., it is considered best. Khaṇḍākhyā is slightly red and yellow in colour and very heavy in weight. 'Manaḥ Śilā' contains more amount of Śatva.

**Physical Properties–**

Manaḥ Śilā should be bright red in colour just like Japā puṣpa. It should also be heavy in weight and without impurity like stones and clay etc.

**Synonyms**[32]**–** Manohwā, Nāga Jihwikā, Nepālī, Kunaṭī, Manogupta, Satvātmikā, Kaṇavīrā, Divyauṣadhi.

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31. **भेदाः–**

मनःशिला त्रिधा प्रोक्ता श्यामाङ्गी कणवीरिकां । खण्डाख्या चेति तद्रूपं विविच्य परिकथ्यते ।।
मनःशिला त्रिधा प्रोक्ता श्यामाङ्गी कणवीरिका । द्विखण्डाख्या च तासां तु लक्षणानि निबोधत ।।
श्यामा हिङ्गुलवद्रक्ता किंचित्पीताऽतिदीप्तिका । कणवीरा रक्तवर्णा चूर्णरूपाऽतिभारयुक् ।
किंचिद्रक्ता च गौरा च द्विखण्डा भारवत्तरा ।। त्रिविधासु च श्रेष्ठास्यात्कणवीरा मनःशिला ।।
(आ.प्र. २/२१५-२१७)

**लक्षणानि–**

श्यामा रक्ता सगौरा च भाराढ्या श्यामिका मता । तेजस्विनी च निर्गौरा ताम्राभा कणवीरिका ।।
चूर्णीभूतातिरक्ताङ्गी सभारा खण्डपूर्विका । उत्तरोत्तरतः श्रेष्ठा भूरिसत्त्वा प्रकीर्त्तिता ।।
(र.चू. ११/५४-५६)

32. **पर्यायाः–**

मनः शिला मनोगुप्ता मनोह्वा नागजिह्विका । नेपाली कुनटी गोला शिला दिव्यौषधिः स्मृता ।।
(आ.प्र. २/२१३)

**Pharmacological & Therapeutic Properties[33]–**

**Rasa–** Tikta, Kaṭu **Guṇa–** Snigdha, Uṣṇa, Guru, Sara.

**Vīrya–** Uṣṇa **Vipāka–** X

**Karma–** Sarva rasāyanāgryā, Lekhanī, Viṣaghnī, Śoṣiṇī, Varṇakara, Asranut, Bhūtopadravanāśinī.

**Doṣa Prabhāva–** Kapha Vātahantri, Kaphaghnī.

**Vyādhi Prabhāva–** Bhūtāveśa, Viṣaroga, Agnimāndya, Kaṇḍū, Koṭha, Kṣaya, Kāsa, Swāsa, Vātamaya, Śleṣmāmaya, Jwara, Asraroga, Kuṣṭha roga, Ānāha, Sarva roga.

**Dose–** $^{1}/_{32}$–$^{1}/_{16}$th part of Guñjā.

**Method for Śodhana–**

Aśuddha Manaḥśilā[34] if used internally is likely to produce following diseases–

Aśmarī, Śarkarā, Mūtrakṛiccha, Mūtravrodha, Mandāgni, Mandabala, Malabandha and Kāntināśa. Hence it should be subjected to Śodhana first.

**Procedure for Śodhana[35]**–(1) Bhāvanā with prescribed liquids for seven times. (2) Svedana in Dolāyantra for one yāma to one day.

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33. **गुणाः–**
मनःशिला सर्वरसायनाग्र्या तिक्ता कटूष्णा कफवातहन्त्री ।
सत्वात्मिका भूतविषाग्निमान्द्यकण्डूतिकोठक्षयहारिणी च ।। (र.चू. ११/५७)
मनःशिला गुरुर्वर्ण्या सरोष्णा लेखनी कटुः ।
तिक्ता स्निग्धा विषश्वासकासभूतकफास्रनुत् ।। (आ.प्र. २/२१८)

34. **मनःशिला दोषाः–**
मनःशिला मन्दवलं करोति जन्तुं ध्रुवं शोधनमन्तरेण ।
मलस्य वन्धं किल मूत्ररोधं सशर्करं कृच्छ्रगदं च कुर्यात् ।। (आ.प्र. २/२१९)

35. **शोधनम् –**
अगस्त्यपत्रतोयेन भाविता सप्तवारकम् । शृङ्गवेररसैर्वापि विशुद्ध्यति मनःशिला ।।
(र.चू. ११/५८)
जयन्तिका द्रवे तैले दोलायन्त्रे मनःशिला । दिनमेक मजामूत्रे भृङ्गराजरसेऽपि च ।।
पचेत्यहमजामूत्रे दोलायन्त्रे मनःशिलाम् । भावयेत्सप्तधा पित्तैरजायाः शुद्धिमृच्छति ।।
(आ.प्र. २/२२०-२२१)

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**Drugs Used–** Agastya patra rasa, Śriṅgavera rasa, Jayantīrasa or Taila, Ajāmūtra and Bhriṅga rāja rasa, Ajāpitta.

**Satva Pātana**[36]**–**

Mix Śodhita Manaḥśilā with $^1/_8$th part Kiṭṭa (Maṇḍūra), Guḍa, Guggulu and Ghee, grind these, prepare small balls, close in mūṣā and apply strong heat. In this way a Satva can be extracted from Manaḥ Śilā. As per Tālaka method also its Satva may be extracted. Arsenic comes as its Satva.

**Note–** (I) As per 'Āyurveda Prakāśa' Manaḥ Śilā is a variety of Tālaka but Manaḥ Śilā is red in colour where as Tālaka is deep yellow in colour.

(II) Sometimes it is observed that even purified Manaḥ Śilā may produce some toxic effects in the body, hence to prevent that we must use cow's milk with honey till these are controlled. It means during Manaḥ Śilā therapy cow's milk with honey should always be used to prevent the toxic effects of Manaḥ Śilā.

## TUVARY/SPHAṬIKĀ (Alum) VARṆANAM

**Group–** Uparasa group.

**Ayurvedic Description–**

It is called 'Tuvarī'[37] because of its Kaṣāya (Astringent) Rasa (taste). 'Sphaṭika' because of its form, colour and appearance i.e. –

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भृङ्गागस्त्यजयन्तीनामार्द्रकस्वरसेषु च । दोलायन्त्रेण संस्विन्ना विशुद्ध्यति मनःशिला ॥
(आ.प्र. २/२२३)

36. **सत्वपातनम्–**
अष्टमांशेन किट्टेन गुडगुग्गुलुसर्पिषा । कोष्ठ्यां रुद्ध्वा दृढं ध्माता सत्वं मुञ्चेन्मनःशिला ॥
(र.चू. ११/५९)
तालवच्च शिलासत्त्वं ग्राह्यं तैरेव चौषधैः । (आ.प्र. २/२२४)
अष्टमांशेन गुडगुग्गुलुलोहकिट्टेन सर्पिषा सह मर्दयित्वा
मूषां दत्वाऽन्धयित्वा कोष्ठ्यां दृढं ध्माता सत्वं मुञ्चेत् ॥ (र. पद्धति)

37. **तुवरी-कांक्षी–**
सौराष्ट्रे खनिसम्भूता मृत्स्ना या तुवरी मता । वस्त्रेषु लिप्यते याऽसौ मञ्जिष्ठारागबन्धिनी ॥
(र.चू. ११/४९)
सौराष्ट्री तुवरी कांक्षी मृत्तालकसुराह्वजे । आढ़की सापि च ख्याता मृत्स्ना च सुरमृत्तिका ।
स्फटिकाया गुणाः सर्वे सौराष्ट्र्यामपिकीर्तिताः ॥ तस्मात्परस्पराभावे प्रयोज्याऽन्यतरा बुधैः ॥
(आ.प्र. २/३२०-३२१)

its crystals are similar to Sphaṭika (Rock crystal/quartz) in colour and form. 'Saurāṣṭrī' because in India it occurs mainly in Saurāṣṭra region of Gujarat State. Initially the earth containing alum was found in Saurastra and from there it is supplied through out India. Later on it was found in Punjab, U.P., Bihar and Bombay also. On the basis of its ancient description it is a type of soil in which Aluminium and Sulphur are present in a specific combination and is obtained either from the hilly areas or planes. According to the author of 'Rasajala Nidhi' 'Gopi Candana' is known as Tuvarī which is found near Dwāraka in Saurāṣṭra.

**Modern Description–**

Alum group includes a large number of isomorphus compounds. The group crystallizes in the isometric system, but all of its members are readily soluble in water. The commonest alums are Kalinite ($KAl(SO_4)_2 12(H_2O)$) and Soda alum ($NaAl(SO_4)_2 12H_2O$).

Alunite is alum stone and comparatively a rare mineral. It has long been used as a source of Potash alum. The mineral when pure, contains $SO_3$ 36.6%, $Al_2O_3$ 37%, $K_2O$ 11.4% and $H_2O$ 13.0% or $K_2O$ 11.4%, $Al_2O_3$ 37%, $SiO_3$ 38.6% and $H_2O$ 13.0% and may contain some sodium. Insoluble in HCl and water but soluble in $H_2SO_4$.

Alunite occurs in hexagonal crystals. The natural crystals are generally small, simple Rhombohedrans resembling cubes, often with curved surfaces, more rarely tabular. The mineral also occurs as massive or compact with fibrous, granular or earthy porcelain like structure.

Perfect basal cleavage, conchoidal, splintary or earthy fracture. Hardness 3.5-4; sometimes harder due to admixture of quartz and feld spar, tough white streak. It is colourless-white, pink, grey, yellowish or reddish. Transparent to translucent and has vitrious to pearly lustre i.e. pearly on cleavage surfaces, otherwise vitreous. Sp.Gr. 2.6 to 2.75; before blow pipe it remains infusible. In the closed tube it yeilds water and at a high temperature sulphurous and sulphuric oxides. It also gives the Sulphur reaction when ignited it gives of all its water and three quarters of its $SO_4$ the other quarter remaining $K_2SO_4$. When

the ignited residue is treated with water, the Potassium sulphate dissolves and insoluble $Al_2O_3$ is left.

The mineral is characterised by its colour and hardness together with the reactions for $Al_2H_2O$ and Sulphuric acid.

Alunite occurs in irregular deposits and in veins, in altered feld sparatic rocks. Common associate are Kaolin, Pyrite, opal and quartz. It occurs in Czechoslovakia, Greece, Italy, France, Maxica, japan and U.S.A.

Alunite is a source of alum and Potassium sulphate, which are obtained by roasting and subsequent leaching.

**Varieties**[38]**–**

Rasārṇava– 1. Sita – Khaṇḍātmikā
2. Kriṣṇa – Cūrṇa rupā.

R. Cūḍāmaṇi– 1. Isat Pita – Guru, Snigdha, Fataki
2. Śubhravarṇa– Nirbhārā, Snigdhā, Sāmlā, Fullikā

R.R.S.– 1. Fatakī – Iṣat pītā
2. Fullika – Śubhra varṇā

**Form & Appearance–**

Fullikā and Tuvarī are the same, which is obtained from the soil of Saurastra hence it is also called Saurāṣṭrī. It is white and crystalline and sometimes in big masses. Sometimes it is red, black or blue due to the presence of Iron and other impurities in traces. It is also used for dying purposes of cloths and also in making the colour of Mañjiṣṭhā more deep and stable.

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38. **स्फटिका भेदाः–**
स्फटिका फुल्लिका चेति द्विविधा परिकीर्त्तिता । ईषत्पीता गुरु स्निग्धा पीतिका विषनाशिनी ।।
व्रणकुष्ठहरा सर्वकुष्ठघ्नी च विशेषतः । निर्भारा शुभ्रवर्णा च स्निग्धा साम्ला परामता ।।
सा फुल्लतुवरी प्रोक्ता लेपाच्छीघ्रं चरेद्यः ।। (ग.चू. ११/५०-५१)
स्फटिकाया गुणाः सर्वे सौराष्ट्र्यामपिकीर्त्तिताः । तस्मात्परस्पराभावे प्रयोज्याऽन्यतरा बुधैः ।।
(आ.प्र. २/३२१)

**Synonyms**[39]**–** Saurāṣṭrī, Tuvarī, Sphaṭikā, Sura mṛittikā, Kāṅkṣī, Fullikā.

**Pharmacological & Therapeutic Properties**[40]**–**

**Rasa–** Kaṣāya, Kaṭu, Amla, Madhura.

**Guṇa–** Guru, Snigdha, Iṣatpīta, Śubhra, Nirbhāra.

**Vīrya–** Uṣṇa

**Vipāka–** X

**Karma–** Kaṇṭhyā, Keśyā, Vraṇaghnā, Viṣaghnā, Netrahitā, Garadoṣa vināśinī, Loha māraṇī, Pārada jāriṇī, Yoni Saṅkoca Kāriṇī, Rociṣā, Vraṇa Śodhinī, Raktastambhinī, Kuṣṭhaharā.

**Doṣa Prabhāva–** Kaphahā, Tridoṣahā, Ślesmapittaghnā.

**Vyādhi Prabhāva–** Śvitra, Kuṣṭha, Vraṇa, Garaviṣa, Kaphaja roga, Netra roga, Uraḥ Kṣata, Kṣaya, Śūla, Vīsarpa, Rakta Srāva, Pittaja roga, Tridoṣaja roga.

**Method for Śodhana**[41]**–**

**Procedures–** 1. Svedana – One-three days.

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39. **पर्यायाः–**

स्फटिका च स्फटी प्रोक्ता श्वेता शुभ्रा च रङ्गदा। दृढ़रङ्गा च रङ्गाङ्गा रङ्गदृढा च कथ्यते ॥
(आ.प्र. २/२५६)

सौराष्ट्री तुवरी कांक्षी मृत्तालकसुराष्ट्रजे। आढ़की सापि च ख्याता मृत्स्ना च सुरमृत्रिका ॥
(आ.प्र. २/३२०)

40. **गुणाः–**

कांक्षी कषाया कटुकाम्ल कण्ठ्या केश्या व्रणघ्नी विषनाशिनी च।
श्वित्रापहानेत्रहिता त्रिदोषशान्तिप्रदा पारदजारिणी च ॥ (र.चू. ११/५२)

स्फटिका तु कषायोष्णा वातपित्तकफव्रणान्। निहन्ति श्वित्रवीसर्पान् योनिसंकोचकारिणी ॥
(आ.प्र. २/२५७)

स्फटिका निर्मला श्वेता श्रेष्ठा स्याच्छोधनं क्वचित्। न दृष्टं शास्त्रतो लोका वह्नावुत्फुल्लयन्ति हि ॥
(आ.प्र. २/२५८)

स्फटिकाया गुणाः सर्वे सौराष्ट्र्यामपि कीर्त्तिताः। तस्मात्परस्पराभावे प्रयोज्याऽन्यतरा बुधैः ॥
(आ.प्र. २/३२१)

41. **शोधनम् –**

तुवरी काञ्जिके क्षिप्ता त्रिदिनाच्छुद्धिमृच्छति। (र.चू. ११/५३)

स्फटिका निर्मला श्वेता श्रेष्ठास्याच्छोधनं क्वचित्। न दृष्टं शास्त्रतो लोका बह्नावुत्फुल्लयन्तिहि ॥
(आ.प्र. २/२५८)

2. Utphullana – Till water of crystallisation burns.

3. Agni Tāpana – Heat till it is puffed.

**Drugs Used for Śodhana–**

Kāñjika, Dhānyāmla, Agni (Citraka)

**Note–** The Sphaṭikā (Alum) which is white, pure and clear does not require any purification rather it may be ignited to remove its water of crystallisation and to make it puffed and light in weight.

**Method of Satvapātana[42]–**

**Procedure used–** 1 Mardana (Grinding/Trituration) with Ksārodaka and Amla drava, made into balls, keep these in Mūṣā and apply strong heat. In this way alum may yeild as its Satva content.

## KĀSĪSA (Ferrous Sulphate – $FeSO_4H_2O$) VARṆANAM

**Group–** Uparasa group.[43]

**Utpatti–** It is found in nature and prepared artificially also.

**1. Natural–** It occurs in nature as a decomposition product of Iron sulphide.

**2. Artificial–** Prepared artificially by the action of $SO_4$ on iron in factories.

**Occurance–** It occurs in crystalline and massive forms. Its colour is green. In market it is obtained by the name of Hirākasa.

**Modern Description–**

The mineral of iron sulphate is Melantite. It is monoclinic and prismatic class. Crystals are very rare. Usually as earthy, fibrous or capillary crusts or efflorescences.

Its crystals have perfect basal or distinct prismatic cleavages. Conchoidal to earthy fracture. Hardness– 2; Sp.Gr. 1.8-1.9; various shades of green colour are seen. After exposure often looks yellowish, lustre vitrious to dull. Trasparent to Trans-

42. **सत्वपातन–**
क्षाराम्लैर्मर्दिता ध्माता सत्वं मुञ्चति निश्चितम्। (र.चू. ११/५३)

43. **कासीस वर्ग–**
गन्धाश्मगैरिकासीसकांक्षीतालशिलाञ्जनम् कंकुष्ठं चत्युपरसाः ..... ॥

lucent. Sweat & astringent taste somewhat metallic. Contains FeO 25.9%, $SO_3$ 29.8% and $H_2O$ 45.3%. Some times contains Manganes, Magnessium, Copper or Zinc. Early soluble in water. Losses on expossure and crumbles to powder.

It is a decomposition product of iron sulphide mineral. Specially Pyrite, Marcasite, Chalcopyrite and Pyrrhotite.

**Localities–** Germany, Bovaria, Sweden, Spain and U.S.A. Melantirite does not occur abundantly enough in nature. The artificial compound is used in large quantities.

**Varieties[44]–**

According to colour–

(I) 1. Śukla
2. Kṛiṣṇa } 'Rasārṇava'
3. Pīta

(II) 1. Śveta – Bālukā Kāsīsa
2. Pīta – Puṣpa Kāsīsa } 'Rasajala Nidhi'
3. Harita – Kṛitrima Kāsīsa
4. Syāma – Dhātu Kāsīsa

According to form–

(I) 1. Bālukā Kāsīsa – Śīta } 'Rasendra Cūḍāmaṇi'
2. Puṣpa Kāsīsa – Pīta } 'R.R.S.'

(II) 1. Dhātu Kāsīsa – Pāṁśukāsīsa } 'Ay. Pra.'
2. Puṣpa Kāsīsa – Kiñcitpīta

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44. **भेदाः–**

कासीसं बालुकाधेकं पुष्पपूर्वमथापरम् । (र.चू. ११/७८)

कासीसं धातुकासीसं पांसुकासीसमित्यपि । किंचित्तदेव पीतं तु पुष्पकासीसमुच्यते ॥
(आ.प्र. २/२७३)

लक्षणानि–

क्षाराम्लं गुरुधूमाभं सोष्णवीर्यं विषापहम् । बालुकापूर्वकासीसं श्वित्रघ्नं केशरञ्जनम् ॥
(र.चू. ११/७८)

पुष्पादिकासीसमतिप्रसिद्धं सोष्णं कषायाम्लमतीव नेत्र्यम् ।
विषानिलश्लेष्मगदव्रणघ्नं श्वित्रक्षयघ्नं कचरञ्जनं च ॥ (र.चू. ११/७९)

**Note–** Actually Kāsīsa is of two types i.e. Bālukā Kāsīsa and Puṣpa Kāsīsa. The Bālukā Kāsīsa Pāṁśukāsīsa and Dhātu Kāsīsa are the same and greenish in colour where as Puṣpakāsīsa is yellowish in colour which is due to exposure to air and atmosphere.

**Pharmacological & Therapeutic Properties[45]–**

**Rasa–** Tiktā, Amla, Kaṣāya and Khṣārīya

**Guṇa–** Snigha, Uṣṇa, Guru, Nirmala. Dhūmābha

**Vīrya–** Uṣṇa

**Vipāka–** X

**Karma–** Keśya, Netrya, Kacarañjana, Āma Saṁśoṣaṇa, Viṣāpaha, Śvitraghna, Dīpana, Vraṇaghna, Kṣayaghna, Rasāyaṇa, Rāgakara, Ropaṇa, Jantughna, Rakta vardhaka, Rajaḥ pravartaka Rasavadguṇakāraka, Rasa bandhana.

**Doṣa Prabhāva–** Śleṣmanāśana, Vātakaphahara.

**Vyādhi Prabhāva–** Świtra, Viṣajaroga, Vātakaphaja roga, Vraṇa, Kṣayaroga, Netra roga, Hṛidroga, Pāṇḍuroga, Gulma, Plīharoga, Śūla roga, Arśas, Agnimāndya, Palitaroga, Mūtra-Kṛicchra, Aśmarī, Kaṇḍū, Kṛimi, Kuṣṭha, Jwara.

**Method for Śodhana[46]–**

**Procedures Used–** 1. Svedana in dolāyantra
2. Bhāvanā

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45. **गुणाः–**

रसायनविधानेन सेवितं वत्सरावधि । आमसंशोषणं श्रेष्ठं मन्दाग्निपरिदीपनम् ॥
पलितं बलिभिः सार्धं विनाशयति निश्चितम् ॥ (र.चू. ११/८४)
कासीसद्वयमम्लोष्णं तिक्तं च तुवरं तथा । वातश्लेष्महरं केश्यं नेत्र्यं कण्डूविषप्रणुत् ॥
मूत्रकृच्छ्राश्मरीश्वित्रनाशनं परिकीर्त्तितम् ॥ (आ.प्र. २/२७४-२७४½)

46. **शोधनम् –**

सकृद्भृङ्गाम्बुना स्विन्नं कासीसं निर्मलं भवेत् । (आ.प्र. २/२७५)
कासीसंशुद्धिमाप्नोति पित्तैश्चरजसा स्त्रियः ॥ (र.र.स.)

**सेवन विधि–**

वलिनाहतकासीसं कान्तं कासीसमारितम् । उभयंसमभागं हि त्रिफलावेल्लसंयुतम् ॥
विष्मांशघृतक्षौद्रयुतं शाणमितं प्रगे । सेवितं हन्ति वेगेन श्वित्रपाण्डुक्षयामयान् ॥
गुल्मप्लीहं गुदशूलं मूत्ररोगमशेषतः ॥ (र.चू. ११/८१-८३)

**Drugs Used–** Bhriṅgarāja rasa, Kāñjī, Nimburasa, Nārī rajasa, Pitta, Rājakośātakīrasa.

**Method for Māraṇa–**

**Māraṇa & Bhāvanā Drugs–** Nimburasa, Kāñji, Kṣīra.

**Procedures Used–** Bhāvanā, Cakrika Nirmāṇa, Saṁpuṭa Karaṇa.

**Type & Number of Puṭa–** Laghupuṭa 2-3 times or till red and niramla bhasma is prepared.

**Dose–** 1-2 Guñjā (125-250 mg.)

**Method for Satva Pātana[47]–**

Its Satva pātana may be done either like Tuvarī or Tālaka. Generally it is not in practice.

## GAIRIKA (Red Ochre – Heamatite) VARṆANAM

**Group–** Uparasa group.[48]

**Modern Description–**

Gairika is heamatite or red iron ore. It is an iron oxide having red colour. Chemically the mineral is $Fe_2O_3$ corresponding to Fe– 70% and O– 30%. In addition to these hamatite often contains some magnesium and Titanium. The crystals are either thin or thick tabular, Pyramidal rhombohedral, occurs more abundantaly in compact, granular, columnor, fibrous, micaceous and earthy masses.

It has no well defined cleavage but a rhombohedral parting, which is nearly cubical, conchoidal, earthy to uneven fracture. Its crystals are black, glistening and opaque except in very small spilnters. These are red and transparent or translucent. Earthy varieties are red, the streak of all varieties is brownish red or cherry red. The hardness of crystallised hamatite is 5.5-6.5; Earthy varieties are apperently soft. Sp.Gr. 4.9-5.3, metal-

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47. **सत्वपातनम्–**
तुवरीसत्ववत् सत्वमेतस्यापि समाहरेत्। (र.चू. ११/८०)

48. **गैरिक-वर्ग–**
गन्धाश्म गैरिकासीस कांक्षीतालशिलाञ्जनम्। कंकुष्ठं चेत्युपरसाः ..... ॥
(र.र.स.)

lic spelendent to dull lustre. Opaque except in very thin scales, commonly steal grey, reddish brown or iron black in colour. Sometimes slightly magnetic owing to the presence of small amount of magnetite. Good conductor of electricity. Infusible before blow pipe. Becomes, magnetic when heated on charcoal. When powdered it is slowly soluble in acids. Heamatite has many varieties, of which red Heamatite is compact in which fibrous structure is not very pronounced. Red ochre is a red earthy hamatite which is very soft and has a dull lustre often contains considerable amount of clays, sand and other impurities.

Its excellent crystals are found in the island of Elva. in the meditarranean sea, in Switzerland, Sweden, England and U.S.A. Enormous deposits of Hamatite occur in the rocks and in the lakes, which includes both hard and soft varieties.

**Nirukti of the Term Swarṇa Gairika–**

It is called Swarṇagairika due to its Golden red colour. Besides it is also used by Goldsmiths for making the colour of Gold more bright and beautiful hence it is called Swarṇagairika although it does not contain Gold even in traces.

**Pāṣāna Gairika–** It is called Pāṣāṇa Garika because it is hard just like stone. It does not contain clay or sand. The percentage of iron is more in this variety where as in Swarṇa Gairika the % of iron is less as it contains clay and sand and hence it is smooth, soft and glistening due to the presence of impurities its colour is not so bright.

**Varieties**[49]**–** Its two varieties are mentioned, viz–

1. Pāṣāṇa Gairika and
2. Swarṇa Gairika.

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49. **भेदाः–**

पाषाणगैरिकं चैकं द्वितीयं स्वर्णगैरिकम्। स्वर्णगैरिकं श्रेष्ठं द्वितीयात् गैरिकात् परम्॥ (र.चू. ११/८५)

द्विविधं गैरिकं प्राहुः स्वर्णं सामान्यगैरिकम्। परैस्तृतीयमप्युक्तं पाषाणाख्यं हि गैरिकम्॥
स्वर्णगैरिकं रक्ततरं शिष्टं तु रक्तकम्॥ (आ.प्र. २/२६८-६९)

पाषाणगैरिकं प्रोक्तं कठिनं ताम्रवर्णकम्। पाषाणगैरिकं चान्यत् पूर्वस्मादल्पकं गुणैः॥ (र.चू. ११/८६-८७)

of the two varieties Swarṇa Gairika is best/superior than the other one. In 'Āyurveda Prakāśa' three varieties are mentioned viz.

1. Swarṇa Gairika, 2. Sāmānya Gairika and 3. Pāṣāṇa Gairika.

**Physical Properties–**

Swarṇa Gairika is 'Raktatara' (deep red) in colour where as Pāṣāṇa Gairika is Tāmra varṇa (copper colour) and hard on touch. In properties also it is inferior. It does not contain clay and sand. In this iron percentage is more. In ancient texts Gairika is claimed as Satva rūpa.

**Pharmacological and Therapeutic Properties[50]–**

**Rasa–** Madhura, Tikta, Kaṣāya

**Guṇa–** Snigdha, Kaṭhina, Rūkṣa and Hima

**Vīrya–** Śīta

**Vipāka–** Madhura

**Karma–** Cakṣuṣya, Viṣāpaha, Balya, Netrya, Kaṇḍūghna, Vraṇa ropaṇa, Dāhahara, Raktahara, Alakṣmīhara.

**Doṣa Prabhāva–** Pittāpaha (Pitta Śamana) Kaphāpaha, Vātajit.

**Vyādhi Prabhāva–** Rakta-Pitta, Hikkā, Vami, Viṣadosa, Atikaṇḍū, Udararoga, Netra roga, Vraṇa, Dāha, Asṛigdara, Jwara, Udarda.

**Method of Śodhana[51]–**

**Procedures Used–**1. Bhāvanā with Godugdha.

2. Bharjana in ghee

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50. **गुणाः–**

स्वादुस्निग्धं हिमं नेत्र्यं कषायं रक्तपित्तनुत्। हिध्मावभिविषघ्नं च रक्तघ्नं स्वर्णगैरिकम्॥ (र.चू. ११/८६)

गैरिकद्वितयं स्निग्धं **मधुरं** तुवरं हिमम्। चक्षुष्यं दाहपित्तास्रकफहिक्काविषापहम्॥
अतिकण्डूहरं रूक्षं **तथा** प्रोक्तमुदर्दनुत्॥ पाषाणगैरिकं त्वन्यद्विक्काऽलक्ष्मीविषापहम्॥ (आ.प्र. २/२७०-२७१)

51. **शोधनम् –**

गैरिकं हि गवां दुग्धैर्भावितं शुद्धिमृच्छति। (र.चू. ११/८८)

गैरिकं किञ्चिदाज्येन भृष्टं शुद्धं प्रजायते॥ (आ.प्र. २/२७२)

**Drugs Used–** Godugdha, Goghrita, Rakta varga rasa, Raktavargakvāth Amla drava.

**Satva Pātana[52]–**

Acārya Nandi has said that Gairika itself is in Satva form hence its Satvapātana is not necessary. However some scholars suggest to do its Satvapātana as follows.

**Procedure–** It should first be treated with Svedana using Ksāra drava and Amla drava and with the general Satvapātana method its Satva may be extracted. It is also claimed further in the texts that its Satva can mix with mercury easily and possess better qualities then ordinary Gairika.

**Note–** As per modern knowledge Gairika is a main source for obtaining Iron metal. Hence its Satva may be iron which when mixed with mercury may form an amalgam easily but in Gairika form if added with mercury may not mix with it so readily due to the presence of clay, sand etc. impurities present in it along with metal content.

## AÑJANA (Antimony and Lead compounds) VARṆANAM

**Group–** Uparasa group.

**Utpati–** According to 'Rasakāma Dhenu' all the Añjanas either occur in hilly areas or in rivers. i.e. 'Nadī Śhailodbhavānyañjanāni'.

In Rasasāstra[53] literature five or six types of Añjanas are described. Viz. 1. Srotoñjana, 2. Sauvīāñjana, 3. Rasāñjana.

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52. **सत्वपातन–**
गैरिकं सत्वरूपहि नन्दिना परिकीर्त्तितम् ।
कैरप्युक्तं पतेत्सत्वं क्षाराम्लस्विन्नगैरिकात् ॥ उपतिष्ठति सूतेन्द्रमेकत्वं गुणवत्तरम् ॥
(र.चू. ११/८८-८९)

53. **अञ्जनानि–**
सौवीरमञ्जनं प्रोक्तं रसाञ्जनमतः परम् । स्रोतोऽञ्जनं तदन्यच्च पुष्पाञ्जनकमेव च ॥
नीलाञ्जनं हि तेषां च स्वरूपमिहवर्ण्यते ॥ (र.चू. ११/६२)
स्रोतोञ्जनं च सौवीरमञ्जनं च रसाञ्जनम् । नीलाञ्जनं तदन्यच्च पुष्पाञ्जनकमेव च ॥
(आ.प्र. २/२२७)

4. Nīlāñjana, 5. Puṣpāñjana, and 6. Kulatthānjana. of these at present only Rasāñjana is in use and that too is prepared artificially.

**Modern Description–**

From modern point of view Añjanas could not be compared with one compound rather there may be several compounds with which these may be compared. Such as Srotoñjana and Sauvīrāñjana may the Antimony compounds (Stibnite $Sb_2S_3$). Though, as per ancient description Sauvīrāñjana is Pāṇḍura (Whitish) or Dhūmra varṇa (Greyish) in colour while Srotoñjana is Añjana Sannibha (Blackish). From minerological point of view Antimony sulphide (Stibnite) is lead grey in colour when it is pure but it usually contains small amount of iron and other metallic impurities which when powdered finely may look black. As such these may be compared with Stibnite. Chemically it is Antimony trisulphide and composed of Sb 71.4% and S 28.6%. It usually contains small amount of iron and often traces of Silver and Gold and sometimes lead and Copper also which may impart various colours to it. Its crystals are very complicated. They are orthorhombic, columnar or occicular in habit. Many of the crystals are curbed, bent or twisted. Nearly all are longitudinally striated. Cleavage is perfect. The mineral is soft slighlly sectile. Sp.Gr. 4.65; lustre– metallic, colour lead grey, streak little darker. The surfaces which are exposed to the air are often coated with a black turnish. Melt easily in candle flame. It is distinguished with other sulphides by its cleavage and the fumes it yields when heated on charcoal. Its closest resemblance is with Galena (PbS) which is less fusible and yields lead globules. More over Galena possesses a cubic cleavage.

The mineral is found as crystals in quartz veins, in metalliferous veins associated with lead, zinc, realger, orpiment, cinnabar, barite, sphalerite and Gold. Stibnite is the chief source of metallic antimony. China, Bolivia and Mexico are principal source of metallic Antimony.

Of the two Añjanas Srotoñjana is better than Sauvirāñjana.

## 1. SROTOÑJANAM[54]–

### Pharmacological & Therapeutic Properties[55]–

**Srotoñjana–**

**Rasa–** Kaṣāya, Madhura

**Guṇa–** Snigdha, Śītā; Kriṣṇa

**Vīrya–** Śīta

**Vipāka–** X

**Karma–** Lekhana, Netrya, Grāhi, Asrahṛit.

**Doṣaprabhāva–** Kaphapittāsra Kopanut.

**Vyādhiprabhāva–** Hikkā, Viṣa, Chardi, Kṣaya, Asrakopa, Vidāha, Sidma.

**Note–** In both Srotoñjana and Sauvīrāñjana Strotoñjana is considered best.

## 2. SAUVĪRĀÑJANAM[56]–

**Rasa–** Tikta, Kaṭu, Kaṣāya.

**Guṇa–** Hima, Snigdha, Śveta & Dhūmra varṇa.

**Vīrya–** Śīta

**Vipāka–** Madhura

**Karma–** Vraṇa Śodhana, Ropaṇa, Dṛikprasādana, Saṅgrāhī, Raktapittahara, Netrya, Lekhana.

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54. **स्रोतोऽञ्जन–**

स्रोतोञ्जनं तु द्विविधं श्वेतकृष्णविभेदतः । तत्र स्रोतोञ्जनं कृष्णं सौवीरं श्वेतमीरितम् ॥

**द्वयोर्लक्षणानि–**

वल्मीकशिखराकारं भिन्नमञ्जनसन्निभम् । दृष्टं तु गैरिकच्छायमेतत्स्रोतोञ्जनं स्मृतम् ॥
स्रोतोञ्जनसमं ज्ञेयं सौवीरं तत्तु पाण्डुरम् ॥ अथवा धूम्रवर्णाभं सौवीरांञ्जनमुच्यते ॥

(आ.प्र. २/२२८-२२९)

55. **गुणाः–**

स्रोतोञ्जनं स्मृतं स्वादु चक्षुष्यं कफपित्तनुत् । कषायं लेखनं स्निग्धं ग्राहि छर्दिविषापहम् ॥
हिध्माक्षयास्रहच्छीतं सौवीरमपि तादृशम् । द्वयोरञ्जनयोः किन्तु श्रेष्ठं स्रोतोञ्जनं स्मृतम् ॥

(आ.प्र. २/२३०-२३१)

56. **सौवीराञ्जनगुणाः–**

सौवीरमञ्जनं धूम्रं रक्तपित्तहरं हिमम् । वमिहिध्माक्षिरोगघ्नं व्रणशोधनरोपणम् ॥

(र.चू. ११/६३)

**Doṣaprabhāva–** Pittaghna, Tridoṣahara.

**Vyādhi Prabhāva–** Raktapitta, Vami, Hikkā, Akṣiroga, Vraṇa, kṣaya, Rakta roga, Viṣaroga, Karṇaroga.

### 3. RASĀÑJANAM[57]–

Since ancient times 'Rasāñjana' is considered to be a controvercial material. Ancient scholars have mentioned that it is two types. One is Śailaja i.e. obtained from hills or mines hence it must be a mineral and on this basis Prof-D.A. Kulkarni (late) has mentioned that Rasāñjana is yellow oxide of mercury which is a mineral obtained in nature in small quantities. In ancient texts also its colour is described as yellow. But at present no body uses it in the name of Rasāñjana in practice. At present the Vaidyas are using the Kṛitrima variety of Rasāñjana which is prepared by using Dārvīkvātha and Ajākṣīra and making these in Ghana (Solid) form by heating. It is also used in Netra rogas (eye diseases). And its colour is also described to be yellowish since ancient times i.e. from the time of 'Rasendra Cūḍāmaṇi' (12th A.D.). 'Rasagarbham rasāñjanam' mentioned in 'Ay. Prakāśa' also suppots this view.

### Method for Preparation of Rasāñjana[58]–

For this Daruharidrā Kvātha is prepared first and then it is mixed with $^{1}/_{4}$th part of Ajā (Goat) Kṣīra (Milk) and made Ghana (Solid) by heating (boiling).

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57. **रसाञ्जनम्–**

रसाञ्जंन तु द्विविधं शैलजं कृत्रिमं तथा। तार्क्ष्यजं तार्क्ष्यशैलं च रसगर्भं रसाञ्जनम्।
(आ.प्र. २/२३४)

दार्वीक्राथमजाक्षीरपादपक्वं यदा घनम्। तदा रसाञ्जनं ख्यातं नेत्रयोः परमं हितम्॥
(आ.प्र. २/२३४)

रसाञ्जनं च पीताभं विषरक्तगदापहम्। श्वासहिध्मापहं वर्ण्यं वातपित्तासनाशनम्॥
(र.चू. ११/६४)

58. **उत्पत्ति–**

खर्परं तु दार्वीक्राथसम्भूतं हि रसाञ्जनम्। दार्वीक्राथमजाक्षीर पक्वं सान्द्रं रसाञ्जनम्॥
(आ.प्र. २/२३४ टीका)

दार्वीक्राथमजाक्षीरपादपक्वं यदा घनम्। तदा रसाञ्जनं ख्यातं नेत्रयोः परमंहितम्॥
(आ.प्र. २/२३४)

**Pharmacological & Therapeutic Properties[59]–**

**Rasa–** Kaṭu, Tikta, Madhura.

**Guṇa–** Śīta, Pītābham

**Vīrya–** Sīta (Uṣṇa– 'Śoḍhala Nighaṇṭu') and 'Ay. Prakāśa'.

**Vipāka–** Madhura

**Karma–** Cakṣuṣya, Varṇya, Viṣaghna, Kuṣṭhaghna, Dṛik-Prasādana, Sthaulyahara, Raktadoṣahara, Kṛimihara, Lekhana Rasāyana.

**Doṣa Prabhāva–** Vātapittanāśana.

**Vyādhi Prabhāva–** Viṣaroga, Mukharoga, Raktaroga, Śwāsa, Hikkā, Vātaroga, Kṛimiroga, Pittaroga, Netra roga, Karṇa roga, Vamana, Sthaulya, Rakta pitta, Asrigdara, Ādhmānaroga.

**4. PUṢPĀÑJANAM[60]–**

It is also a controversial mineral. Some scholars say that it is a Zinc oxide mineral which is white in colour and usefull in eye diseases just like Puṣpāñjana. Others mentioned that it is Antimony oxide i.e. $Sb_2O_3$. But actually what it is? is not clear so far. Some say that it is Ritikiṭṭa.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Kṣārīya

**Guṇa–** Snigdha, Śveta, Hima

**Vīrya–** Śīta

**Vipāka–** X

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59. **गुणाः–**
रसाञ्जनं च पीताभं विषरक्तगदापहम् । श्वासहिध्मापहं वर्ण्यं वातपित्रास्रनाशनम् ॥
(र.चू. ११/६४)
रसाञ्जनं कटु श्लेष्मविषनेत्रविकारनुत् । उष्णं रसायनं तिक्तं छेदनं व्रणदोषहृत् ॥
(आ.प्र. २/२३५)

60. **पुष्पाञ्जनम् –**
पुष्पाञ्जनं सितं स्निग्धं हिमं सर्वाक्षिरोगनुत् । अतिदुर्धरहिध्माध्नं विषज्वरगदापहम् ॥
(र.चू. ११/६६)
पुष्पाञ्जनं रीतिकिट्टमितिकेचिद्वदन्तिहि ॥

**Karma–** Atidurdha hidhmāghna, Sarvākṣiroganut, Viṣāpaha.

**Doṣa Prabhāva–** X

**Vyādhi Prabhāva–** Severe hikkā, Netraroga, Viṣaroga, Jwaras Patalāsrahara.

**5. NĪLĀÑJANAM[61]– Galena (Lead Sulphide)–**

It is bluish and bright in colour, Snigdha (Glistening greasy) and Bhāravat (very heavy in weight) probably due to its being a lead compound (lead sulphide).

**Modern Description–**

From modern point of view Nīlāñjana is Galena or lead sulphide. Which occurs in grey crystalline masses, in large and small crystals, in coarse or fine granular aggregates. Chemically it is a lead sulphide in which lead is 86.6% and sulphur is 13.4%. It usually contains small quantities of sulphides of silver, zinc, cadmium, copper and Bismuth and in some cases native silver and gold and sometimes antimony and iron are also present in small quantities.

Well developed crystals are common, usual forms are the cubes or octahedrons, independently or in combinations. Twins are common with O as the twiming face. Galena is well characterized by its lead gray colour. Its perfect cleavage is paralell to the cubic faces. Its density is 6.3. Its hardness is about 2.5-2.6; lustre metallic specially on cleavage surfaces. Streak grayish black. Good conductor of electricity. It fuses on charcoal yielding sulphurous fumes and globules of metallic lead which are soft as compared to silver globules. The mineral is soluble in $HNO_3$ with the seperation of sulphur.

It is a widely spread mineral and found in veins of silver and lead containing ignous rocks, as deposits in ground water surrounding sedimentary rocks. It is frequently associated with zinc and silver ores.

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61. **नीलाञ्जन गुणाः–**

नीलाञ्जनं गुरु स्निग्धं नेत्र्यं दोषत्रयापहम्। रसायनं सुवर्ण्यं लोहमार्दवकारकम्॥

(र.चू. ११/६७)

**Pharmacological & Therapeutic Properties–**

**Rasa–** X

**Guṇa–** Snigdha, Bhāsura, Nila varṇa, Guru.

**Vipāka–** X

**Karma–** Netrya, Rasāyana, Suvarṇaghna, Lohamārdava Kāraka.

**Doṣa Prabhāva–** Tridoṣanut

**Vyādhi Prabhāva–** Tridoṣaja vyādhi, Paṭala roga, Armaroga, Netra roga

**Method for Śodhana[62]–**

**Procedures used for–** 1. Bhāvanā – 1-3 times
2. Svedana with dolāyantra method

**Drugs used for–** Bhriṅgarāja rasa, Nimbu (Jambīra) rasa, Gomūtra, Triphalā rasa, Sūryāvartādi drava.

**Satva Pātana[63]–**

There is no specific method mentioned for Añjana satva pātana its Satva may be extracted with the same method mentioned for Manaḥ Śilā (Realgar) and Rājāvarta.

Añjana Satva is considered best for Netra rogas.

**6. KULATTHĀÑJANAM[64]–**

'Āyurveda Prakāśakāra' has mentioned it and given the

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62. **शोधनम् –**
नीलाञ्जनं चूर्णयित्वा जम्बीररसभावितम्। दिनैकमातपे शुष्कं भर्वत्कार्येषु योजयेत्॥ (आ.प्र. २/२३८)
अथवा भृङ्गजद्रावे स्विन्नानि सकलान्यपि। अञ्जनानि विशुद्ध्यन्ति ..... ॥ (आ.प्र. २/२३९)
अञ्जनानि विशुद्धयन्ति भृङ्गराजनिजद्रवैः।

63. **सत्वपातन–**
मनोह्वासत्ववत् सत्त्वमञ्जनानां समाहरेत्॥ (र.चू. ११/६८)
..... सत्वं तेषां शिलासमम्। (आ.प्र. २/२३९)

64. **कुलित्थाञ्जनं राजनिघण्टौ–**
कुलित्था दृक्प्रसादा च चक्षुष्या च कुलत्थिका। कुकुलाली लोकहिता कुम्भकारी मलापहा॥ (आ.प्र. २/२४०)

reference of 'Rāja Nighaṇṭu'. Kulittha is claimed as Dṛik Prasādana (Clerifys Vision) and Cakṣuṣya also. Its Satva pātana may also be done as Manaḥ Śilā.

## KAṄKUṢṬHA[65] (Rhubarb) VARṆANAM

Since ancient times Kaṅkuṣṭha is also a controversial drug. According to Bhālukī it is an ore of Tin metal i.e. It is probably cassiterite (SnO). According to 'Rasārṇava' it is bright red in colour just like Vidruma (Coral). According to 'Rasa Ratna Samuccaya' it is found in the base of high peaks of mountains specially of Himālaya. It has quoted the opinions of other scholars regarding Kaṅkuṣṭha. Viz[66]– 1. Some scholars say that it is a faecal matter of newly born elephant child, which is yellowish black in colour. Other mentioned that it is a part of Ambilicus of a newly born horse child which is yellowish white in colour.

According to the reference found in 'Ḍalhaṇa commentary' on 'Susruta' it is Swarṇakṣīrī. Due to its yellowish colour others suggest that it is a Mṛiddāra Śṛiṅga (yellow oxide) of lead. Still other scholars say that due to its relationship with Himālaya it is a root of Revand Chīnī (Rhubarb) which possess a good virechana property. Still some scholars say that it is a gum of Mysoor Gambose tree which is also yellow in colour and possess virechana property.

**Properties–** According to Ayurvedic Rasa Texts it should be yellow in colour, Guru in weight and Snigdha (Glistening) in Guṇa and should possess virechana effect and on this basis it should be a root of Rhubarb which has all the above properties and characteristics.

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65. **कंकुष्ठम् उत्पत्तिः–**

हिमवत्पादशिखरे कंकुष्ठमुपजायते। (र.चू. ११/६९)

हिमाचलैकदेशे तु कंकुष्ठमुपजायते। (आ.प्र. २/३१२)

66. **संदिग्धता–**

केचिद्वदन्ति कंकुष्ठं सद्योजातस्य दन्तिनः। वर्चः स श्यामपीताभं रेचनं परिकथ्यते॥
कतिचित्तेजिवाहानां नालं कंकुष्ठसंज्ञकम्। वदन्ति श्वेतपीताभं तदतीव विरेचनम्॥
(र.चू. ११/७१-७२)

सद्योजातस्य करिणः शकृत्कंकुष्ठमुच्यते। यद्वा सद्यः प्रसूतस्य वाजिबालस्य विट् स्मृतम्
नालं वा वाजिबालस्येत्येवं कंकुष्ठके भ्रमः॥ (आ.प्र. २/३१६-३१७)

**Varieties**[67]**–**

1. Nalikā Kaṅkuṣṭha – Pita, Guru, Snigdha– Better.
2. Reṇukā Kaṅkuṣṭha – Śyāmala and laghu, Medium.
3. Śweta Kaṅkuṣṭha – Śyāmapīta – Inferior.

**Pharmacological & Therapeutic Properties**[68]**–**

**Rasa–** Tikta, Kaṭu, Amla

**Guṇa–** Tikṣṇa, Uṣṇa

**Vīrya-Vipāka–** X

**Karma–** Ativirechana, Gudārtinut, Bibhedī, Varṇakara.

**Doṣa Prabhāva–** Pittakara

**Vyādhi Prabhāva–** Vraṇa, Udāvarta, Śūla, Gudaroga, Kaphaja Gulma roga, Pliha roga, Āmajwara, Kuṣṭha, Kaphodara, Śotha, Ānāha, Vivandha, Jalodara, Āmavāta, Jantuhara.

**Method for Śodhana**[69]**–**

**Procedurs–** 1. Bhāvanā
2. Svedana with dolāyantra

**Drugs used–** Śuṇṭhyaṁbu, Jaṁburasa, Sūryāvartādi drava. Lavaṇa Kṣārāmla drava.

**Dose**[70]**–** I yava for virechana effect.

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67. **भेदाः–**
तत्तैकं नलिकाख्यंहि तदन्यद्रेणुकं मतम् । पीतप्रभं गुरु स्निग्धं श्रेष्ठं कंकुष्ठमादिमम् ॥
श्यामं पीतं लघु त्यक्तसत्वं नेष्टं हि रेणुकम् ॥ (र.चू. ११/६९-७०)

68. **गुणाः–**
ककुष्ठं तिक्तकटुकं वीर्योष्णं चातिरेचनम् । व्रणोदावर्त्तशूलार्त्तिगुल्मप्लीहगुदार्त्तिहृत् ॥ (र.चू. ११/७३)
ककुष्ठं रेचनं तिक्तं कटूष्णं वर्णकारकम् । कृमिदोषोदराध्मानगुल्मानाहकफापहम् ॥ (आ.प्र. २/३१८)

69. **शोधनम्–**
ककुष्ठं शुद्धिमायाति त्रिधा श्रेष्ठाम्बुभावितम् । सत्त्वाकर्षोऽस्य न प्रोक्तो यस्मात्सत्त्वमयं हि तत् ॥ (र.चू. ११/७४)

70. **मात्रा–**
भजेदेनं विरेकार्थं ग्राहिभिर्यव मात्रया । नाशयेदामजूर्तिञ्च विरिच्य क्षणमात्रतः ॥
भक्षितः सह ताम्बूलै विरिच्याशु विनाशयेत् ॥ (र.चू. ११/७५-७६)

**Toxic Effects–** Kaṅkuṣṭha should not be used with Tāmbūla patra (Betal leaf) as in this way it is likely to cause much purgation which may lead to even death.

**Antidote**[71]**–** 1. Barbūrī mūlikā Kvātha with Ṭaṅkaṇa and Jīraka in equal parts may be taken repeatedly to stop purgation effect of Kaṅkuṣṭha.

2. The decoction of Babbula and Aṅkola with Jīraka and Śuddha Ṭaṅkana may be given repeatedly to prevent its toxic effect.

## NĀGAPĀṢĀṆA (Serpentine) VARṆANAM

Serpentine may be of two types–

1. Monoclinic and 2. Orthorhombic.

Never in crystals except as Pseudomorphs. They however can not be distinguished except by microscopic study. Serpentine usually occurs in structurless fibrous, foliated and schistouse masses of white, gray, brown or green colour. It is usually compact, columnor, fibrous or lamellur.

It is translucent and has a dull, resinous, slightly glistening, greasy, fatty or waxy lustre, smooth to greasy feel, conchoidal to splintery fracture, white streak.

The variety known as Noval Serpentine is nearly transparent and has a clear greenish or yellowish white, yellowish green, apple green or dark green colour.

The mineral when pure has a hardness of 3, but it varies from 2.6 to 4; sp.Gr. 2.5 to 2.8. It has various shades of green colour often spoted, clouded or multi coloured. Lustre dull, resinous, greasy or waxy. Smooth to greesy.

It may contain Iron, Nickel, Manganese, Aluminium and Chromium. It fuses on thin edges when heated in blow pipe

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71. बर्बूरीमूलिकाक्काथ जीरसौभाग्यकं समम्। कंकुष्ठविषनाशाय भूयो भूयः पिबेन्नरः॥
(र.चू. ११/७७)

बब्बूलमूलिकाक्काथजीरसौभाग्यटंकणम्। कंकुष्ठविषनाशाय भूयोभूयः पिबेन्नरः॥
(आ.प्र. २/३१९)

flame. It yeilds water in the closed tube on heating. When heated to about 1400°C it crystalizes as alivine. It is decomposed by HCl and $H_2SO_4$ with the separation of geletinous silica, which in fibrous varieties retains the shape of the fibers. It is soluble in dilute carbolic acid. Its powder reacts alkaline.

Serpentine is a secondary mineral resulting from the alteration of magnesium minerals and rocks. Alivine is the commonest source of serpentine.

**Varieties–** 1. Chrysotile is silky. Nearly transparent fibrous variety occuring in veins. It is apparently orthorhombic.

2. Antigorite – is a form occuring in laminated masses or in microscopic scales that are possibly monoclinic, platy. Dark-green in colour translucent.

The massive varieties are distinguished from Talc by their solubility in acids and by difference in hardness. The chrysotile is distinguished from amphibole asbestus by the presence of water unit.

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## III. DRUGS OF SĀDHĀRAṆA RASA GROUP

The minerals included in this group are considered less useful to mercurial processes as compared to minerals of Mahārasa and Uparasa groups hence the name Sādhāraṇa rasa is given to this group. However these are also found useful in mercury processes and potentiation.

Following eight substances are included in this group.

1. Kaṁpillaka – Mallotus philippinensis Mull– Arg.
2. Gaurīpāṣāṇa– White Arsenic
3. Nava Sādara – Ammonium chloride salt
4. Kaparda/Varāṭa – Cowry (Marine shell)
5. Agni (Bahni) Jāra – Amber.
6. Giri Sindūra – Red oxide of mercury.
7. Hiṅgula – Cinnebar – Mercury sulphide.
8. Mṛiddāra Śṛinga – Litharge/yellow oxide of lead.

Generally above mentioned eight minerals are found included in this group.

Table showing the Textwise minerals included in Sādhāraṇa rasa group

| S. N. | Name of mineral | Name of the Texts | | | | |
|---|---|---|---|---|---|---|
| | | R. Cūḍ. | R. Pra.Sudh. | Ras Dhā.Pra. | R.R.S. | Āy. Prak. |
| 1. | Kampillaka | + | – | + | + | + |
| 2. | Gaurīpāṣāṇa | + | – | + | + | + |
| 3. | Nava Sādara | + | + | + | + | + |
| 4. | Kaparda/ varāṭa | + | + | + | + | + |
| 5. | Agnijāra | + | + | + | + | + |
| 6. | Giri Sindūra | + | + | + | + | + |
| 7. | Hiṅgula | + | + | + | + | – |
| 8. | Mṛiddāra Śṛiṅga | + | + | + | + | – |
| 9. | Capala | – | – | – | – | + |

R. Cud. – Rasendra Cūḍāmaṇi.
R. Pra. Sudh– Rasa Prakāśa Sudhākara.
Ras. Dha. Pra. – Rasa Dhātu Prakāśa
R.R.S. – Rasa Ratna Samuccaya
Āy. Prak. – Āyurveda Prakāśa

## 1. Kaṁpillaka (Mallotus philippinensis Mull – Arg.)

**Group–** Sādhāraṇa Rasa group.

Though, it is a vegetable drug but because of its usefulness in mercurial operations the same has been included under Sādhāraṇa Rasa group.

**Modern Description–**

In India it is generally found in Saurāṣṭra[1] (Gujarat State). In addition to it, it is also found in tropical areas east and south of Himālayas. In East-Bengal and in South-Karṇāṭaka, Malābār and Madras (Tamil Nadu), out side India it is also seen in Barma, Singapur and Malaya.

Its plant is 25-30 feet in hight and is always green. Its leafs are 3" to 9" in length having oval shape with sharp ends, the backside is covered with hairs and these are reddish in colour. Flowers are small and greyish red in colour. Fruit is small and round like a Badarīphala, which when ripped is found covered with a powder like sand of red colour. It has three layers. Fruit's covering[2] collected is known as Kampillaka ('Kaṁpillako-Phalarajaḥ'). Seeds are smoth, rounded and blackish in colour.

**Method of Collection–**

When fruits ripe completely these become fully covered with the red covering, which may be collected with the help of

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1. **परिचयः–**
इष्टिकाचूर्णसंकाशश्चन्द्रिकाढ्योऽतिरेचनः । सौराष्ट्रदेशसम्भूतः स हि कम्पिल्लको मतः ॥ (र.चू. ११/९२)
सौराष्ट्रदेशे संजातः कम्पिल्लस्तस्य लक्षणम् । इष्टकाचूर्णसंकाशः स विरेकी हि कथ्यते ॥ (आ.प्र. २/३३३)

2. **स्वरूप–**
कम्पिल्लको फलरजः ।

cloth or hand. It is reddish in colour just like Brick-powder having some shinning. It does not have any taste or smell. It contains some portion of plant tissues i.e. fruit coverings and some times some sand particles are also found mixed with it. Hence it should be tested as follows–

**Prescribed Test–**

1. For determining its genuineness it should be dropped over the water surface. If it floats it is considered genuine and when it is mixed with some impurities like sand, mud etc. That may settle down at the bottom and only the genuine sample will float on the water surface.

2. The wet powder of Kaṁpillaka may produce yellow lining on white paper when rubbed with finger tip.

3. It can be detected under microscope also.

4. The ash value should not go above 9%. It is unsoluble in cold water, slightly soluble in hot water and completely soluble in Alcohol and Ether. It produces sparking if put on fire.

**Chemical Composition–**

It contains a crystalline substance known as Rotaline also contains yellow crystalline substance, yellow and red resin, wax volatile oil, starch, sugars, tannins, oxalic and citric acids.

**Pharmacological & Therapeutic Properties[3]–**

**Rasa–** Kaṭu, slightly amla.

**Guṇa–** Uṣṇa

**Vīrya–** Uṣṇa

**Vipāka–** X

**Karma–** Recaka, Viḍbhedī, Asrajit, Kṛimighna, Āmapācāna.

**Doṣa Prabhāva–** Vātajit, Kaphapittajit.

**Vyādhi Prabhāva–** Kṛimi, Gulma, Śleṣmodara, Arśa, Śūla, Jwara, Śopha, Carmaroga, Vraṇa, Pṛiṣṭha Vraṇa, Ādhmāna,

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3. **गुणाः–**
पित्तव्रणाध्मानविवन्धनिघ्नः श्लेष्मोदरार्त्तिकृमिगुल्मवैरी ।
मूलामशूलज्वरशोफहारी कम्पिल्लको रेच्यगदापहारि ।। (आ.प्र. २/२३५)

Vibandha, Āmaśūla, Pittavraṇa, Raktahara, Raktagulma, Prameha, Ānāha, Viṣa, Aśmarī.

**Toxic Effects–**

If used in large doses it may produce Hṛillāsa (Nausea) and Mūrcchā (Coma).

**Specific Uses–**

It is specific for Tapeworms, produce purgation, cures skin disorders like ringworms, itching, various types of rashes when used mixed with ghee and oil.

**Dose–** 5 guñjā with honey in children.

## 2. Gaurī Pāṣāṇa (White Arsenic)

**Group–** Sādhāraṇa rasa group.

**Modern Description–**

It is white like tin in colour on fresh fracture surface, tarnishes dark gray to black on exposure. Hardness– 3-4; Sp.Gr. 5.6-5.8; lustre– metallic, opaque.

Native arsenic often contains Antimony, also Bismuth, Cobalt, Nickels, Silver, Iron and Gold. Its crystals are hexagonal psuedocubical. In compact, scaly, granular or fine masses often breaks into concentric or onion like layers.

Found prominentally in veins with silver, cobalt and nickel ores. It is often found with sulphur, iron and copper hence the ores containing sulphur, iron and copper when roasted in furnace the arsenic content mixed with oxygen is found accumulated in the pipes and collected from there.

**Varieties[4]–**

As per source– 1. Parvata Saṁbhava
2. Kṛitrima (Tāla saṁbhava)

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4. **गौरीपाषाण भेदाः–**

स्फाटिकाभश्चशंखायो हरिद्राभस्त्रय: स्मृता:। (र.र.स. ३/१२४)

गोरीपाषाणक: प्रोक्तो द्विविध: श्वेतपीतक: । श्वेत: शंखसदृक् पीतो दाडिमाभ: प्रकीर्त्तित: ॥ (आ.प्र. २/३३६)

श्वेत: कृत्रिमक: प्रोक्तो पीत: पर्वतसम्भव: । विषकृत्यकरौ तौ हि रसकर्मणि पूजितौ ॥ (आ.प्र. २/३३७)

As per form– 1. Sphaṭikābha – Best
2. Śaṅkhābha – Better
3. Haridrābha – Good

As per colour– 1. White – Śaṅkhābha – Kṛitrima
2. Yellow – Dādimābha– Parvata Saṁbhava.

**Synonyms–** Somala, Malla, Śaṅkhaviṣa, Fenāśma.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Tikta

**Guṇa–** Rūkṣa, Snigdha.

**Karma–** Kledana, Viṣatulya, Doṣaghna, Rasabandhakara[5], Rasavīryakara, Viṣakṛityakara.

**Doṣa Prabhāva–** Tridoṣaghna

**Vyādhi Prabhāva–** Śotha, Gulma, Pāṇḍu, Udara roga, Sarvaroga.

**Method for Śodhana[6]–**

**Procedure–** 1. Svedana in dolāyantra for 2 yāma.
2. Mardana for 3 days.

**Drugs Used for–** Godugdha, Ajā dugdha, Kāravallīphala rasa, Sūraṇa rasa, Palāśa rasa. Arkakṣīra, Suṇṭhīkṣīra, Uduṁbara rasa.

### 3. Navasādara (Ammonium chloride salt) Varṇanam

**Group–** Sādhāraṇa rasa group.

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5. **परिचयः–**
गौरीपाषाणकः पीतो विकटो हतचूर्णकः । रसबन्धकरः स्निग्धो दोषघ्नो रसवीर्यकृत् ॥
(र.चू. ११/९४)

**साधारण रस–**
कम्पिल्लश्चापरो गौरीपाषाणो नवसारकः । कपर्दो बह्निजारश्च गिरिसिन्दूरहिङ्गुलौ ॥
बोद्दारशृङ्गमित्यष्टौ साधारणरसा मताः ॥

6. **शोधनम् –**
गवां दुग्धेऽथवा त्वाजे कारवेल्लीरसेऽथवा। द्वियामंस्वेदितः शुद्धो गौरीपाषाणको भवेत् ॥
(रसामृतम्)

**Utpatti**[7]– 1. It occurs during roasting of bricks.

2. It is produced as a by product of burnt woods of Karīra and Pīluplants.

3. It is also obtained from the residue of burnt faecal matter and urine of menkind and animals.

**Form–** It is an alkaline material of white colour, light and saltish in taste and obtained during roasting of bricks or burnt woods of Karīra and Pilu plants. It is also called Narasāra and Culhika lavaṇa. It is included in Kṣāras, it is used for Swarṇa Śodhana (purification of Gold), for inducing mukha in Pārada and also for preparing Śaṅkha drāva & Viḍa dravyas for Pārada Jāraṇa.

**Source and Collection Method–**

Navasādara is obtained from the ash collected after roasting the bricks where Karīra and Pīlu woods are used as fuel along with animal's faecal matter, urine and dried leaves.

It is yellowish white (pale) in colour having Kṣārīya (alkaline) and Amla (acidic) taste. It is also called 'Culhikā lavaṇa'[8] as it is collected from the ash after burning above mentioned woods as fuel. In some countries it is obtained from the ash of burnt faecal matter and urine of camel. In Europ it is made from the man's urine hence called 'Narasāra'. It occurs in Itali and obtained from the volcanic mountains of 'Sisali'. It also occurs in Middle Asia.

**Purity Test–** Sublimes on heating, water becomes cool if mixed with it.

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7. **नवसादरः–**
करीरपीलुकाष्ठेषु पच्यमानेषु चोद्भवः । क्षारोऽसौ नवसारःस्याच्चूल्लिकालवणाभिधः ॥
(र.चू. ११/९५)
इष्टिकादहने जातं पाण्डुरं लवणं लघु । तदुक्तं नवसाराख्यं चूल्हिकालवणञ्च तत् ॥
(र.चू. ११/९६)

8. नवसारः समाख्यातःश्चुल्हिकालवणाभिधः । जायते चेष्टिकापाक दहने पाण्डुरप्रभः । मनुष्यसूकराणां च विष्ठान्तः किट्टवद्भवेत् ॥ क्षारेषु गणना तस्य स्वर्णशोधनकः परः । शंखद्रावरसे पूज्यो मुखकर्मणि पारदे ॥ बिड़द्रव्योपयोगी च क्षारवत्तद्गुणाः स्मृताः ॥
(आ.प्र. २/३३८-३४०)

**Pharmacological & Therapeutic Properties[9]–**

**Rasa–** Lavaṇa, Amla, Kaṣāya, Kṣāra.

**Guṇa–** Hima

**Karma– Jaṭharāgni dīpana, 'Bhukta māṁsādi – jāraṇa', Srāvaṇa, Śothakara, Samasta-dhātu-Sandrāvaka, Āsya Śoṣaghna, Loha drāvaṇa, Rasendra jārāṇa, Bhukta pācana, Samastagadahara.**

**Doṣa Prabhāva–** Tridoṣahara.

**Vyādhi Prabhāva–** Gulma, Plīharoga, Mandāgni, Āsyaśoṣa, Yakṛiddoṣa, Jwara, Śiraḥ Śūla, Arbuda, Stanaroga, Raktapitta, Kāsa, Bhagandara, Yonivyāpad.

**Method for Śodhana–**

**Procedure–** 1. Jalavilayana and Vastra Srāvana (mixed with water and filtered through cloth)

2. Ūrdhwapātana (Sublimation) through Ḍamaru yantra).

**Drugs Used–** No specific drug is mentioned for its Śodhana. As Navasādara is water soluble hence it is mixed with water and filtered to remove its impurities which are unsoluble in water. On drying it is collected as white crystals or as white powder.

After sublimation pure Navasādara will sublime in upper pot as light yellow coloured powder and impurities are left in lower pot.

## 4. Kaparda/Varāṭikā (Cowry) Varṇanam

**Group–** Sādhāraṇa rasa group.

**Occurance–** Kapardikā or Varāṭikā are the Sea (Marine) products and obtained from seacost. The big Varātikās having yellowish in colour, nods (Granthi) at their back and having long Vṛinta (Peripheri) are considered good. These are also known as Carācara.

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9. **गुणाः–**
रसेन्द्रजारणं लोहद्रावणं जठराग्निकृत्। गुल्मप्लीहास्यशोषघ्नं भुक्तमांसादिजारणम्॥
विडाख्यश्च त्रिदोषघ्नं चूलिकालवणं मतम्॥ (र.चू. ११/९७)

**Varieties**[10]– Its three types are mentioned, on the basis of colours and weights, viz.

1. Śvetā – Sārdha Niṣkamitā – Best
2. Pītā – Niṣkamitā – Medium
3. Śoṇa – Pādona Niṣkamitā – Kaniṣṭha

As per texts its two types are mentioned Varāṭikā and Varāṭa.

**Physical Properties**[11]–

Yellowish in colour, having nods on back surface , heavy in weight and long Vṛinta (Peripheri) should not have any Vraṇa (Cut or fissure) on their surface.

**Pharmacological & Therapeutic Properties**[12]–

**Rasa**– Kaṭu, Tikta

**Guṇa**– Guru, Uṣṇa

**Vīrya**– Uṣṇa

**Vipāka**– X

**Karma**– Dīpana, Vṛiṣya, Netrya, Rasāyana, Śukrakara, Rasendrajāraṇa, Doṣahārī, Viḍa nirmāṇakārī.

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10-11. **कपर्दिका भेदाः–**

पीताभा ग्रन्थिला पृष्ठे दीर्घवृन्ता वराटिका । रसवैद्यैर्विनिर्दिष्टा सा चराचरसंज्ञिता ।।
सार्धनिष्कमिता श्रेष्ठा निष्कभारा च मध्यमा । पादोननिष्कभारा च कनिष्ठापरिकीर्त्तिता ।।
(र.चू. ११/९८-९९)

वराटिका त्रिधाप्रोक्ता श्वेताशोणातथाऽपरा । पीता सा चाति चक्षुष्या श्वेताशोणा हिमाऽव्रणा ।।
असिता विन्दुभिः श्वेतैर्लाञ्छिता रेखयाऽथवा । बालग्रहहरी नानाकौतुकेषु च पूजिता ।।
पीता गुल्मयुता पृष्ठे रसयोगेषु पूजिता । सार्धनिष्कप्रमाणाऽसौ श्रेष्ठा योगेषु युज्यते ।
निष्कप्रमाणा मध्या सा हीनापादोननिष्किका ।। (आ.प्र. २/२९४-२९७)

12. **गुणाः–**

परिणामादिशूलघ्नी ग्रहणी क्षयनाशिनी । कटूष्णा दीपनी वृष्या नेत्र्या वातकफापहा ।।
रसेन्द्र जारणे प्रोक्ता विड्द्रव्येषु शस्यते । तदन्येतु वराटाःस्युर्गुरवः श्लेष्मपित्तला ।।
(र.चू. ११/१००-१०१)

कपर्दिका हिमानेत्रहिता स्फोटक्षयापहा । कर्णस्रावाग्निमान्द्यघ्नी पित्तास्रकफनाशिनी ।।
कटूष्णा दीपनी वृष्या तिक्ता वातकफापहा । परिणामादिशूलघ्नी ग्रहणी क्षयहारिणी ।।
(आ.प्र. २/३०१-३०२)

**Doṣa Prabhāva–** Kaphavātaghna, Sthūla Varāṭikā– Śleṣma Pittahā.

**Vyādhi Prabhāva–** Pariṇāma Śūla, Grahaṇī, Kṣaya roga, Śūla, Netra roga, Śukrāśruti, Sphoṭa, Karṇasrāva, Agnimāndya, Pitta roga, Rakta roga, Kapharoga.

**Method for Śodhana[13]–**

**Procedures Used–**1. Svedana in Dolāyantra for one yāma

2. Profullana on burning charcoals.

**Drugs Used–** Kāñjika, Takra, Nimbu rasa. Amladrava.

**Māraṇa[14]–** Puffing on fire is considered as its māraṇa. By this method these become soft and white. Calcium carbonate may change to oxide form to some extent. It is acheived by aṅgārāgni dhamana.

**Dose–** 2 Guñjā twice daily.

## 5. Agnijāra (Ambar) Varṇanam

**Group–** Sādhāraṇa rasa group.

**Origin–** It is obtained from the sea shore and is a Jarāyu (Outer covering) of Agni Nakra (A sea animal).

**Description–**

According[15] to ancient description when the Jarāyu (Garbha Koṣa – Covering) of Garbha (Fetus) of Agni Nakra (A sea ani-

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13. **वराट शोधनम् –**
वराटा: काञ्जिके स्वित्रा यामाच्छुद्धिमवाप्नुयु: । (र.चू. ११/१०२)

14. **मारणम् –**
अङ्गाराग्नौ स्थिता ध्माता सम्यक् प्रोत्फुल्लिता यदा ।
स्वाङ्गशीता मृता तां तु पिष्ट्वा सम्यक् प्रयोजयेत् ।। (आ.प्र. २/३००)

15. **अग्निजार: उत्पत्ति:–**
समुद्रेणाग्निनक्रस्य जरायुर्बहिरुज्झित: । संशुष्को भानुतापेन सोऽग्निजार इतिस्मृत: ।।
(र.चू. ११/१०३)
अब्धितीरेऽग्निनक्रस्य जरायु: शुष्कतां गत: । अग्निजारस्तु संप्रोक्त: स क्षारो जारणे हित: ।।
(आ.प्र. २/३४१)

mal) is dried due to sun rays and taken to sea shore through sea waves is known as Agnijāra.

According to modern view it is a dried faecal matter found in the intestine of whale fish. It comes out from the intestine of dead fish in due course of time. Due to lightness it floats on sea water and brought to sea shore through the sea waves and on drying through sun rays it is known as Ambar. Hence it is an animal product obtained from sea.

It is generally found at the sea shore of India, Lakshadweep, Nikobar and Africa. Its colour is blackish white having black spots over its surface. Its mass is opaque, very light in weight and insoluble in water. It has very pungent smell and resembles with 'Musk' (Kastūrī) in properties. It burns on fire leaving no residue. Every thing volatilises.

**Pharmacological & Therapeutic Properties[16]–**

**Rasa–** Kṣāra

**Guṇa–** Laghu, Tībra gandhi

**Karma–** Dīpana, Rasa Jāraṇa, Rasavīrya vardhana.

**Doṣa Prabhāva–** Tridoṣaghna

**Vyādhi Prabhāva–** Dhanurvāta, and all the Vāta rogas.

**Note–** Its properties are very much similar to Musk (Kastūrī).

**Śodhana[17]–** As it is already made pure with Abdhi-Kṣāra (Alkaline and Saltish character of sea) hence its Śodhana is not needed.

## 6. Giri Sindūra (Red Oxide of Mercury) Varṇanam

**Group–** Sādhāraṇa rasa group.

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16. **गुणाः–**
अग्निजारस्त्रिदोषघ्नो धनुर्वातादिरोतनुत्। बर्धनो रसवीर्यस्य दीपनो जारणस्तथा ॥
(र.चू. ११/१०४)

17. **शोधनम् –**
तदंब्धिक्षारसंशुद्धं तस्माच्छुद्धिर्न हीष्यते। (र.चू. ११/१०३½)
**साधारण-रस वर्ग–**
कपर्दो वह्निजारश्च गिरिसिन्दूर हिङ्गुलौ मृद्दारशृङ्गमित्यष्टौ साधारण रसाः स्मृताः।

**Origin**[18]– Some times a reddish powder is found in between the rocks of big mountains which may be a mercury oxide compound and the same is known as Girisindūra in Āyurveda.

**Occurance**– It is mentioned in Ayurvedic texts that rasa (Mercury) is also found in between the big mountains in very little quantity which looks red on drying and the same is known by the name Girisindūra. It is probably a compound of mercury and oxygen which occurs rarely in mineral form mixed with other minerals. 'Montraodite' the mineral of mercury closely resembles with it. It contains a few particles of free mercury. Its colour is red.

Some scholars consider it to be a lead compound called Nāga Sindūra but actually it is a mercury compound which looks red and obtained in between the rocks of bigger mountains. It is also known as Rakta reṇu.

Rasa Jala Nidhi has mentioned its two varieties, i.e.

1. Swabhāvaja – Girisindūra
2. Kṛitrima – Nāgasindūra.

**Pharmacological & Therapeutic Properties**[19]–

**Rasa**– Kaṭu, Tikta

**Guṇa**– Rakta, Uṣṇa

**Vīrya**– Uṣṇa

**Karma**– Bhedī, Netrya, Bhagna Sandhānakara, Rasabandhakara, Vraṇa Śodhana and Ropaṇa, Dehaloha kara, Dhātu vādopayogī.

**Doṣa Prabhāva**– Tridoṣa Śamana

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18. **गिरिसिन्दूरम्–**

महागिरिषु चाल्पीयः पाषाणान्तःस्थितो रसः । शुष्कः शोणः स निर्दिष्टो रससिन्दूरसंज्ञया ॥
(र.चू. ११/१०५)

गिरिसिन्दूरकं यत्तु गिरौ पाषाणजं भवेत् । किंचिद्धिङ्गुलतुल्याभं रसबन्धे हितं मतम् ॥
(आ.प्र. २/३४२)

19. **गुणाः–**

त्रिदोषशमनं भेदि रसबन्धनमग्रिमम् । देहलोहकरं नेत्र्यं गिरिसिन्दूरमीरितम् ॥
(र.चू. ११/१०६)

**Vyādhi Prabhāva–** Visarpa, Kuṣṭha, Kaṇḍū, Visphoṭa, Vraṇa, Bhagna-roga, Netra roga, Viṣaroga.

**Uses–** It is often used in Rasabandhana, Dhanurvāta and Netraroga[20]. It is a red and shining powder and looks like Hiṅgula.

## 7. Hiṅgula (Cinnabar – (HgS) Varṇanam

**Group–** Mahārasa Varga (Rasārṇava, R.H.T. and R.K.D.) and Sādhāraṇa rasa varga (R.R.S.).

**Modern Description[21]–**

Cinnabar (Hiṅgula) is a most popular mineral for obtaining mercury. In the world almost total mercury is obtained from it. It occurs in both crystaline and massive forms. The ore is a red crystalline mass and easily distinguished from all other red minerals by its pequliar shades of colour and its great weight.

It contains 13.8% sulphur and 86.2% mercury. Massive cinnabar is usually impure through the admixture of clay, iron oxide or bituminous substances, occasionally organic materials.

**Form–** Though, usually cinnabar is granular, massive or earthy, it sometimes occurs beautifully crystallized in small complex and highly modified hexagonal crystals. Usually the crystals are rhombohedral or prismatic in habit. It is trasparent, translucent or opaque. It is a cachineal red in colour often inclining to brown. Its streak is scarlet to reddish brown. Admantine to dull lustre. Perfect prismatic cleavage. If moistened with HCl and rubbed on clean copper a silver white streak is produced. Usual associates are native mercury, pyrite, marcasite, realger, calcite, stibnite, quartz and opal.

**Mythological Origin[22]–**

Mythologically it is said that when Lord Śiva's essence

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20. धातुवादेऽपि तत्पूज्यं नेत्ररोगघ्नमीरितम् ॥ (आ.प्र. २/३४२)

21. **हिङ्गुल प्रकाराः–**
प्रथमः खनिजोऽन्यस्तु कृत्रिमोहिङ्गुलो मतः । खनिजः खनितोजातः कृत्रिमोंरसगन्धजः ॥ (र.त.)

22. **उत्पत्तिः–**
पतितो दरदे देशे गौरवाद्वह्निवक्त्रतः । स रसो भूतले लीनस्तत्तद्देशनिवासिनः ॥
ता मृदं पातनायन्त्रे क्षिप्त्वा सूतं हरिन्त च ॥ (र.र.स.)

has fallen from the mouth of God Agni due to its heavyness in Darada deśa then that essence (mercury) gone down on earth and mixed with soil. Then the inhabitents of that country took that soil and extracted mercury from it using Pātana (Distilation) Yantra (Apparatus).

Late Śrī 'Sadānanda Śarmā' has described two varieties of Hiṅgula in his Text Rasa Taraṅginī i.e. 1. Khanija and 2. Kṛitrima.

Khanija is that which is obtained from the mines and Kṛitrima is prepared artificially using Pārada and Gandhaka by chemical method. At present Khanija Hiṅgula is rare and what we are getting is Kṛitrima (Prepared by mixing mercury and sulphur in difinit proportion) Hiṅgula.

**Varieties As Per Ancient Texts[23]–**

As per Rasendra Cūḍāmaṇi–

1. Śuka Tuṇḍa – Carmāra – Alpaguṇa
2. Haṁsapāda – Śvetarekha – Pravālābha

As per Ay. Prakāśa–

1. Carmāra – Śukavarṇa – Inferior, greenish
2. Śuka Tuṇḍa – like Śuka Tuṇḍa – Medium, light yellow
3. Haṁsapāda – Japā Puṣpavat – Best, Deep red

As per Rasa Taraṅginī–

1. Khanija – Associated with impurities
2. Kṛitrima – Śveta rekha, Pravālābha (Red).

**Synonyms–** Mleccha, Cūrṇa Parada, Daradāhwaya, Cīnapiṣṭa, Carmāra, Darada, Suraṅga, Rasagarbha, Hiṅgula. Rasagandha Samudbhava.

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23. **प्रकाराः–**

हिङ्गुलः शुकतुण्डाख्यो हंसपाकस्तथापर । प्रथमोऽल्पगुणस्तत्र चर्मारः स निगद्यते ॥
श्वेतरेखः प्रवालाभो हंसपाक(दः) स ईरितः ॥ (र.चू.११/१०७-१०७½)

दरदस्त्रिविधः प्रोक्तश्चर्मारः शुकतुण्डकः । हंसपादस्तृतीयः स्याद् गुणवानुत्तरोत्तरः।
चर्मार; शुकवर्णःस्यात् सपीतः शुकतुण्डुकः ॥ जपाकुसुमसंकाशो हंसपादो महोत्तमः ॥
(आ.प्र. २/७०-७१)

प्रथमः खनिजोऽन्यस्तु कृत्रिमोहिङ्गलोमतः । खनिजः खनितो जातः कृत्रिमों रसगन्धजः ।
(र.त.)

**Physical Properties–**

Best quality of Hiṅgula should be just like Pravāla (Coral), Japākusuma or Bimbīphala in colour, it should possess whitelines or Śalākā like structure (Long niddle shaped crystals).

Hiṅgula[24] is a cheif source of mercury since ancient times to till today. Mercury extracted from Hiṅgula is considered best and pure and also similar to Jīrṇa gandhaka. (in which Gandhaka jāraṇa is done). It is said about mercury that without doing Ṣaḍguṇa gandhaka jāraṇa (Burnt six times sulphur) does not acquire roganāśana Śakti (Disease curing capacity) – therapeutic effectiveness. And such mercury does not need any Śodhana.

**Pharmacological & Therapeutic Properties[25]–**

**Rasa–** Tikta, Kaṭu and Kaṣāya

**Guṇa–** Uṣṇa

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24. **हिङ्गलोत्थसूतवैशिष्ट्यम् –**

ऊर्ध्वपातनयुक्त्या तु डमरूयन्त्र पाचितम्। हिङ्गुलं तस्य सूतं तु शुद्धमेव न शोधयेत्॥ (आ.प्र. २/८३)

एतस्मादाहृतः सूतो जीर्णगन्धसमो गुणैः। (र.चू. ११/१०९)

रसगुणवलिजारणं विनायं न खलु रुजांहरणक्षमोरसेन्द्रः। (आ.प्र. २/१६७)

हिंगुलाकृष्टसूतस्तु जीर्णगन्धसमोगुणैः। (आ.प्र. २/१६७)

**कृत्रिमहिङ्गुल निर्माणम् –**

अशुद्ध पारदं भागं चतुर्भागं च गन्धकम्। लौहपात्रे ह्युभौ क्षिप्त्वा क्षणं मृद्वग्निना पचेत्॥
ततस्तु खण्डशः कृत्वा काचकूप्यां निरुध्य च। बालुकायन्त्रगर्भे तु दिनं मृद्वग्निनापचेत्॥
क्रमवृद्धाग्निना पश्चात्पचेद्दिवसपञ्चकम्। सप्ताहात्तु समुद्धृत्य स्यान्मानोहरः हिङ्गुलं शभम्॥ (आ.प्र. २/७८,८०,८२)

25. **गुणाः–**

हिङ्गुलः सर्वदोषघ्नो दीपनोऽतिरसायनः। सर्वरोगहरो वृष्यो जारणायातिशस्यते॥
एतस्मादाहृतः सूतोजीर्णगन्धसमोगुणैः॥ (र.चू. ११/१०८-१०९)

तिक्तं कषायं कटु हिङ्गुलं स्यान्नेत्रामयनं कफपित्तहारि।
हल्लासकुष्ठज्वरकामलाश्च प्लीहामवातौ च गरं निहन्ति॥ (आ.प्र. २/७२)

तिक्तोष्णं हिङ्गुलं दिव्यं रसगन्धसमुद्भवम्। मेहकुष्ठहरं रुच्यं बल्यं मेधाग्निवर्धनम्॥ (आ.प्र. २/७७)

**Vīrya–** Uṣṇa

**Vipāka–** X

**Karma–** Dīpana, Rasāyana, Vṛiṣya, Balya, Vājīkara, Patra Janana, Sukhāyukara, Śrīkara, Medhā Vardhana, Agni Vardhana, Sarvadoṣaghna, Rucya, Divya, Drāvaṇa, Hṛidut-Sāhakara, Netrāmayahara, Best for Jāraṇa.

**Doṣa Prabhāva–** Sarvadoṣaghna, Kaphapitta-hāri.

**Vyādhi Prabhāva–** Prameha, Kuṣṭha, Jwara, Mandāgni, Hṛidroga, Aruci, Amlapitta, Hṛillasa, Kāmalā, Plīharoga, Āmavāta, Garaviṣa.

**Method for Śodhana[26]–**

**Procedures–** 1. Bhāvanā seven times each for one yāma

2. Amla mardana one day.

3. Ūrdhwapātana in Pātanayantra/Damaru yantra.

**Drugs Used–** Ārdraka rasa, Lakuca rasa, Any amla drava, Meṣīkṣīra, Jambīra rasa, Nimba patra rasa.

**Bad Effects of Hiṅgula[27]–**

Āndhya, Kṣainya, Klama, Bhrama, Moha, Meha, are produced if used without Śodhana.

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26. **शोधनम् –**

सप्तकृत्वार्द्रक द्रावैर्लकुचस्याम्बुनापिवा। शोषितो भावयित्वा च निर्दोषो जायते खलु॥
(र.चू. ११/११०)

दिनैकं हिङ्गुलं खल्वे मर्धमम्लेन केनचित्। पातयेत्पातनायन्त्रे दिनान्ते तत्समुद्धरेत्।
विनाकर्माष्टकेनैव सूतोऽयं सर्वकार्यकृत्॥ (र.रत्नाकर)

मेषीक्षीरेण हिङ्गुलमम्लवर्गैश्च भावयेत्। सप्तवारं प्रयत्नेन शुद्धिमायाति निश्चितम्॥
(आ.प्र. २/७४)

27. **अशुद्धदरददोषाः–**

अशुद्धो दरदः कुर्यादान्ध्यं क्षैण्यं क्लमंभ्रमम्। मोहं मेहं च संशोध्यस्तस्माद्वैधैस्तु हिङ्गुलः॥
(आ.प्र. २/७३)

**Satvapātana**[28]**–**

Mercury is extracted from Hiṅgula as Satva. For this Hiṅgula should be given Bhāvanā with any Amla drava like Jaṁbira/Niṁburas, Kāñjī etc. or with Ārdraka rasa, Lakuca drava or Niṁbapatra rasa. It is then put in the lower pot of Damaru or Pātana yantra. Keep another pot upside down on the lower pot seal the joints and applied heat from down for one yāma to whole day. Mercury vapours should be condensed in the upper pot by keeping it cool with wet cloth and changing it frequently. In this way mercury is extracted from Hiṅgula as its Satva by Pātana (Sublimation/Distilation) method.

**Uses–** It is used to extract mercury, to be used as Rasāyana, as Rasayoga nirmāṇārtha, Loha māraṇārtha, Varṇotkarṣakaraṇārtha.

**Dose–** 1 Guñjā (125 mg.) mixed with marica and Guḍa in case of Jwara, Mandāgni and in Hṛidroga – with Pippali juice, in Amlapitta with Guḍūcī Satva.

## 8. Mṛiddāra Śṛiṅga (Litharge – PbO) Varṇanam

**Group–** Sādhāraṇa rasa group.

**Origin**[29]**–** It occurs in Gujarata near Arbudācala (Arāvalī mountain). It occurs naturally in Native form in the mines and may be prepared artificially in factories. When the lead is heated in an iron pan in open air a layer of yellow colour material

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28. **हिङ्गुलात्पारद निष्कासनम् –**

दिनैकं हिङ्गुलंखल्वे मर्घमम्लेनकेनचित् । पातयेत्पातनायन्त्रे दिनान्तेतत्समुद्धरेत् ॥
विनाकर्माष्टकेनैव सूतोऽयंसर्वकर्मकृत् ॥ (र.रत्नाकर)

जम्बीर निम्बुनीरेण मर्दितो हिङ्गुलोदिनम् । ऊर्ध्वपातनयन्त्रेण ग्राह्यः स्यान्निर्मलोरसः ।
कञ्चुकैर्नागवङ्गाघैर्निर्मक्तो रसकर्मणि ॥ (र.सा.स. १/५१-५२)

ऊर्ध्वपातनयुक्त्या तु डमरूयन्त्रपाचितम् । हिङ्गुलं तस्य सूतं तु शुद्धमेव न शोधयेत् ॥
निम्बपत्ररसैर्निम्बूरसैर्वा याममात्रकम् । घृष्ट्वादरदमूर्ध्वं तु पातयेत्सूतयुक्तिवत् ।
तन्नोर्ध्वपिठरीलग्नं गृह्णीयाद्दु रसमुत्तमम् ॥ (आ.प्र. २/८३-८५)

29. **मृद्दारशृङ्ग उत्पत्ति–**

सदलं पीतवर्णञ्च भवेद्गुर्जरमण्डले । अर्बुदस्य गिरेः पार्श्वे जातं बोद्दारशृङ्गकम् ॥
(र.चू. ११/१११)

सदलं निर्दलं तस्य जनिर्गुर्जरमण्डले ॥ अर्बुदाख्यगिरेः पार्श्वे सीससत्वं स्मृतं परम् ।
(आ.प्र. २/३४४)

accumulates over the melted lead which after some time turns into powder form. It is then collected and heated strongly till melting. On cooling it turns into mass form which is known as artificially prepared Mṛiddāra Śṛiṅga. Chemically it is a yellow oxide of lead. In nature also it occurs as monoxide (PbO). It is found in two varieties. 1. Yellow powder is commercially known as messicot and 2. Buff coloured crystalline variety is known as litharge (which means silver stone). Messicot also converts into Litharge when it is heated it melts and molten mass on cooling solidify, giving the crystalline variety called litharge.

**Varieties[30]–**

As per source– 1. Prākṛita – Natural/Native
(R.R.S. Commentary) 2. Kṛitrima – Artificial
As per colour– 1. Pita
(Āy. Pr.) 2. Pāṇḍura
As per form– 1. Sadala – With layers
2. Nirdala – Massive

It is a yellow coloured granular or crystalline substance which some times look red also due to the presence (admixture) of Red oxide of lead. Its yellow colour becomes more shining if it is heated with Navasādara (Ammonium chloride).

**Physical Properties–**

Yellow in colour, crystalline or massive, with or without layers, rough on touch and heavy in weight due to lead compound.

**Pharmacological & Therapeutic Properties[31]–**

**Rasa–** X
**Guṇa–** Guru, Pīta (Yellow), Śīta
**Vīrya–** Śīta

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30-31. **गुणाः–**

सीससत्वं मरुत् श्लेष्मशमनं पुंगदापहम्। रसबन्धनमुत्कृष्टं केशरञ्जनमुत्तमम्॥
(र.चू. ११/११२)

बोदारशृंगकं प्रोक्तं द्विविधं पीतपाण्डुरम्। सदलं निर्दलं तस्य जनिर्गुर्जरमण्डले॥
अर्बुदाख्य गिरेः पार्श्वे, सीससत्वं स्मृतं परम्। केश्यं पुरुषरोगघ्नं रञ्जनं रसबन्धकम्॥
(आ.प्र. २/३४३-३४४)

**Karma–** Keśya, Keśarañjana, Bhagna Sandhāna kara, Puṁgadāpaha, Śmaśru rañjana, Firaṅga Vraṇa hṛit, Rasavandhakara, Twakdoṣa Śamana, Rasarañjana, Saṅkocana kara, Śīsasatva.

**Doṣa Prabhāva–** Marutśleśma Śamana

**Vyādhi Prabhāva–** Puṁgada, Liṅga doṣa, Ślesma vikāra, Firaṅga vraṇa, Pāma, Kaṇḍu, Palita, Bhagnaroga, Twak-roga.

**Śodhana Method[32]–**

No specific Śodhana method is mentioned for this. But for the Śodhana of all the materials of Sādhāraṇa rasa group following method is mentioned.

Bhāvanā with Mātuluṅga rasa for three times or Ārdraka rasa.

**Satva Pātana–**

Śisa satva is mentioned about, which indicates that Śīsa (Lead) may be obtained as its Satva. And that can be obtained by following common Satvapātana method i.e.

It may be mixed with $^1/_4$th part Ṭaṅkaṇa, Triturated with lemon juice, made into balas and heated strongly in mūṣā may yield its Satva (Metal-lead).

## Bhūnāga (Earth worms) Varṇanam

**Origin[33]–** In rainy season some worms occur in the earth due to the effect of rains and these are known as Bhūnāgas.

**Varieties[34]–** Four different types of Bhūnāgas have been described in the texts depending upon the type of soil in which

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32. **शोधनम् –**
साधारणरसाः सर्वे मातुलुङ्गार्द्रकाम्बुना । त्रिवारं भाविताः शुष्का भवेयुर्दोषवर्जिताः ॥
(आ.प्र. २/३४६)

33. **भूनाग-उत्पत्तिः–**
भूनागो वज्रमारः स्यान्तानाविज्ञानकारकः । (आ.प्र. ४/४६)
रसस्य जारणे प्रोक्तं तत्सत्त्वं तु रसायनम् ॥
वर्षासुवृष्टिसंक्लिष्ट भूगर्भेसम्भवन्ति हि ।
जन्तवः कृमिरुपा ये ते भूनागा इति स्मृताः ॥ (आ.प्र. ४/४८)

34. **प्रकाराः–**
चतुर्विधास्तु भूनागाः स्वर्णादिखनिसम्भवाः । स्वर्णभूमिभवाः पीताः रूप्यभूमिभवाः सिताः ॥
ताम्रभूमिभवास्ताम्राः कृष्णालोहमयीभवाः । रसेन्द्रप्राणरूपास्ते भूनागाः सिद्धसंमताः ॥
स्वर्णादिभूमिसम्भूता दुर्लभास्ते प्रकीर्त्तिताः । ताम्रभूमिभवाः प्रायः सुलभाः गुणवत्तराः ॥
(आ.प्र. ४/४८-५०)

these are produced and obtained. On the basis of colour also their types are mentioned.

**Types–**

1. Swarṇa bhūmibhava – Pīta } These are claimed Durlabha
2. Raupya bhūmibhava – Śveta }
3. Tāmrabhūmibhava – Rakta– Sulabha
4. Loha bhūmibhava – Kriṣṇa-Svalpa Satva, Svalpaguṇa.

The first two varieties are rare while last two varieties are common.

**Properties[35] and Uses–**

As per texts Bhūnāgas are very useful for mercury processes Bhūnāga Satva is usually used for this purpose. Generally copper is obtained as Satva from Bhūnāgas (Red variety) which is claimed very useful for Pārada Jāraṇa. It is also used for Rasāyana Karma and for Vājīkaraṇa purposes. Bhūnāga Satva is also used to prepare Tuttha Mudrikā by mixing it with Tuttha Satva.

The water touched with this Mudrikā (Ring) if used internally certainly cures Śūla. This Mudrikā is also claimed for curing Carācara Viṣa, Bhūta bādhā and Netrarujā (Glucoma pain) immediately. It helps in easy child birth and healing of wounds.

**Satvapātana[36]–**

Collect Tāmra bhūmibhava Bhūnāgas, mix these with Niśā (Haridrā), Guḍa, Guggulu, Lākṣā, Ūrṇā, Small fish, Piṇyāka and Ṭaṅkaṇa in equal parts, grind these with any Amladrava, prepare their bolus, put these in Mūṣā and blow with strong heat, on cooling copper like Satva may be obtained from Bhūnāgas.

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35. **गुणाः–**
रसेन्द्रप्राणरूपास्ते भूनागोः वज्रमारःस्यान्नाना विज्ञानकारकः ।
रसस्य जारणे प्रोक्तं तत्सत्त्वं तु रसायनम् ॥ (आ.प्र. ४/४६)

36. **सत्वपातनम् –**
ताम्रभूभवभूनागान् निशापिष्टान् समेन तान् गुड़गुग्गुलुलाक्षोर्णामत्स्यपिण्याकटंकणैः ।
दृढ़मेतैश्च संयोज्य मर्दयित्वा धमेत्सुखम् ॥ मुञ्चन्ति ताम्रवत्सत्त्वं ते पक्षा अपि बर्हिणाम् ॥
(आ.प्र. ४/५१-५२)

**Properties of Bhūnāga Satva**[37]**–**

It is Śīta in Vīrya, cures the wounds of all types of Kuṣṭhas, the water containing this Satva if taken internally cures Sthāvara and Jaṅgama Viṣa effect. And mercury kept in its vessel if heated strongly becomes baddha (Solidify).

## Śaṅkha (Conch Shell – $CaCO_3$) Varṇanam

**Group–** Sudhā (Calcium) Varga

**Origin**[38]**–** From Sea

**Varieties**[39]**–**

According Form– 1. Dakṣiṇāvarta – Durlabha (rare) Paramaśubha (very auspicious)
2. Vāmāvarta – Common.

According to Size– 1. Śaṅkha
2. Kṣudra Śaṅkha

**Physical Properties**[40]**–**

It should be Nirmala (Clean) without any external impurities), white, shining like moon, Snigdha (Glistening), Guru (Heavy). Chemically it is a Calcium carbonate compound and obtained from Marine source. Varies in size, shape and form. Small varieties are also available in small ponds.

**Pharmacological & Therapeutic Properties**[41]**–**

**Rasa–** Kaṣāya, Kaṭu (Kṣāra)

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37. **गुणाः–**
शीतं भूनागसत्वं तु सर्वकुष्ठव्रणप्रणुत् । तद्युक्तजलपानेन स्थावरं चापि जङ्गमम् ।
विषं नश्यति तत्पात्रगतः सूतोऽग्नितो दृढ़म् ॥ (आ.प्र. ४/५३-५३½)

38. **शंखः–** शंखः समुद्रजः कम्बुः ..... । (आ.प्र. २/२५९)

39. **प्रकाराः–**
द्विधा स दक्षिणावर्त्तो वमावर्त्तः शुभेतरः । दक्षिणावर्तशंखस्तु पुण्ययोगादवाप्यते ॥
तिष्ठतियद्गृहेसौ वै स लक्ष्म्या भाजनं भवेत् । (आ.प्र. २/२६०-२६१)

40. **गुणाः–**
शंखश्च विमलः श्रेष्ठश्चन्द्रकान्तिसमप्रभः ॥ (आ.प्र. २/२६३)

41. **शंख गुणाः–**
शंखः सर्वरूजां हन्ति विशेषादुदरामयम् । शूलाम्लपित्तविष्टम्भमेहहृद् वह्निदीपनम् ॥
(र.सा.सं. १/२४)

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**Guṇa–** Laghu, Hima

**Vīrya–** Śīta (Unuṣṇa)

**Karma–** Grāhī, Balya, Vilekhana, Agnidīpana, Varṇya, Viṣaghna, Netrapuṣpahara, Tāruṇya Piḍikāpraṇut, Śuci, Nidhi, Grahālakṣmīhara.

**Doṣa Prabhāva–** Tridoṣaghna.

**Vyādhi Prabhāva–** Udarāmaya, Amlapitta, Udaraśūla, Viṣṭaṁbha, Ādhmāna, Grahaṇī, Atisāra, Prameha, Netraroga, Tāruṇya Piḍikā, Raktapitta, Pakti-rujā, Viṣadoṣa, Grahadōṣa, Kṣaya, Kārṣya, Sarvarujā.

**Specific Property**[42]**–** It was found highly effective in cases of Amlapitta (hyper acidic conditions) due to its alkaline nature and effect and also in cases of Tāruṇya piḍikās. It is on the basis of Research work done.

**Method for Śodhana–**

**Procedure–** Svedana in Dolāyantra for one yāma (3 hours)

**Drugs Used–** Amla Kāñjika, Amla Takra, Nimbu juice, Amladrava.

**Note–**Aśuddha Śaṅkha is not advised to be used internally.

**Method for Māraṇa**[43]**–**

**Procedure–** 1. Roasting in fire (Vahni-utphullana)

2. Laghu puṭa pācana.

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दक्षिणावर्तशंखस्तु त्रिदोषघ्नः शुचिर्निधिः । ग्रहालक्ष्मीक्षयक्ष्वेडक्षामताक्ष्यामयापहः ॥
शंखः क्षारो हिमो ग्राही ग्रहणीरोगनाशनः । नेत्रपुष्पहरो वर्ण्यस्तारुण्यपिटिकाप्रणुत् ॥
अशुद्धो गुणदो नैव शुद्धोऽम्लैः स गुणप्रदः ॥ (आ.प्र. २/२६१-२६२)

42. **शोधनम् –**
अम्लैः काञ्जिकादिभिर्दोलायन्त्रेस्विन्नः सन् शुध्यतीत्यर्थः । (आ.प्र. २/)

43. **मारणम् –**
बह्नौ प्रोत्फुल्लयेत् किंवा सम्यग् लघुपुटे पचेत् । माषार्धटंकणैर्मिश्रं दण्डयन्त्रेणमारयेत् ॥
कुन्दवज्जायते भस्म सर्वयोगेषु योजयेत् ॥ (आ.प्र. टीका २/२)

**क्षुद्र शंखगुणाः–**
क्षुद्रशंखाशंखनकाः शम्बूकः शीतलो नेत्ररुजास्फोटविनाशनः ।
शीतज्वरहरस्तीक्ष्णो ग्राही दीपनपाचनः ॥ ग्रहणीरोगहन्ता च रक्तातीसारनाशनः ॥
(आ.प्र. २/३२४-३२५)

**Bhāvanā Drugs Used–** Nimbu rasa, Kumārī rasa bhāvanā.

**Type & Number of Puta–** 3 laghuputas or one Gajaputa.

**Bhasma Colour–** White-like Kundapuṣpa.

**Note–** Bhasma should not produce caustic effect due to conversion of carbonate into oxide from, hence one must taste it before internal use. If it happans or found then again triturate it with Kumārī juice and apply laghuputa to remove its caustic effect.

**Dose–** 250-500 mg.

## Godanti (Gypsum $CaSO_4 2H_2O$) Varṇanam

**Note–** This mineral is not included in any of the groups described in ancient Rasa texts but widely used in Ayurvedic medicines for various diseases hence described here.

**Modern View–**

Gypsum (Godanti) is a most important of all the hydrous sulphates. It occurs in massive beds associated with lime stones in crystals, in finely granular aggregates and in fibrous masses.

Its crystals are monoclinic and usually developed in tubular or prismatic habit. Twining is very common. It is usually white, colourless and transparent when pure, but gray, red, yellow, blue, brown or black when impure. Vitrious to pearly or silky lustre. Massive varieties are often dull. Hardness 1.5-2; Sp.Gr.2.2-2.4;

It is a hydrous calcium sulphate and contains CaO 32.6%, $SO_3$ 46.5% and $H_2O$ 20.9% but also contains notable quantities of $Fe_2O_2$, $Al_2O_3$ and $SiO_2$, clay, sand and organic matters are common impurities often found mixed with it. Yields water when heated and becomes white and opaque. When heated between 322°F to 400°F it loses water and disintegrated into powder, which when ground becomes 'Plaster of Paris'. This when moistened with water again combines with it and forms Gypsum. It is soluble in 380-460 parts of water depending upon temperature and pressure but readily soluble in HCl. In a closed tube the mineral gives off water and falls into a white powder. It colours the flame yellowish red and yields sulphur test on silver coin.

There are five varieties of Gypsum–

1. Selenite– This includes crystals and cleavable masses and is usually colour less and transparent.

2. Satin– Spar– A fibrous variety with a pronounced silky lustre.

3. Alavaster– A massive and fine grained variety.

4. Rock-Gypsum– A compact scaly or granular variety often very impure.

5. Gypsite– An impure earthy or sandy variety.

Gypsum is a common mineral often occurs in extensive deposits of great thickness. It is usually found with limestone, slabes and in connection with salt deposites. The common associates are Halite, Salasite, Sulphur, Aragonite, Dolomite, Calcite, Pyrite and Quartz. It is used as disinfectant and as adulterant of foods, medicines and paints and to prepare 'Plaster of Paris'.

According to ancient view the term Godantī given to this mineral is indicative of its resemblance with the teeth of a cow in colour and appearance. It is mentioned further that it is a drug of Pāṣāṇa jāti (mineral origin) and Saumya in nature. It does not have any resemblance with Tālaka (Orpiment) except its scaly (Patra) and massive (Piṇḍa) form.

**Physical Properties–**

It must have Patras (Scales) or layers which should be smooth on touch and should have clear and shining appearance just like a moon of Śarada ritu.

**Pharmacological & Therapeutic Properties–**

**Rasa–** X

**Guṇa–** Śīta

**Vīrya–** Śīta

**Karma–** Balya, Dīpana, Jwarahara, Śūlahara

**Doṣa Prabhāva–** Pittahara

**Vyādhi Prabhāva–** Pitta Jwara, Jīrṇa Jwara, Śiraḥ Śula, Kāsa, Śwāsa, Kṣaya, Uraḥkṣata, Pāṇḍuroga, Bālaśoṣa, Śwetapradara.

**Method for Śodhana–**

**Procedure–** Svedana for $^1/_2$ yāma

**Drugs Used–** Nimbu rasa, Droṇapuṣpīrasa.

**Method for Māraṇa–**

**Procedure–** Purified Godantī pieces are first roasted in fire and then powdered, then triturated with Kumārī juice or Nimbu juice, prepare Cakrikas, close in Sarāva saṁputa, and apply 2-3 Gajapuṭa fire. In this way white coloured Godanti bhasma is prepared.

**Dose–** 1-2 grm. with honey, milk or ghee.

## Dugdha Pāṣāṇa (Talc) Streatite) Varṇanam

**Group–** Sudhāvarga

**Modern Description–**

It usually occurs in flaky, foliated and massive forms and in plates, that appear to be tubular crystals with hexagonal outline. It also forms with chlorite and a few other substances, the rock soap stone. Although, its crystallization is unknown, still it is believed to be monoclinic, tubular or scaly.

The composition of pure white talc and ordinary soap stone is as follows–

| Constituents of Pure white Talk | | Ordinary Soapstone |
|---|---|---|
| $SiO_2$ | –68.85% | 63.29% |
| $Al_2O_3$ | – 1.71% | 1.24% |
| $Fe_2O_3$ | – – | 0.16% |
| FeO | – 0.09% | 4.68% |
| MgO | –32.68% | 27.13% |
| $H_2O$ | – 4.09% | 4.40% |
| Total | 99.68% | 100.90% |

The composition-corresponding to the formula $H_2Mg_3(SiO_2)$ is $Si_2$–63.5, MgO– 31.7, and $H_2O$- 4.8.

The cleavage is well marked on its cleavage surface, its lustre is pearly, its cleavage plates are flexible. The colour of

mineral is white grey, greenish or bluish. Transparent to translucent. The massive forms known as soapstones are white, greenish or yellowish, red or brown. All varieties are soft. Hardness is 1 and all have a soapy feeling. The density of pure talc is 2.6-2.8.

Before blowpipe it is nearly infusible (melting temp. is about 1530$^0$C) melting is only at the thinest edges to a white enamel. It yields water in a closed tube only at high temparature. It is unattacked by acids. Its powder reacts alkaline.

It is distinguished from other white soft minerals by its softness, its insolubility in acids and its infusibility.

The mineral is a common alteration product of other magnesium silicates. It occurs in marbles and other crystalline rocks, occurs usually as foliated or compact masses and globular or stellate groups also fibrous, granular. Laminas are flexible but unelastic, compact varieties have an uneven fracture. Hardness– 1.25; Sp.Gr. 2.6-2.8; commonly green, white or grey in colour, also yellowish, reddish or brown, lustre-pearly to greasy.

It is found in Switzerland, Italy, France, Germany, Newyork, Virgina, Vermount, Phillippsburry and New Jersy.

According to Ayurvedic concept Dugdha Pāṣāṇa is a stone which looks white like milk, soft and smooth.

**Synonyms–** Dīptika, Vajrābha, Dugdha sita, Dugdhopala. And Sangajarāhat in Hindi.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Madhura

**Guṇa–** Snigdha, Śīta

**Vīrya–** Śīta

**Karma–** Grāhī, Śoṇitāsthāpana, Vraṇaropaṇa, Rucya.

**Doṣa Prabhāva–** Pitta Śamana.

**Vyādhi Prabhāva–** Jwara, Rakta Srāva, Twakdāha, Ādhmāna, Hṛidroga, Pitta Śūla, Dantaroga, Kāsa, Śwāsa, Vraṇa, Atisāra, Pravāhikā, Raktapitta.

**Dose–** 1-2 guñjā (125-250 mg)

It is specifically used to prepare – Danta mañjana to prevent bleeding from Gums.

## Śukti (Marine Shell) Varṇanam

**Group–** Sudhāvarga

**General Description–**

Śukti is also a sea (marine) product. Its two types are mainly available, 1. Jala Śukti, 2. Muktā Śukti

Jala Śukti and Muktā Śukti both are Calcium carbonate compounds. Both are used in Ayurvedic medicine.

**Synonyms**[44]**–** Śukti, Muktāprasū, Mahāśuktikā, Muktāmātā, Mauktika mandira, Mauktika Prasavā, Abdhimaṇḍūki. Jalaśukti, Vāriśukti, Kṣudra Śukti, Toya Śuktikā etc.

**Pharmacological & Therapeutic Properties**[45]**–**

**Jala Sukti–**

**Rasa–** Kaṭu

**Guṇa–** Snigdha, Śīta

**Vīrya–** Śīta

**Karma–** Dīpanī, Pācanī, Rucyā, Baladāyinī, Viṣadoṣaharā.

**Doṣa Prabhāva–** Pitta nāśinī

**Vyādhi Prabhāva–** Gulma Śūla, Pittajwara, Raktapitta.

**Muktā Śukti**[46]**–**

**Rasa–** Madhura, Kaṭu.

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44. **शुक्ति नामानि–**
शुक्ति र्मुक्ताप्रसूश्चैव महाशुक्तिश्च शुक्तिका । मुक्ता स्फोटोऽब्धिमण्डूकी मौक्तिकप्रसवा च सा ॥
ज्ञेया मौक्तिकसूर्मुक्तामाता मौक्तिकमन्दिरम् ॥ (आ.प्र. २/३२६)
जलशुक्तिर्वारिशुक्तिः कृमिभूः क्षुद्रशुक्तिका । शम्बूकाजलडिम्बश्च पुटिकातोयशुक्तिका ॥
(अ.प्र. २/३२८)

45. **गुणाः–**
जलशुक्तिः कटुः स्निग्धा दीपनी गुल्मशूलनुत् । विषदोषहरा रुच्या पाचनी बलदायिनी ।
(आ.प्र. २/३२९)

46. **मुक्ताशुक्तिगुणाः–**
मुक्ताशुक्तिः कटुः स्निग्धा श्वासहृद्रोगहारिणी । शूलप्रशमनीरुच्या मधुरा दीपनी परा ॥
(आ.प्र. २/३२७)

**Guṇa–** Snigdha, Śita

**Vīrya–** Śīta

**Karma–** Rucya, Dīpanī, Śūla śamanī, Pācanī, Bala dāyinī.

**Doṣa Prabhāva–** Pitta Śamanī

**Vyādhi Prabhāva–** Śwāsa, Kāsa, Śula, Viṣadoṣa, Hṛidroga

**Note–** Their Śodhana[47] is done just like Śaṅkha and Māraṇa is done just like Kaparda.

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47. **शोधन मारण गुणाः–**
शुक्तिस्तु शिशिरा पित्तरक्तज्वरविनाशिनी। शोधनं शंखवत्तस्य मृतिः प्रोक्ता कपर्दवत्॥
(आ.प्र. २/३३०)

# CHAPTER-6
# GEMS (PRECIOUS STONES) OF MEDICINAL IMPORTANCE

## A. Description of Ratnas (Precious Stones)

**Introduction**[1]– The materials described under this group are mostly stony in nature. There are some materials like MUKTĀ (Pearls) and PRAVĀLA (Corals) which are animal in origin and obtained from marine source are also included in this group on account of their high cost, shining appearance and some other qualities just like Gems (Precious stones).

### General Description of Ratnas–

**1. Definition–** According to textual references Ratnas are those which are best in their group, must have high cost and most liked by rich persons. The materials included in this group are generally stony in nature however a few materials having the above mentioned qualities and obtained from animal sources are also included in

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1. **रत्नशब्दनिरुक्तिः–**

धनार्थिनो जनाः सर्वे रमन्तेऽस्मिन्नतीव यत्। अतो रत्नमिति प्रोक्तं शब्दशास्त्र विशारदैः॥ (आ.प्र. ५/२)

**रत्नस्वरूपम्–**

रत्नं क्लीबे मणिः पुंसि स्त्रियामपि निगद्यते। ततु पाषाणभेदोऽस्ति वज्रादि च तदुच्यते॥ (आ.प्र. ५/३)

**रत्नोपयोगाः–**

मणयोऽपि च विज्ञेयाः सूतबन्धस्य कारकाः। देहस्य धारकाः नृणां जराव्याधिविनाशकाः॥ (आ.प्र. ५/१)

रसे रसायने दाने धारणे देवतार्चने। सुलक्ष्णाणि सुजातीनि रत्नान्युक्तानि सिद्धये॥ (र.चू. १२/३)

सुजातिगुणसम्पन्नं रत्नं सर्वार्थसिद्धिदम्। दाने रसायने चैव धारणे देवतार्चने॥ (र.प्र.सु. ७/२)

मणयोऽपि च विज्ञेयाः सूतबन्धनकारकाः॥ (र.र.स. ४/१)

**रत्नधारण गुणाः–**

सूर्यादिग्रहनिग्रहापहरणं दीर्घायुरारोग्यदं सौभाग्योदयभाग्यवश्यविभवोत्साहप्रदं धैर्यकृत्।
दुश्छायाचलधूलिसंगतिभवाऽलक्ष्मीहरं सर्वदा रत्नानां परिधारणं निगदितं भूतादिनिर्नाशनम्॥ (र.र.स. ४/८३)

Ratna group. In modern science Ratnas are called GEMS or PRECIOUS stones. Since ancient times these are divided in two groups on the basis of their bright shining nature, high cost and other superior qualities. These are 1. Ratnas (Precious stones) and 2. Uparatnas – Semi Precious Stones.

**Ratna Group–**

In this group almost all the texts have included nine (9) materials which have been shown in the following table.

Table showing nine Ratnas[2], their relationship with nine Grahs (Planets) and their Hindi and English names.

| S.N. | Names of Ratnas | Hindi Names | English Names | Names of Grahas |
|---|---|---|---|---|
| 1. | Māṇikya | Māṇik | Ruby | Sūrya (Sun) |
| 2. | Muktāphala | Moti | Pearl | Candra (Moon) |
| 3. | Vidruma (Pravāla) | Muṅgā | Coral | Maṅgala (Mars) |
| 4. | Tārkṣya (Marakata) | Pannā | Emerald | Budha (Mercury) |
| 5. | Puṣpa **Rāga** | Pukhraja | Topaz | Guru (Jupitor) |
| 6. | Bhidura (Vajra) | Hīrā | Diamond | Śukra (Venous) |
| 7. | Nīla (Indra Nīla) | Nīlam | Sapphire | Śani (Saturn) |
| 8. | Gomedaka | Gomeda | Hessonite | Rahu (Dragon's Head) |
| 9. | Vidūraka (Vaidūrya) | Lasunia | Cat's eye | Ketu (Dragon's Tail) |

2. **रत्ननामानि–**
माणिक्यमुक्ताफलविद्रुमाणिताक्ष्यं च पुष्यं भिदुरं च नीलम्।
गोमेदकं चाथ विदूरकं च क्रमेण रत्नानि नवग्रहाणम्। (र.र.स. ४/६)
**श्रेष्ठ मणय:–**
पद्मरागेन्द्रनीलाख्यस्तथा मरकतोत्तम:। पुष्पराग: सवज्राख्य: पञ्चरत्नवरा: स्मृता: ॥
**रत्नोपरत्नभेदा:–** (र.र.स. ४/५)
वज्रं विद्रुममौक्तिके मरकतं वैदूर्यगोमेदके माणिक्यं हरिनीलपुष्पदृषदौ रत्नानि नाम्ना नव।
यान्यन्यान्यपि सन्ति कानिचिदिह त्रैलोक्यसीम्नि स्फुटं.नाम्ना तान्युपरत्नतान्युपगतान्याहु: परीक्षाकृत:॥
**रत्नानां ग्रहानुकूल्यता–** (आ.प्र. ५/४)
माणिक्यं घुमणे बुधस्य गरुडोद्गारो गुरो: पुष्पकं गोमेदं तमस: प्रवालमवनीसूनोर्विधोर्मौक्तिकम्।
नीलं मन्दगते: कवेस्तु कुलिशं केतोर्बिडालाक्षकं रत्नं रत्नविदो वदन्ति विहितं दाने तथा धारणे ॥
(आ.प्र. ५/१७८)

It is evident from this table that which Ratna is related to which Graha (Planet) and as such these may be used to pacify the effect of their prakopa. These Gems are not only used to combate the evil effects of these planets rather to cure the diseases produced by these planets. For this purpose the Ratnas of superior quality are only recommended for Dhāraṇa (Bearing purpose) and Dāna (offer) and also for worship. In this table the Hindi and English names of each Ratna are also given.

**Physical Qualities of Good Variety of Ratnas–**

The Ratnas of superior qualities must be clear on looking, light in weight, shining brightly, eight surfaces and six angles, smooth on touch. According to modern view Gem stones should have following five qualities. i.e. 1. Beauty, 2. Durability, 3. Rarerity, 4. Fashion or high cost and 5. Portability. The beauty of the Gems depends upon their transparency and clearity, brilliancy, colour, lustre and fineness. These qualities are seen best when the stone is cut and polished.

**Doṣas (Defects) of Ratnas[3]–**

According to ancient texts Ratnas are said to have following five doṣas. i.e. Grāsa, 2. Trāsa, 3. Bindu, 4. Rekhā and 5. Jalagarbhata. If Ratnas are free from these doṣas these are considered to be of best quality. It is further said in the texts that

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ग्रहानुमैत्र्याकुरुविन्दपुष्पप्रवालमुक्ताफलताक्ष्यवज्रम् ।
नीलाख्यगोमेदविदूरकं च क्रमेण मुद्राघृतमिष्टसिद्धयै ।। (र.चू. १२/२)
सुजातिगुणसम्पन्नं रत्नं सर्वार्थसिद्धिदम् । दाने रसायने चैव धारणे देवतार्चने ।।
(र.प्र.सु. ७/२)
रसे रसायने दाने धारणे च देवतार्चने । सुलक्ष्णाणि सुजातीनि रत्नान्युक्तानि सिद्धये ।।
(र.चू. १२/३)

3. **रत्न दोषाः–**

घर्षश्च विन्दुश्चतथैव रेखा त्रासश्च पानीयकृतासगर्भता ।
सर्वेषु रत्नेषु च पञ्च दोषाः साधारणास्ते कथिता मुनीन्द्रैः ।।
ये क्षेत्रतोयप्रभवाश्च दोषा सर्वेषु रत्नेषु न लगन्ति सम्यक् । (र.प्र.स. ७/५२)
ग्रासस्त्रासश्च विन्दुश्च रेखा च जलगर्भता । सर्वरत्नेष्वमी पञ्च दोषाः साधारणा मताः ।।
क्षेत्रतोयभवा दोषा रत्नेषु न लगन्ति च । भैरवस्तु पुनः प्राह दोषोदोषेऽस्ति सर्वथा ।।
(र.चू. १२/२७-२८)

Ratnas are not likely to be affected with the Kṣetra (Bhūmi doṣa) and Toya (Water born) doṣas (Impurities).

**Mythological Origin of Ratnas–**

As per the textual description the Ratnas are said to have their origin from the brightly red eyes of angry Mahākāla at the time of Pralaya when Mahākāla engages him self in drying the sea.

It is also said about these that these also have their origin from the mountains, rocks, animals and sea.

**Uses and Properties of Ratnas[4]–**

As per 'Rasendra Cūḍāmaṇi' and other texts Ratnas are used for Rasakarmas, Rasāyana Karma, Dāna Karma, Dhāraṇa Karma and Devatārcana. These not only used to make the planets pleased, pacify their prakopa, combat their evil effects but are likely to produce Dīrghāyu (longevity), Vaibhava (Wealth), Saubhāgya (Fortune), Utsāha (Energy), Dhairya (Patience) in human beings on internal and external uses. Besides this these remove Dāridrya (Poverty), Kaṣṭa (Sorrowfulness/misery), Grahabādha (Evil effects of planets) Bhūta bādha (Evil effects of evil spirits) and Amaṅgala (Unfortune).

From pharmacological and therapeutic point of view all the Ratnas possess Madhura and Kaṣāya rasa, Śīta and Sara

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4. **रत्नोपयोगाः–**

रसे रसायने दाने धारणे च देवतार्चने। सुलक्ष्णाणि सुजातीनि रत्नान्युक्तानि सिद्धये ॥
(र.चू. १२/३)

सूर्यादिग्रहनिग्रहापहरणं दीर्घायुरारोग्यदं सौभाग्योदयभाग्यवश्यविभवोत्साहप्रदं धैर्यकृत्।
दुःछायाञ्चलधूलिसंगतिभावालक्ष्मीहरं सर्वदा रत्नानां परिधारणं निगदितं भूतादिनिर्णाशनम् ॥
(र.चू. १२/६६)

धृतानि वातानि समर्चितानि सुजातियुक्तानि च संस्तुतानि
हरन्ति रत्नान्यखिलदुरिष्टं कुर्वन्त्यभीष्टंसततं यथेष्टम्।
हरन्त्यलक्ष्मी सततं समस्तान् दुष्कर्मजातानिहसर्वरोगान् ॥
आयुष्यकारीणि हितानि सर्वरत्नप्रसूतानि रसायनानि ॥
रत्नानि सोपरत्नानि चक्षुष्याणि सराणि च। ग्रहालक्ष्मीविषक्षैण्यपापसन्तापजिन्ति च ॥
(आ.प्र. ५/१७४)

**भक्षितानिचेत् –**

यक्ष्मपाण्डुप्रमेहार्शः कासश्वासभगन्दरान्। ज्वरवीसर्पकुष्ठार्तिशूलकृच्छ्रव्रणामयान् ॥
घ्नन्ति पुण्यंयशः कृन्ति पुण्यानि च नृणां भृशम् ॥ (आ.प्र. ५/१७५-१७६)

guṇa, Dīpana and Kantivardhana Karmas. According to 'Rasa Kāma Dhenu' these are Agnivardhaka, Vilekhī, Viṣahara and Netrāmaya hara. As regards their effects on doṣas almost all the Ratnas may have Pitta Śamana effect except in their impure state as in that impure state these are likely to provok Kapha and Vāta dosa.

These are the properties of Ratnas alone but when these are used in combination with mercury these exibit more better effects just like Amṛita (Nectar).

**Śodhana Objectives[5]–**

It is mentioned in the texts that if the Ratnas like Māṇikya and Muktā etc. are used internally without purification (Śodhana) no bad effects are observed however their Śodhana is done or recommended to enhance their Pharmacological and therapeutic properties.

**General Method of Śodhana[6]–**

As per texts almost all the Pārthiva type of materials are purified by the general method of Śodhana which may be common for that group of material or by the specific method which is specific for that particular material. In this way for Ratnas (Ratna group of materials) also there is a General Śodhana method and specific Śodhana methods.

**General Śodhana Methods[7]–**

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5. **शोधन निर्देशः–**
   रत्नोपरत्नान्येतानि शोधनीयानि यत्नतः ।
   अशुद्धानि न कुर्वन्ति गुणान् रोगांस्तु तन्वते ॥ (आ.प्र. ५/१५०)
   घृतानि .....
6. **सामान्य शोधन विधिः–**
   घृतान्येतेषु संस्विन्नान्याशु शुद्ध्यन्ति दोलया । (आ.प्र. ५/१५३)
   तेषां च शुद्धिं शृणुभैरवोक्तां यथाहि दोषस्य विनाशनं स्यात् । (र.प्र.सु. ७/५३)
7. **रत्नानां शोधनम्–**
   शुद्ध्यत्यम्लेन माणिक्यं जयन्त्या मौक्तिकं तथा । विद्रुमं क्षारवर्गेण तार्क्ष्यं गोदुग्धतस्तथा ॥
   पुष्परागं च धान्याम्लैः कुलत्थक्वाथसंयुतैः । तण्डुलीयजलैर्वज्रं नीलं नीलीरसेन च ॥
   रोचनाभिश्च गोमेदं वैडूर्य्यं त्रिफलाजलैः ॥ (र.चू. १२/५४-५५)
   ..... यामैकं स्वेदितं शुद्धिमेति । (र.प्र.सु. ७/५५)

For this following Śodhana drugs and methods are mentioned.

**Śodhana Drugs/Materials–**

1. Jayantī swarasa
2. Kumārī swarasa
3. Taṇḍulīya swarasa
4. Amla drava/swarasa
5. Kṣāra drava
6. Gomūtra
7. Nārī Payasa

**Śodhana Processes–**

1. Svedana in Dolāyantra for one Yāma (3 hours)

2. Heating to red hot and quanching in prescribed liquids 7 times to 100 (Hundred) times.

**Effects of Śodhana–**

With these drugs and process the external impurities are removed: Softness, brittleness and discolouration to some extent is induced.

**Visesa or Specific Śodhana Methods & Drugs–**

For this following specific drugs for the Śodhana of each Gem stone are mentioned–

1. Māṇikya – Amla drava
2. Muktāphala – Jayantī swarasa
3. Pravāla – Kṣāra drava
4. Marakata/Tārkṣya – Godugdha
5. Puṣpa rāga – Dhānyāmla
6. Vajra – Kulatha Kvātha – Taṇḍulīya drava.
7. Nīla – Nīlīpatra rasa.
8. Gomeda – Gorocanā drava
9. Vaidurya – Triphalā drava or Uttamā Kvātha.

**As regards the processes–** Svedana by Dolāyantra method or Heating & quenching several times in recommended liquids.

**Ratna Māraṇa (Incineration) Method[8]–**

Just like Śodhana a General or Common method for Māraṇa is also found mentioned in the texts for Ratnas. By this

8. **मारणम् –**
लकुचद्रावसंपिष्टैः शिलागन्धकतालकैः । वज्रं विनान्यरत्नानि म्रियन्तेऽष्टपुटैः खलु ॥
(र.चू. १२/५६)

method all the Ratnas except Diamond could be incinerated. For Hīraka (Diamond) Māraṇa Number of māraṇa methods are found mentioned in the texts.

## General Māraṇa Method for Ratnas–

### Māraṇa Drugs/Materials–

Gandhaka, Tālaka, Manaḥ Śilā, Mākṣika and Vimala are mixed with Ratnas.

### Bhāvanā Drugs/Liquids–

Generally Lakuca drava is used to apply Bhāvanā while doing Māraṇa of Ratnas. Trituration is done with above mentioned Māraṇa drugs. Then this mixture is made into pellets and on drying may be subjected to heating (Puṭa application).

### Type and Number of Puṭas–

Eight Gajaputas if given all the Ratnas convert into good bhasmas except Vajra (Diamond) which may require more number of puṭas.

**Note**[9]– It is mentioned in 'Āyurveda Prakāśa' that Hīraka etc. Ratnas should not be subjected to Māraṇa. Because these are the very costly items and by their Māraṇa (Incineration) persons are likely to go to Naraka (Hell).

In this connection it is said further that if at all Ratna Māraṇa[10] is considered necessary then take (Collect) small

9. **रत्नमारण निषेधः–**
न हन्याद्धीरकादीनि नवरत्नानि बुद्धिमान्। महामौल्यानि तेषां तु वधे रौरवमृच्छति ॥
(आ.प्र. ५/१५६)

10. **मारणोपदेशः–**
वज्रादीनां तु संस्कारे क्रियमाणे पतन्ति ये।
गात्रेभ्यः खण्डकाः स्वल्पास्तान् हन्याद् बुद्धिमान् भिषक् ॥
यद्वा तत्खनिजाता ये तज्जातीयाः सुलक्षणाः।
स्वल्पमूल्यास्तु तेषां हि वधे नास्तीहपातकम् ॥ (आ.प्र. ५/१५७-१५८)
**मुक्ताफलानां द्रावणम् –**
मुक्ताफलानि सप्ताहं वेतसाऽम्लेन भावयेत्। जम्बीरोदरमध्ये तु धान्यराशौ निधापयेत् ॥
पुटपाकेन तच्चूर्णं द्रवते सलिलं यथा। कुरुते योगगञ्जोऽयं रत्नानां द्रावणं प्रिये ॥
(आ.प्र. ५/१७९-१८०)

pieces, which are otherwise commercially not found useful may be subjected to Māraṇa. It is an ancient style of description. In fect on account of their hardness their conversion into fine state of Subdivisions is very difficult. And as such to avoid their difficult processing technique ancient scholars might have described this way that by doing their Marana (Killing) persons are likely to get Papa (Sins).

**Druties of Ratnas[11]–**

In making Druti the solid material is made to convert into liquified state and should remain in the same state for ever. It is not the melting state acheived by heating which is unstable. But as per ancient concept 'DRUTI' is a conversion of material into stable liquified state.

**Characteristics of Ratna Druti[12]–**

Druti of a particular Ratna means conversion of that Ratna into liquid state, which should resemble the colour and shining of that Ratna from which it is made, it should mix with mercury easily, should transform body and metal and may mix with Hiṅgwādi group of drugs in Kāṁsya pātra.

11. **रत्नद्रुतिविधानम् –**
रामठं पञ्चलवणं सदा क्षार युग्ममपि चेत्सुपेषितम् ।
चूलिकालवणमम्लवेतसं पक्वकुम्भि फलं तथैव च ।।
चित्रमूलक रुदन्तिके शुभा जम्बुकी जलयुता द्रवन्तिका ।
अर्कदुग्धसमसौधदुग्धकं सर्वमेव मृदितं शिलातले ।
गोलमस्य च विधाय निक्षिपेद्रत्नजातिषु वराणि पेषयेत् ।
भूर्जपत्रमभिवेष्णा गोलके गोलकोपरि निवेष्टय सूत्रतः ।
वस्त्रेण संवेष्ट यत्र ततः प्रयत्नाद्दोलाख्ययन्त्रेऽथनिवेश्य गोलकम् ।
सर्वाम्लयुक्ते तुषवारिपूरिते पात्रे दृढेमृण्मयसंज्ञके हि ।
दिनत्रयं स्वेदनकं विधेयमाहृत्यतस्माद्वरगोलकं हि ।।
संक्षालयेच्चाम्लजलेन चापि संजायते रत्नभवाद्रुतिश्च ।। (र.प्र.सु. ७/५८-६२)

12. **द्रुतिलक्षणम् –**
वर्णेन सा रत्ननिभा चकान्त्या लध्वीभवेद्देहकरी च सम्यक् ।
लोहस्यवेधं प्रकरोति सम्यक् सूतेन सम्यक् मिलनं प्रयाति ।।
तदा भवेयुः खलु सिद्धता यदा हिंग्वादिवर्गेण मिलन्ति सम्यक् ।
यामद्वयं कांस्यविमर्दिता वै चातिप्रयत्नेन तु वैधवर्यैः ।
कस्यापि नुः सिद्ध्यति वै द्रुतिश्च यदा प्रसन्नः खलु पार्वतीशः ।। (र.प्र.सु. ७/६३-६४)

There are number of methods found described for preparing Drutis of Ratnas but in the present times it is not possible to make Drutis in real sense.

## General Method for the Preparation of Druti–

### 1. Drugs for Druti prepation–

Hiṅgu, five lavaṇas, two Kṣāras, Culhikā lavaṇa, Amla vetus, Ripe Kuṁbhīphala, Citraka mūla, Rudantī, Jaṁbukī, Wet Dravantī, Arka Dugdha, Snuhī dugdha etc.

### 2. Procedures Used–

All the prescribed drugs are first pasted and made into balls. Keep the powder of Ratna drugs in it, wrap it into Bhūrjapatra and cloth piece and tie it with thread.

### 3. Apparatus Used–

Apply Svedana to this bundle through Dolāyantra using Amla Tuṣodaka for 3 days. Then collect the Druti after washing the bundle with hot water.

## DESCRIPTION OF EACH RATNA

### 1. Māṇikya (Ruby) ($Al_2O_3$)

**Group–** Ratna Varga

**Hardness–** 9, **Sp.Gr.–** 4

**Chemical Composition–** Aluminium oxide, contains Iron, Chromium and Titanium oxide also in traces.

**Colour–** Deep red due to the presence of Iron and Chromium in small amount.

**Occurence–** Occurs in Burma, Ceylon and India specially near Mysore and Kattak (Orissa). The Ruby obtained from Burma is considered to be the best.

**Āyurvedic Description–**

It should be deep red just like an Indragopa (A type of Earthworm). It is related to Surya graha (Sun).

**Varieties**[13]**–**

A) Padma rāga (Red) and Nilagandhī (Yellowish)

B) Kuruvinda and Saugandhika.

C) Rakta, Pīta, Aśoka patracchāya (Greenish) and Tumburucchāya (Reddish yellow).

**Crystals–** Hexagonal, **Lustre–** Vitrious

**Physical Properties**[14]**–**

For superior qualities– should be deep red, should have shining like that of red lotus, transparent, oval shape, heavy, smooth, clear, uneven, big in size. It should spread red rays when comes in contact with rising sun rays. When put into milk it should look red. And when rubbed over a stone looks shining and beautiful.

The colour[15] of Nīlagandhī Māṇikya is red on outside and blue inside. It is claimed to be produced from Gaṅgājala. It is also considered good just like Padmarāga.

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13. **माणिक्य भेदाः–**
माणिक्यं पद्मरागाख्यं द्वितीयं नीलगन्धि च। पद्मरागाभिधं श्रेष्ठं प्रथमं तदुदीरितम्॥ (र.र.स. ४/९)
द्वितीयं नीलगन्धि स्याद् घनं रक्तं सुशोभनम्॥ (र.प्र.सु. ७/३)

14. **प्रशस्त पद्मराग लक्षणम् –**
कुशेशय दलच्छायं स्वच्छं स्निग्धं गुरु (महत्)स्फुटम्।
वृत्तायतं समंगात्रं माणिक्यं श्रेष्ठ मुच्यते॥ (र.र.स. ४/१०)
महच्च कमलच्छायं स्निग्धं स्वच्छं गुरु स्फुटम्।
समं वृत्तायतं गात्रे माणिक्यं चोत्तमं मतम्॥ (र.प्र.स. ७/४)
स्निग्धं सुगात्ररचितं दीप्तं स्वच्छं सुरङ्गं च।
तज्जात्यं माणिक्यं कल्याणं धारणात्कुरुते॥ (आ.प्र. ५/१०१)

15. **नीलगन्धि माणिक्य लक्षणम् –**
नीलं गगाम्बुसम्भूतं नीलगर्भारुणच्छविः। पूर्वमाणिक्यवच्छ्रेष्ठं माणिक्यं नीलगन्धितत्॥ (र.र.स. ४/११)
गंग्गेदकसम्भूतं नीलगर्भारुणच्छविः। माणिक्यं पूर्ववच्छायं नीलगन्धि तदुच्यते॥ (र.प्र.सु. ७/६)

**For inferior quality**[16]– The Ruby containing holes, rough on look, dull in appearance, light in weight, flat on surface, small and uneven is considered inferior and not recommonded for use.

**General Test for Good Ratna–**

According to this if any gem producing loud sound when put together with an ice-piece may be considered genuine otherwise not genuine.

**Pharmacological and Therapeutic Properties**[17]**–**

**Rasa–** Madhura

**Guṇa–** Snigdha, Śīta, Rūkṣa

**Karma–** Sandīpana, Vṛiṣyatama, Balya, Rasayana, Medhya, Hṛidya, Āyuṣya, Vājīkaraṇa.

**Doṣa Prabhāva–** Kapha Vātahara, Vātapittanut, Tridoṣanāśana.

**Vyādhi Prabhāva–** Karmaja Vyādhi, Kṣaya roga, Bhūta Vetālādi janya roga, Sūryagraha janya roga such as– Śiropīḍā, Prameha, Satatajwara, Santatajwara, Pitta roga, Āma Śūla, Hṛidroga, Viṣūcikā, Viṣaroga, Śirovraṇa, Dāhajwara and Hikkā.

**Note–** By bearing and worshiping Māṇikya the planet Sun becomes pleased, its Kopa is pacified and as such the diseases caused by the Prakopa of sun are cured easily.

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16. **निकृष्टमाणिक्यलक्षणम् –**

रन्ध्रकार्कश्यमालिन्य रौक्ष्याऽवैशद्यसंयुतम्। चिपिटं लघु वक्रं च माणिक्यं दुष्टमष्टधा ॥
(र.र.स. ४/१२)

माणिक्यं चाष्टधा नेष्टं सच्छिद्रं मलिनं लघु। कर्कशं चिपिटं वक्रं सूक्ष्मं चाविशदं तथा ॥
(र.प्र.सु. ७/७)

यद्विच्छायं शर्करिलं कर्कशधूम्रं स्वरागविकलं च। विरुप लघु माणिक्यं न धार्यं दोषावहंत्याज्यम् ॥
(आ.प्र. ५/१०२)

17. **माणिक्य गुणाः–**

माणिक्यं दीपनं वृष्यं कफवातक्षयार्त्रिनुत्। भूतवेतालपापघ्नं कर्मजव्याधिनाशनम् ॥
(र.र.स. ४/१३)

संदीपनं वृष्यतमं हि रूक्षं वातापहं कर्मरुजापहं च।
भूतादिदोषत्रयनाशनं परं राज्ञां सदा योग्यतमं प्रशस्तम् ॥ (र.प्र.सु. ७/८)

माणिक्यं मधुरं स्निग्धं वातपित्तविनाशनम्। ..... रसायनकरं परम् ॥
(आ.प्र. ५/१००)

**Pharmaceutical Processes–**

**(A) Śodhana– Śodhana drugs**–Nimbu rasa/any Amla drava.

**Procedure**– Svedana by Dolāyantra for one yāma.

**(B) Māraṇa– Maraṇa drugs**– Śilājatu, Amlavetas, Culhikā lavaṇa, Ṭaṅkaṇa, Manaḥ Śilā, Haritāla, Gandhaka, Hiṅgula Śodhita.

**Bhāvanā drugs**–Lakuca rasa, Nimbu drava.

**Procedure**– Puṭapāka with eight Gajaputas.

**Bhasma Colour**– Pāṇḍura Varṇa.

**Note**– In the present times Ruby and Sapphires are produced artifically in large numbers. These synthetic corundoms possess superior colours. But when small in size it is extremely difficult to distinguish these with the natural stones.

**Dose**– $^1/_4$th to $^1/_2$ Guñjā (30-60 mg.).

## 2. Nīla Maṇi (Sapphire) ($Al_2O_3$)

**Group**– Ratna Varga.

**Hardness**– 9, **Sp.Gr.**– 4.

**Chemical Composition**– Aluminium oxide. Also contains cobalt in traces which gives blue colour to it.

**Colour**– Deep blue to white. There is no difference in between Maṇikya and Nīlam except colour and the presence of trace elements. It also belongs to corundum group. Sapphire proper is a transparant blue corandum.

**Relationship with Graha**– It is related with Śani graha (Planet Saturn).

**Varieties**[18] –

As per Rasa texts– 1. Indra Nīla and (Best) 2. Jala Nīla (Ordinary)

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18. **नीलमणि भेदाः–**

जलनीलेन्द्रनीलं च शक्रनीलंतयोर्वरम्। (र.चू. १२/४४)

**तयोर्लक्षणानि–**

काष्ण्यर्गर्भितनीलाभं सभारं शक्रनीलकम्। श्वैत्यगर्भितनीलाभं लघुतज्जलनीलकम्॥ (र.चू. १२/४४)

As per modern texts– 1. Yellow, 2. Golden, 3. White, 4. Green and 5. Violet.

**Synonyms–** Indra Nila, Mahā Nīla, Śakra Nīla, Kṛiṣṇa Maṇi and Jala Nīla.

**Crystals–** Hexagonal, Sapphire usually show asterism and are called star Sapphires.

**Colour & Appearance–** Indra Nīla – Deep blue
Jala Nīla – Whitish blue.

**Physical Properties**[19]**–** For superior quality– Sapphire having deep blue colour and having one colour only, heavy in weight, clear, shining and beautiful, smooth on touch, bright and round is considered good and recommonded for use.

For inferior quality– That which is soft, light, reddish, having blood like smell, rough, small, flat, having one colour in one half and other colour in another half is considered inferior. As per 'Rasa Prakāśa Sudhākara' Jala Nīla is inferior. Mahā Nīla

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19. **श्रेष्ठनील लक्षणानि–**
एकच्छायं गुरुस्निग्धं स्वच्छं पिण्डितविग्रहम् । मृदुमध्योल्लसज्ज्योतिः सप्तधा नीलमुत्तमम् ॥ (र.चू. १२/४५)

**जलनील लक्षणानि–**
कोमलं विहितं वर्णं निर्भारं रक्तगन्धि च । चिपिटाभं सरुक्षं च जलनीलं च सप्तधा ॥ (र.चू. १२/४६)

इन्द्रनीलमथवारिनीलकं श्वैत्यगर्भितमथापिनीलकम् ।
कथ्यते हि लघुवारिनीलकं तुच्छमेव कथितं भिषग्वरैः ॥
कान्त्या युक्तं काष्ण्यगर्भं च नीलं तच्चाप्युक्तं शक्रनीलाभिधानम् ।

**उत्तमम् –**
एकच्छायं स्निग्धवर्णंगुरुस्यात्स्वच्छं मध्ये चोल्लसत्कान्तियुक्तम् ।
नीलं प्रोक्तं पिण्डितं सप्तसंख्यैरेतैर्लिङ्गैर्लक्षितं चोत्तमं हि ।

**अधमम् –**
निर्भारं चेत्कोमलं चास्रगन्धि रुक्षं वर्णे सूक्ष्मंक चिप्पिटं च ।
प्रोक्तं हि तद्वारिनीलं भिषग्भिरेतैर्लिङ्गैः सप्तभिः क्षेपणीयम् ॥ (प्र.सु. ७/४१-४३)

**उत्तम लक्षणम् –**
न निम्नो निर्मलो गात्रे मसृणो गुरुदीप्तिकः । तृणग्राही मृदुर्नीलो दुर्लभो लक्षणान्वितः ॥ (आ.प्र. ५/१२३)

or Indra Nīla are the same. These are as blue as clouds or Atasīpuṣpa. It gives blue colour to milk or water when put in these liquids.

**Pharmacological and Therapeutic Properties[20]–**

**Rasa–** X

**Guna–** X

**Karma–** Balya, Vṛiṣya, Dīpana, Rasāyana, Medhya, Hṛidya, Viṣahara, Twacya, Varṇya, Pāpaghna.

**Doṣa Prabhāva–** Tridoṣaghna.

**Vyādhi Prabhāva–** Kāsa, Śwāsa, Jwara, Viṣama Jwara, Kuṣṭha, Pāṇḍu, Arśa.

As the gem is related to Śanigraha hence it may also prove useful in the diseases caused by the Śaniprakopa like– Yakṣmā, Vātodara, Snāyu-ruk, Kṛimi, Pakṣāghāta, Śwāsa, Plīharoga, Jīrṇa Jwara, Sarvāṅga Vāta, Hastapāda Prakaṁpa.

**Pharmaceutical Processes–**

**1. Śodhana–** Śodhana drugs– Nīli swarasa.

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20. **नील गुणाः–**

संदीपनं श्वासहरं च वृष्यं दोषत्रयोन्मूलनकं विषघ्नम् ।
दुर्नामपाण्डुघ्नमतीव बल्यं जूर्त्ति जयेन्नीलमिदं प्रशस्तम् ।। (र.प्र.सु. ७/४४)

कासश्वासहरं वृष्यं त्रिदोषघ्नं सुदीपनम् । विषमज्वर दुर्नाम पापघ्नं नीलमीरितम् ।।
(र.चू. १२/४७)

नीलकस्तिक्तकः श्रेष्ठः कफपित्तानिलापहः । यो दधाति शरीरस्य शौरिर्मङ्गलदो भवेत् ।।
(आ प्र. ५/१२२)

**श्रेष्ठ ताक्ष्र्यलक्षणानि–**

हरिद्वर्णं गुरु स्निग्धं स्फुरद्रश्मिचयं शुभम् । मसृणं भासुरं ताक्ष्र्यं गात्रं सप्तगुणं मतम् ।।
(र.चू. १२/१४)

ताक्ष्र्यं स्निग्धं भासुरं सस्यवर्णं गात्रैः शुद्धंभारवद्रश्मियुक्तम् ।
एते प्रोक्ताः सप्तसंख्यागुणा वै दानेशस्तं भक्षणे धारणे च ।। (र.प्र.सु. ७/१४)

यच्छैवाल शिखण्डिशाड्वलहरित्क्वाथैश्च काकच्छदैः खद्योतेन च बालकोरवपुषा शैरीषपुष्पेण च ।
छायाभिः सततं दधाति तदिदं निर्दिष्टमष्टात्मकं जात्यं यत्तपनातपैश्च परितो गारुत्मतं रञ्जयत् ।।
(आ.प्र. ५/१०८)

स्वच्छं च गुरु सुच्छायं स्निग्धं गात्रं च मार्दवम् । अव्यङ्गं बहुरङ्गं च शुभं मरकतं मतम् ।।
(आ.प्र. ५/१०६)

Procedure & Apparatus – Svedana in Dolāyantra for 1 yāma.

**2. Māraṇa–** Māraṇa drugs– Mrita Vajra Cūrṇa, Mayūra Pitta.

Procedure– Mix mrita vajra curṇa with Nīlam, Triturate with Mayūra pitta and Roast it in strong heat. It is reduced to ashes.

## 3. Tārkṣya/Marakata (Emerald or Beryl) ($Al_2O_36SiO_2$)

**Group–** Ratnavarga.

**Hardness–** 7.5-8.5, **Sp. Gr.–** 2.7.

**Chemical Composition–** Berylium, Aluminium, and Silicon oxide, Also contains Chromium in traces. The green colour is attributed to these elements. It has another variety and that is known as 'Aqua Marine' which closely resembles with sea water in colour.

**Colour–** Deep shining green colour, transparent. Its cost is high in proportion to colour, brightness and transparency.

It is related to Budha graha (Planet Mercury).

**Occurence–** It occurs in Columbia, Russia, China, Central Asia, India. In India it is obtained from Kasmir, Punjab, Ajmer (Rajasthan), Madhya Pradesh, Bihar, Mysore and in Coimbatore in small quantities.

**Chemical Constituents and their Percentage–**

| | |
|---|---|
| 1. Silica | 68.50% |
| 2. Alumina | 15.75% |
| 3. Glucina | 12.50% |
| 4. Chromium oxide | 0.30% |
| 5. Iron oxide | 1.0% |
| 6. Calcium | 0.25% |

**Varieties–**

As per the ancient texts it has no varieties but on the basis of colour it is of 3 types.

1. Green – Good
2. Bluish – Medium
3. White – Ordinary

**Synonyms–** Tārkṣya, Garuḍodgāra, Harinmaṇi, Dṛiṣadgarbha, Gārutmata.

**Physical Properties**[21]**–**

For superior quality– It should be green like grass, Banana or Bambu leaf. Shines like sunrays, smooth, heavy in weight, big in size, without holes and bubbles. Besides this emerald having close resembalance with Mayūra Kaṇṭha is also considered to be of superior variety.

For Inferior Quality[22]– Tārkṣya having Kapish (Monkey colour), blue, white or black colour, rough and uneven surface, flat appearance, light in weight, having holes and bubbles is considered to be of inferior quality. And such emarald is not recommended for use.

**Pharmacological & Therapeutic Properties**[23]**–**

**Rasa–** Madhura
**Guṇa–** Śīta
**Vīrya–** Śīta

**Karma–** Ojovardhana, Balya, Viṣaghna, Agni dīpana, Pācana, Rucikara, Puṣṭikara, Vṛiṣya, Bhūtabādhāhara.

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21. हरिद्वर्ण गुरु स्निग्धं स्फुरद्रश्मिचयं शुभम् । मसृणं भासुरं तार्क्ष्यं गात्रं सप्तगुणं मतम् ॥ (र.चू. १२/१४)

22. **अग्राह्य लक्षणानि–**
कपिशं कर्कशं नीलं पाण्डु कृष्णं सलाघवम् । चिपिटं विकटं कृष्णं रूक्षं तार्क्ष्यं न शस्यते ॥ (र.चू. १२/१५)
नीलं श्वेतं कर्कशं श्यावरूक्षं वक्रं कृष्णं चिप्पटं भारहीनम् । दुष्टं तार्क्ष्यं चौषधे नोपयोज्यं ... ॥ (र.प्र.सु. ७/१५)
शर्करिलं रूक्षमलिनं लघु हीनकान्तिमकलषम् । त्रासयुतं विकृताङ्गं मरकतममरोऽपि नोपभुञ्जीत ॥ (आ.प्र. ५/१०७)

23. **तार्क्ष्यगुणाः–**
ज्वरछर्दिविषश्वाससन्निपाताग्निमान्द्यनुत् । दुर्नामपाण्डुशोफध्नं तार्क्ष्यमोजो विवर्धनम् ॥ (र.चू. १२/१६)
.... कासं श्वासं सन्निपाताग्निमान्द्यम् । शोफं शूलं जूर्त्तिरोगं विषं च दुर्नामानं पाण्डुरोगं निहन्यात् ॥ (र.प्र.सु. ७/१६)
मरकतं विषघ्नं हि शीतलं मधुरं रसे । अम्लपित्तहरं रुच्यं पुष्टिदं भूतनाशनम् ॥ (आ.प्र. ५/१०५)

**Doṣa Prabhāva–** Sannipata nut.

**Vyādhi Prabhāva–** Śwāsa, Agnimāndya, Chardi, Arśa, Sannipāta, Pāṇḍu, Śopha, Śūla, Jwara, Amlapitta, Viṣa.

Besides these it may also be used in the diseases caused due to the Prakopa of Budha graha i.e. Twak-doṣa, Vātaja Pīḍā, Jihwāroga, Vicarcikā, Unmattatā, Kaphaja and Tridoṣaja Vyādhies.

**Pharmaceutical Processes–**

**1. Śodhana–** Śodhana drugs– Godugdha.

Śodhana Procedure– Svedana in Dolāyantra for one yāma.

**2. Māraṇa–** As per Māṇikya or as per general method of Māraṇa of Ratna.

**Note–** Emery is an intimate mixture of Corandum, Magnetite, Haematite, Quartz and Spinal. These are dark grey to black in colour. It was first considered to be an iron ore. But due to its hardness, brilliancy and transparency it is considered or included in gem group.

## 4. Puṣpa rāga (Topaz) $Al_2(FOH)_2SiO_4$

**Group–** Ratna Varga.

**Hardness–** 8, **Sp.Gr.–** 3.8.

**Chemical Composition–** It is Flourohydroxy Silicate of Aluminium. i.e. it contains flourine, hydrogen and oxygen, Aluminium and silicon. Some times it does not contain hydrogen. The percentage of flourine varies from 15.5 to 20. It also belongs to corandum group. It comes under Mahāratnas.

**Colour–** Usually colourless, but sometimes it is of wine-yellow, greyish, light blue, violet or rosy reddish in colour. Its colour closely resembles with the flower of Amala Tas (Cassia fistula linn). Its appearance is very clear, shining, transparent to opaque.

**Lustre–** Vitrious.

**Crystals–** Arthorhombic. Prismatic.

**Occurence–** It occurs in North Asia, Burma, Brajil, Ceylon, Montana and India. In India it occurs in Himālayas.

**Percentage of Chemical Constituents–**

Aluminium oxide 55.4%
Flourine 20.7%
Silicon oxide 28.9%

**Varieties–**

In Ayurvedic Rasa texts no varieties of Pusparāga are mentioned. However Yuktikalpa Tarukāra has described its two varieties on the basis of its occurence i.e. (1) Padmarāgā karodbhava and (2) Markatākarodbhava.

**Relation with Graha–** It is related to Gurugraha.

**Synonyms–** Puṣparāga, Mañju Maṇi, Guru Ratna, Vācaspati– Ballabha, Pītamaṇi.

**Physical Properties[24]–**

**For Superior Quality–** Topaz should be heavy in weight, big in size, smooth on touch, clear, shining, even, soft and yellow in colour like Karṇikāra or Campaka puṣpa and transparent. Only such Topaz is considered to be of superior quality. In addition to above the Topaz appearing more bright and shining after rubbing on Nikaśa (Touching stone) is also considered best.

**For Inferior Variety[25]–** That which is lustre less, rough, Kapiśa (Reddish yellow), Śyāmala (Blackish) or Pāṇḍura (Whitish)

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24. **श्रेष्ठ पुष्पराग लक्षणानि–**

पुष्परागं गुरुस्निग्धं स्वच्छं स्थूलं समं मृदु। कर्णिकारप्रसूनाभं मसृणं शुभमष्टधा ॥
(र.चू. १२/१७)

स्वच्छं स्थूलं पुष्परागं गुरुस्यात्स्निग्धं वर्णे कर्णिकारप्रसूनम्।
यच्चावक्रं मसृणं कोमलं च लिङ्गैरैतै शोभनं पुष्परागम् ॥ (र.प्र.सु. ७/१७)
घृष्टो निकषपदे यत्पुष्यति यो रागमधिकमात्मीयम्।
एष खलु पुष्परागो जात्यस्तथाऽयं परीक्षकैरुक्तः ॥ (आ.प्र. ५/१२८)

25. **अग्राह्य पुष्पराग लक्षणानि–**

निष्प्रभं कर्कशं रूक्षं पीतं श्यामंनतोन्नतम्। कपिलं कपिशं पाण्डु पुष्परागं परित्यजेत् ॥
(र.चू. १२/१८)

रूक्षं पीतं कर्कशं श्यामलं च पाण्डु स्याद्वा कापिलं तोयहीनम्।
दोषैर्युक्तं निष्प्रभं पुष्परागं नो सेव्यं तन्नदेयं द्विजेभ्यः ॥ (र.प्र.सु. ७/१८)
कृष्णं विन्द्वङ्कितं द्व्यक्षं घवलं मलिनं लघु। विच्छायं शर्कराङ्गाभं पुष्परागं सदोषकम् ॥
(आ.प्र. ५/१२७)

in colour, having un even surface and less shining is considered inferior. Such Topaz is not recommended for any purpose.

**Pharmacological and Therapeutic Properties**[26]**–**

**Rasa–** X

**Guṇa–** Laghu, Śīta

**Karma–** Dīpana, Pācana, Viṣaghna, Dāha Śamana, Medya, Bṛiṁhaṇa, Āyuṣya.

**Doṣa Prabhāva–** Kapha Vātanut.

**Vyādi Prabhāva–** Agnimāndya, Chardi, Viṣa, Dāha, Mūtrakṛicchra, Kuṣṭha, Arśa. Besides it may also be used in the diseases caused by the Prakop of Gurugraha.

**Pharmaceutical Processes–**

**1. Śodhana–** Śodhana drugs– Dhānyāmla (Kāñjika)

Śodhana Procedures– Svedana in Dolāyantra I yāma

**2. Māraṇa–** As per Māṇikya or as per general method.

## 5. Vajra (Diamond)

**Group–** Ratna group.

**Hardness–** 10, **Sp. Gr.–** 3.5.

**Chemical Composition–** It contains only Carbon, hence chemically it belongs to a group Coal. When it is heated in the open air where oxygen is present at high temp. it produces carbon di-oxide just like Coals. The difference between diamond and coal is in its structurel arrangement, i.e. in diamond the atoms of carbon

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26. **पुष्पराग गुणाः–**

पुष्परागं विषच्छर्दिकफवाताग्निमान्द्यनुत्। दाहकुष्ठप्रशमनं दीपनं लघु पाचनम्॥ (र.चू. १२/१९)

कुष्ठं छर्दिं श्लेष्मवातौनिहन्ति मन्दाग्निनामेतदेव प्रशस्तम्।
दाहे कृच्छ्रे दीपनं पाचनं च तस्मात्सेव्यं सर्वकालं मनुष्यैः॥ (र.प्र.सु. ७/१९)

सच्छांय पीतगुरुगात्रसुरङ्गशुद्धं स्निग्धं च निर्मलमतीवसुवृत्तशीतम्।
यत्पुष्परागममलंक्षयनाशकारि पुष्णाति कीर्त्तिमतिशौर्यसुखायुरर्थान्॥
कुष्ठाशोंदाहरोगघ्नम् ..... ॥ (आ.प्र. ५/१२६)

are situated densely hence its hardness is 10 and its Sp.Gr. is more than that of ordinary coals.

**Colour–** It has no specific colour, commonly colourless, or Slightly yellowish. Also yellow, red, green, blue, rarely black. Transparent to translucent or opaque. The index of refraction and the dispersion of diamond are high. The Diamond is an excellent conductor of heat. It is cold to touch. Poor conductor of electricity. Transparent to X-rays.

**Crystals–** Cubic, hexacta hedral, often rounded or distorted. Chemically colourless diamonds are pure carbon but coloured stones may contain Calcium, Sodium, Copper, Silicon, Aluminium, Boron, Iron and Magnesium in traces. Un affected by acids.

**Occurence–** Till the end of 17th Cent. A.D. Diamond was not found in any other country except India. But now a days. These are abundently found in Brazil, Australia, and South Africa.

The diamond mines of India are situated in Bundel Khand, Chennai, Vijayanagaram and Golakunda are Still famous in the world. Now a days the diamonds found in India are not of good quality. However India and Burma are the earliest sources of diamonds.

**Ayurvedic Description–**

**Synonyms–** Kuliśa, Vajra, Pavi, Hīraka, Bhārgava Priya.

**Relation with Graha–** It is related to Śukra graha.

**Varieties**[27]**–**

1. On the basis of gender– Nara Vajra – Very good
   Nārī Vajra – Good
   Napuṁsaka Vajra – Inferior
2. On the basis of colour–
   1. White, 2. Red, 3. Yellow and 4. Black.

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27. **वज्रभेदाः–**
वज्रं तु त्रिविधं प्रोक्तं नरो नारी नपुंसकम्। पूर्वं पूर्वं महाश्रेष्ठं रसवीर्यविपाकतः ॥
(र.चू. १२/२०)

3. On the basis of Caste–

1. Brāhmaṇa – Rasāyana – White
2. Kṣatriya – Rogaharaṇa – Red
3. Vaiśya – Lohavedha/Dhātuvāda – Yellow
4. Śudra – Vaystaṁbhana – Black.

These are useful for respective caste persons. It is also said in this connection that Uttama caste Vajra could be found useful in low caste persons but low caste Vajra may not prove useful in high caste persons. Such views are expressed by Lord Bhairava.

**Physical Properties of Each Type of Vajra–**

**Nara Vajra**[28]**–** It has eight edges, eight surfaces, six angles very shining, exhibits many colours just like Indra Dhanuṣa (Rain bow) in sky. It is Vāritara (Light in wt.), As per 'Rasārṇava' it is round and without Rekhas and Bindus. It is claimed Sarvadoṣāpaha, Vedhaka and Rasa bandhana.

**Nārī Vajra**[29]**–** It possess all the above characteristics but its shape is flat and oval. It may have Rekhās and Bindus, Karkaśa (Rough) to touch and Dehasidhikara.

**Napuṁsaka Vajra**[30]**–** It is round and does not have edges and angles, heavy in wt. It is claimed to be Krāmaṇa, and inferior to all.

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28. **पुंवज्र लक्षणानि–**
अष्टास्रं चाष्टफलकं षट्कोणमतिभासुरम् । अम्बुदेन्द्रधनुर्वारि नरं पुंवज्रमुच्यते ॥
(र.चू. १२/२१)

29. **स्त्रीवज्र–**
तदेव चिपिटाकारं स्त्रीवज्रं वर्तुलायतम् । (र.चू. १२/२१)

30. **नपुंसक वज्र–**
वर्तुलं कुण्ठकोणाग्रं किंचिद् गुरु नपुंसकम् ॥ (र.चू. १२/२२)
श्वेतादि वर्णभेदेन तदेकैकं चतुर्विधम् । ब्रह्मक्षत्रियविट्शूद्रं स्वस्ववर्णफलप्रदम् ॥
(र.चू. १२/२४)
स्त्रीपुंनपुंसकं वज्रं योज्यं स्त्री पुंनपुंसके । व्यत्यासान्नैव फलदं पुंवज्रेणविना क्वचित् ॥
उत्तमोत्तमवर्णं हि नीचवर्णे फलप्रदम् । न्यायोऽयं भैरवेणोक्तं पदार्थेष्वखिलेष्वपि ॥
(र.चू. १२/२३, २५)
सर्वेषु रत्नेषु सदा वरिष्ठं मूल्यैर्गरिष्ठं त्रिविधं हि वज्रम् ।
नरश्च नारी च तथा तृतीयं तेषां गुणान् **वच्मि समासतो हि** ॥

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**For Superior Variety**[31]– It must possess eight edges, eight surfaces, six angles, looks very attractive and shining, colourless but transparent, round, light, free from any defects, should be clear, white, shining like star, reflects light from inner surface just like exhibiting brilliant sparking which gives handsome play of colours. It may cut all substances but can not be cut due to greater hardness.

**For Inferior Quality**– Round, less shining, blue or ash colour, broken from one side, rough, having defects like– Rekhā and Kākapada etc. are not good and considered to be inferior.

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पूर्वं पूर्वं श्रेष्ठमेतत्प्रदिष्टं द्रव्यात् वीर्यात् पाकतश्च प्रभावात् ।
तेषां वर्णाजातयश्चप्रकेदाः कथ्यन्तेऽष्टौ शास्त्रतश्चापकर्षात् ॥
श्वेतादिकं वर्णचतुष्टयं हि सर्वेषु रत्नेषु च कथ्यते बुधैः ।
स्युर्ब्राह्मणक्षत्रियवैश्यशूद्रास्ते जातयोवै क्रमतश्च वर्णाः ॥
पुंवज्रं यत्प्रोच्यते चाष्टधारं षट्कोणं चेदिन्द्रचापेन तुल्यम् ।
अष्टौ चेत्स्यु फालकाः भासुरं हि पूर्वश्रेष्ठं सर्वदोषापहं स्यात् ॥
स्त्रीवज्रं चेत्रादृशं वर्त्तुलं हि किंचिच्चैवं चिप्पिटं कर्कशं च ।
कोणाग्रं वै कुण्ठितं वर्त्तुलं च किंचिद् हीनं प्रोच्यते तत्तृतीयम् ॥
स्त्रीपुमान् नपुंसकं यच्च वज्रं योज्यंतच्च स्त्रीषु पुंस्त्वेवषण्ढे ।
व्यत्यासा द्वै नैवदत्तं फलं स्यात् वज्रं वा विनातत्पुमांसम् ॥
वर्णेष्वेवं यस्य वर्णस्य वज्रं तद्वर्णे शोभनीयं प्रदिष्टम् ।
न्यायश्चायं भैरवेण प्रदिष्टं सर्वेष्वेव रत्नवर्गेषुसम्यक् ॥ (आ.प्र. ७/२०-२६)

ब्रह्मक्षत्रियवैश्यशूद्रविभिदा ज्ञेयश्चतुर्धा पविः । पुंस्त्रीक्लीबविभागतः पुनरसौ प्रत्येकमुक्तस्त्रिधा ॥
तत्र श्वेतरुचिर्द्विजः स्फटिकवद्रक्तस्तु किंचिन्नृपो । वैश्यः पीतरुगंघ्रिजस्त्वसितभास्तत्राप्ययं पुरूषः ।

**भौतिक गुणाः–**

रेखाविन्दुविवर्जितोऽष्टफलकः स्वच्छच्छवियों भवेत्सा ।
स्त्री या तु षडस्त्रविन्दुसहितो रेखान्वितो दाहृतः ॥
निष्कोणाश्चिपिटास्त्रिकोणवपुषोदीर्घा विपुंस्त्वाः पुनर्धायाः ।
स्त्रीनृनपुंसकैर्युवतिपुंषण्डाभिधानाः क्रमात् ॥ (आ.प्र. ५/२८-२९)

31. **श्रेष्ठकुलिशलक्षणानि–**

यत्पाषाणतले निकाषनिकरे नोद्घृष्यतेनिष्ठुरैर्यच्चान्योपललोहमुद्गरमुखैर्लेखंन यात्याहतम् ।
यच्चान्यान् निजलीलयैव दलयेद् वज्रेण वा भिद्यते तज्जात्यं कुलिशं वदन्ति कुशलाः
स्थाप्यं महार्धं च तत् ॥ (आ.प्र. ५/६९)

**Pharmacological and Therapeutic Properties**[32]**–**

**Rasa–** Ṣaḍrasa

**Guṇa–** Snigdha

**Karma–** Āyuprada, Parama Hṛidya, Yogavāhī, Pradīpana, Vṛiṣyatama, Vayastaṁbhakara, Kāntijanana, Saukhya Janana, Rasāyana, Sudhāsama balaprada, Netrya, Medhya, Rogaghna, Mrityuhara, Sarva Siddhiprada, Dravyakāri, Rasabandhakara, Rasamāraka.

**Doṣa Prabhāva–** Tridoṣa śamana.

**Vyādhi Prabhāva–** Sakalaroga, Balī-Palita, Rājayakṣmā, Prameha, Medoroga, Pāṇḍu, Śotha, Udararoga, Claivya, Mṛityuhara.

**Properties According to Types–**

**1. Nara Vajra–** Rasabandhakara, Lohakrāmaṇa Śīlā Satvayukta, useful for all persons, Best of all.

**2. Nārī Vajra–** Divakāntijanana, lesspowerful, useful for ladies only.

**3. Napuṁsaka Vajra–** Less Krāmaṇa power, without Satva, useful only for Klaviaya (Impotents).

**As per Caste–**

**1. Brāhmaṇa Vajra–** Good for Rasāyana karma, Aṇimādi–Siddhiprada.

**2. Kṣatriya Vajra–** Good for rogaharaṇa, Balīpalitahara, useless for Rasakarma.

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32. **गुणाः –**

आयुष्प्रदं झटिति सद्गुणदं च वृष्यं दोषत्रयप्रशमनं सकलामयघ्नम् ।
सूतेन्द्रबन्धवधसद्गुणकृत् प्रदीपि मृत्युञ्जयेदमृतोपमयेव वज्रम् ॥ (र.चू. १२/२६)

आयुप्रदं वृष्यतमंप्रदिष्टं दोषत्रयोन्मूलनकं तथैव ।
रसेन्द्रकस्यापिहि बन्धकृत्सदासुधामयं चापमृतिं च हन्यात् ॥ (र.प्र.सु. ७/३६)

वज्रं च षड्रसोपेतं सर्वरोगापहारकम् । सर्वोधशमनं सौख्यदार्ढ्यकारि रसायनम् ॥
(आ.प्र. ५/६७)

वज्रं समीरकफपित्तगदान्निहन्याद्वज्रोपमं च कुरुते वपुरुत्तमश्रिः ।
शोषक्षयभ्रमभगन्दरमेहभेदः पाण्डूदरश्वयथुहारि च षड्रसाढ्यम् ॥ (आ.प्र.५/७३)

आयुः पुष्टिंबलंवीर्यं वर्णं सौख्यं करोति च । सेवितं सर्वरोगघ्नं मृतं वज्रं न संशयः ॥
(आ.प्र. ५/७५)

**3. Vaiśya Vajra–** Good for Rasavāda and Dhātuvāda (Drvayakārī), Śarīra dārḍhyakara (As per 'Rasārṇava').

**4. Śūdra Vajra–** Vayastaṁbhakara, Vyādhihara.

**Mythological Origin–**

(i) According to ancient view Ratnas are said to have their origin from the head or the body of Asura Bali who was bearing Ratnas on his body and head which were cut by the Vajra of Indra.

(ii) In ancient times when Devas and Asuras were engaged in Samudra manthan (Churning of sea) by using Mantharācala as Churning instrument. They got Amṛita first by Churning and started to drunk it. While drinking a few drops of Amṛita have fallen on the earth which converted into Vajra (Diamonds) on drying. Vajra is also called Pavi by some persons.

**Pharmaceutical Processes–**

**Necessity for Śodhana–** It is mentioned in 'Rasa Mañjarī' that if Diamonds are used internally without their Śodhana. These are likely to produce following disease. Viz– Pāṇḍu, Pārśwapīḍā, Kilāśa, Dāha, Gurutva, and other diseases.

**Necessity for Māraṇa–** It is said in 'Rasa Kāma Dhenu' that if it is used without Māraṇa it is likely to produce following disease, Viz– Pāṇḍu, Santāpa, Pārśwa pīḍā, Bhrama, Kuṣṭha and Kṣaya etc. diseases. Hence it should be used in Bhasma form only.

**Śodhana Process[33]–**

**Śodhana drugs–** Kulattha or Kodrava **Kvātha**, Hayamūtra, Taṇḍulīya drava, Vyāghrīkand, Vajrīkṣīra, Pārada.

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33. **शोधनम् –**

कुलत्थक्काथके स्विन्नं कोद्रवक्काथितेन वा । एकयामावधि स्विन्नं वज्रं शुद्ध्यति निश्चितम् ॥ (र.चू. १२/२९)

यामावधिस्वेदितमेव वज्रं शुद्धिं प्रयातीह कुलत्थतोये । सिद्धं तथा कोद्रवजेशृते वा वज्रं विशुद्ध्येद्धि विनिश्चयेन ॥ (र.प्र.सु. ७/२७)

व्याघ्रीकन्दगतं वज्रं दोलायन्त्रेण पाचयेत् । सप्ताहं कोद्रवक्काथे कुलिशं विमलं भवेत् ॥
कुलत्थकोद्रवक्काथे दोलायन्त्रे विपाचयेत् । व्याघ्रीकन्दगतं वज्रं त्रिदिनं तद्विशुद्धयति ॥ (आ.प्र. ५/७६-७७)

व्याघ्रीकन्दगतं वज्रं मृदालिप्तं पुटे पचेत् । अहोरात्रात्समुद्धृत्य हयमूत्रेण सेचयेत् ॥
वज्रीक्षीरेण वा सिञ्चेत् कुलिशं विमलं भवेत् ॥ (आ.प्र. ५/७८)

**Sodhana Procedure–**

(A) Niṣecana after strong heating

(B) Svedana in dolāyantra one yāma to 7 days.

(C) Puṭapāka for 24 hours.

**Curṇī karaṇa Method for Vajra–**

By the above Śodhana method Vajra is claimed to become purified however it does not become suitable for Māraṇa i.e. does not convert in powder form as it is the hardest material, hence ordinary crushing and grinding is not sufficient for its powdering.

**Method Adopted–** Late great scholar Jādavaji Trikam Ji Ācārya has suggested that Diamond pieces should be heated strongly and quenched into Snuhī Kṣīra or Kulattha Kvātha or Āmalakī Kvātha more than 100 times and then it should be poured into Pārada (Mercury) to make it brittle. Then it may be powdered.

**Māraṇa Process[34]–**

**Māraṇa drugs–** Rasa Sindūra, Purified Manaḥ Śilā, Haritāla, Gandhaka, Swarṇa Makṣika.

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34. **मारणम् –**

वज्रं मत्कुणरक्तेण चतुर्वारं विभावितम् । सुगन्धमूषिकामांसैर्वर्त्तितैः परिवेष्ट्य च ॥
पुटेत्पुटैर्वराहाख्यैस्त्रिंसद्वारं ततः परम् । ध्मात्वा ध्मात्वा शतं वारान् कुलत्थक्काथके क्षिपेत् ॥
(र.चू. १२/३०-३१)

कुलत्थक्काथसंयुक्तं लकुचद्रवपिष्टया । शिलयालिप्तमूषायां वज्रं क्षिप्त्वा निरुध्य च ।
अष्टवारं पुटेत्सम्यग्विशुष्कैर्वनकोत्पलैः ॥ शतवारं ततोध्मात्वा निक्षिप्तं शुद्धपारदे ।
निश्चितं म्रियते वज्रं भस्मवारितरं भवेत् ॥ (र.चू. १२/३२-३४)

विलिप्तंमत्कुणस्यास्रैः सप्तवारं विशोषितम् । कासमर्दरसापूर्णलोहपात्रे निवेशितम् ॥
सप्तवारं परिध्मातं वज्रभस्म भवेत्खलु । ब्रह्मज्योतिमुनीन्द्रेण क्रमोऽयं परिकीर्त्तितः ॥
नीलज्योतिलताकन्देघृष्टंधर्मे विशोषितम् । वज्रं भस्मत्वमायाति ..... ॥
(र.चू. १२/३६-३८)

त्रिवर्षारुढकार्पासमूलमादाय पेषयेत् । त्रिवर्षनागवल्ल्या वा निजद्रावैः प्रपेषयेत् ॥
तद्गोलके क्षिपेद्वज्रं रुद्ध्वागजपुटे पचेत् । एवं सप्तपुटैर्नूनं कुलिशं मृतिमाप्नुयात् ॥
(आ.प्र. ५/८१-८२)

त्रिसप्तवारं संतप्तं खरमूत्रेण सेचितम् । मत्कुणैस्तालकं पिष्ट्वातद्गोले कुलिशं क्षिपेत् ॥
प्रध्मातं वाजिमूत्रेण सिक्तं पूर्वक्रमेण वै । भस्मीभवति तद्वज्रं शंखशीतांशुसुन्दरम् ॥
(आ.प्र. ५/८३-८४)

**Bhāvanā drugs–** Kulaltha kvātha, 3 years old Kārpāsa mūla drava.

**Procedure–** Peṣaṇa (Grinding) for 3 days, Golaka nirmāṇa and drying.

**Puṭapāka–** Mahāputa or Gajaputas for number of times.

**Bhasma colour**[35]**–** As per 'Āyurveda Prakāśakāra' the bhasma of Vajra is said to be white like Śaṅkha or Moon.

**Note–** There are number of methods for Vajra māraṇa but the above mentioned method is simple and common. Late Acārya Śri Jādvaji has also followed the same. It is a modification of the IInd method mentioned in 'Rasa Ratna Samuccaya'.

**Dose–** $^{1}/_{32}$nd to $^{1}/_{16}$th part of a Guñjā.

About dose it is mentioned in 'Rasa Taraṅgiṇī' that one Guñjā of Vajra bhasma should be mixed with the 4 māsa of Rasa sindūra and rubbed well then one Guñjā of this mixture may be used internally for obtaining therapeutic effects of Vajrabhasma.

## 6. Vaidūrya (Cat's eye) ($BeAl_2O_4$)

**Group–** Ratna Varga

**Hardness–** 8.5, **Sp.Gr.–** 3.6-3.8.

**Crystals–** Arthorhombic, Tubular and also heart shaped.

**Lustre–** Vitrious or Greasy.

**Colour–** Greenish white or Greenish yellow. Transparent to translucent. It exhibits a play of colours.

Chemically it is Beryllium Aluminate and contains BeO– 19.8%, $Al_2O_3$– 80.2%. Iron and Magnesium are also present in traces.

From modern point of view i.e. on the basis of constituents its two types are described. Viz–

**1. Chrysoberyl group–** Which is described above.

**2. Quartz group–**Its hardness is 4. The green fibrous variety of Crosidolite is known as Cat's eye. It is an Asbestos like substance and contains $FeSiO_3$. It appears to be secondary mineral.

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35. **वज्र भस्मवर्ण–**

भस्मीभवति तद्वज्रं शंखश्चीतांशुसुन्दरम्। (आ.प्र. ५/८४)

The mineral 'Cymophan' is opalescent, has yellow green colour, a silky lustre and fibrous structure. The name Cat's eye is given to this. It resembles Lahaśuna (Garlic) in appearance hence it is called 'Lahasunia' in Hindi. In ancient texts its colour is described as greenish yellow or greyish yellow with white shining in the middle like white mica, cloth or fiber. Others are of the opinion that it has various colours like the clouds of rainy season seen in the sky. On account of heat the change in its colour is not uncommon.

**Varieties–** In modern literature its varieties are described on the basis of following two groups, Viz–

1. Chrysobesryl or Emerald group
2. Quartz group – Crocidolite

On the basis of colour it has four varieties, viz–

1. White, 2. Smoky, 3. Blackish and 4. Mixture of colours.

In Ayurveda its varieties are described on Caste basis, Viz.

1. Brahmina– Whitish blue
2. Kṣatriya – Whitish red
3. Vaiśya – Yellowish blue
4. Śudra – Blue.

**Relation with Graha–** It is related with Ketu graha.

**Synonyms–** Vaidūrya, Viḍālaka, Vidālākṣa, Mārjār Netra.

**Physical Properties[36]–**

**For Superior Variety–** That which is blackish white, clear, even, heavy, smooth, showing white fiber like structure in the

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36. **वैदूर्य वर्णनम् –**

वैडूर्य्यं श्यामशुभ्रामं समंस्वच्छं गुरु स्फुटम्। भ्रमच्छुभ्रोत्तरीयेण गर्भितं शुभमीरितम्॥
(र.चू. १२/५१)

स्वच्छं समं चापि विदूर्यकं हि श्यामाभशुभ्रं च गुरुस्फुटं च।
यज्ञोपवीतोपमशुभ्ररेखस्तिस्रश्च संदर्शयतीह शुभ्राः॥ (र.प्र.सु. ७/४९)

वैदूर्यं श्यामशुभ्राभं समंस्वच्छं गुरु स्फुटम्। भ्रमच्छुभ्रोत्तरीयेण गर्भितं शुभमीरितम्॥
घृष्टं यदात्मना स्वच्छं स्वच्छायां निकषात्मनि। स्फुटं प्रदर्शयेदेतद्वैदूर्यं जात्यमुच्यते॥
(आ.प्र. ५/११२-११३)

middle, looks like Cat's eye is considered to be of superior quality and recommonded for use.

**Inferior Quality**[37]– Which is black, looks like water, rough on touch, flat in appearance, light in wt. shows red lines in the middle is inferior.

**Pharmacological and Therapeutic Properties**[38]–

**Rasa**– Madhura

**Guṇa**– Śīta

**Virya**– Śīta

**Karma**– Dīpana, Prajnā-Buddhi Janana, Āyuṣkara, Balavardhaka, Netrya, Parama Bṛiṁhaṇa, Malamocana, Medhya, Malabhedanut, Raktapitta Praśamana.

**Doṣa Prabhāva**– Pittaghna.

**Vyādhi Prabhāva**– Raktapitta, Pittāmaya.

**Pharmaceutical Processes**–

**Śodhana**[39]– Śodhana drugs– Triphalā kvātha

Procedure– Svedana in dolāyantra for one yāma.

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37. **अग्राह्यवैदूर्यलक्षणानि**–
श्यामंतोयसमच्छायं चिपिटं लघु कर्कशम्। रक्तगर्भोत्तरीयं च वैदूर्यं नैव शस्यते ॥
(र.चू. १२/५२)
कर्कशं च लघु चिप्पटं सदा श्यामतोयमिवदृश्यते छविः। रक्तगर्भसममुत्तरीयकं नैवशोभनमिदं विदूर्यकम्। (र.प्र.सु. ७/५०)
विच्छायं मृच्छिलागर्भं लघुरूक्षं त्वसत्कृतम्। सत्रासं चिपिटं कृष्णं वैदूर्यं दूरतस्त्यजेत् ॥
(आ.प्र. ५/१११)

38. **गुणाः**–
वैदूर्यं रक्तपित्तघ्नं प्रज्ञायुर्बलवर्धनम्। पित्तप्रधानरोगघ्नं दीपनंमलमोचनम् ॥
(र.चू. १२/५३)
रक्तपित्तशमनं विदूर्यकं बुद्धिवर्धनकरं च दीपनम्।
पित्तरोगमलमोचनं सदा धारयेच्च मतिमान् सुखवहम् ॥ (र.प्र.सु. ७/५१)
वैदूर्यं विडालेक्षणसदृशम्। (आ.प्र.)

39. **शोधनम्** –
वैदूर्यं त्रिफलाजलैः। वैदूर्यं चेदुत्तमाक्काथयुक्तं यामैकं स्वेदितं शुद्धिमेति।
(र.प्र.सु. ७/५५)

**Māraṇa**[40]– Māraṇa drugs– Māṇikya and Vajra powder.

Procedure– Mix these with Vaidūrya powder and heat in Gajaputa fire for number of times or just like Māṇikya.

## 7. Gomeda (Zircon/Hessonite) Varṇanam ($CaAl(SiO_2)$)

**Group**– Ratna varga.

**Hardness**– 6.5-7.5, **Sp.Gr.**– 3.5-3.7.

**Colour**– Brown or Rose red. Dark colour varies from translucent to opaque.

**Lustre**– Vitrious to resinous.

**Crystals**– Cubic. Its mineral is 'Grossularite. It is chemically-Calcium-Aluminium garnet. Calcium may be partially replaced by Ferrous iron and Aluminium by Ferric iron.

According to some scholars Gomeda is Zircon ($Z_1SiO_4$). Its hardness is 7.5, Sp.Gr. 4.65 to 4.71. Its lustre is adamentine. Colour– commonly Brown or Greyish, trasparent to opaque, crystal-tetragonal.

**Occurence**– It occus in South Africa, Ukraine and Arizona. It does not occur in India.

**Ayurvedic Description**– According[41] to 'Rasendra Cūḍāmaṇi' the colour of Gomeda should resemble with the colour of the fat of cow, hence the name Gomeda is given to this stone. In other words its colour is light dark reddish. According to 'Nighaṇṭu Ratnākara' its colour is just like Gomūtra (Cow's urine). In 'Rasa Jala Nidhi' its colour is like that of orange.

**Relation with Graha**– It is said to be related to Rāhu graha.

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40. **मारणम्** –
लकुचद्रावसंपिष्टैः शिलागन्धकतालकैः । वज्रं विनान्यरत्नानि म्रियन्तेऽष्टपुटैःखलु ॥
(र.चू. १२/५६)

41. **निरुक्तिः**–
गोमेदः समरागत्वाद् गोमेदं रत्नमुच्यते ।

**Varieties–** In 'Rasā Kāma Dhenu' four varieties of Gomeda are described on the basis of colour. Viz–

1. Whitish– Brāhamaṇa
2. Reddish yellow – Kṣatriya
3. Yellow – Vaiśya
4. Blackish yellow – Śūdra

**Synonyms–** Pītaratna, Sundara, Gomeda.

**Physical Properties–**

**For Superior Quality**[42]**–** Its colour should be similar to Gomeda or Gomūtra, should be shining, smooth, without layers, clear, heavy, even in shape.

**For Inferior Quality**[43]**–** Having less shining or opaque, rough, flat, with layers, light in wt. look like yellow glass. Such Gomeda is inferior and not recommended for use.

**Note**[44]**–** It is also mentioned in 'Āyurveda Prakāśa' that best Gomeda if put in milk pot should give the appearance like cow's urine and should not loose its shining even after rubbing.

**Defects of Gomeda–**

Just like Diamond Gomeda also possess following defects, Viz– Mala, Bindu, Rekhā, Trāsa, Kākapada.

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42. **उत्तमगोभेद–**
सुस्वच्छगोजलच्छायं स्वच्छं स्निग्धं समं गुरु ।
निर्दलंमसृणं दीप्तं शस्तं गोमेदमष्टधा ॥ (र.चू. १२/४८) (आ.प्र. ५/११५)
गोमेदकं रत्नवरं प्रशस्तं गोमेदवद्रागयुतं प्रचक्षते ।
सुस्वच्छगोमूत्रसमानवर्णं गोमेदकं शुद्धमिहोच्यते खलु ॥ (र.प्र.सू. ७/४५)
दीप्तं स्निग्धं निर्दलं मसृणं वै मूत्रच्छायंस्वच्छमेतत्समं च ।
एभिर्लिङ्गैर्लक्षितं वै गरीयं सर्वास्वेतत् योजनीयं क्रियासु ॥ (र.प्र.सु. ७/४६)

43. **अग्राह्यगोमेद–**
विच्छायं लघु रूक्षाङ्गं चिपिटं पटलाचितम् ।
निष्प्रभं पीतकाचाभं गोमेदं न शुभावहम् ॥ (आ.प्र. १५/११९)
विच्छायं वा त्रिघिटं निष्प्रभं च रूक्षं चाल्पं चावृतं पाटलेन ।
निर्भारं वा पीतकाचाभयुक्तं गोमेदं चेदीदृशं नो वरिष्ठम् ॥ (र.प्र.सु. ७/४७)

44. **परीक्षा–**
पात्रे यत्र न्यस्ते पयः प्रयात्येव गोजलोज्ज्वलितम् ।
घर्षेऽप्यहीनकान्तिगोमेदं तं बुधा विदुर्जात्यम् ॥ (आ.प्र. ५/११७)

**Pharmacological & Therapeutic Properties**[45]**–**

**Rasa–** Amla

**Guṇa–** Uṣṇa

**Karma–** Dīpana, Pācana, Rucya, Twacya, Atibuddhi prabodhana, Balya, Twakdāhahara, Pāpanāśana.

**Doṣa Prabhāva–** Kaphapittaghna, Vāta Kapha Vikāranut.

**Vyādhi Prabhāva–** Pāṇḍu, Kṣaya, Vāta Vikāra, Twakdoṣa.

**Pharmaceutical Processes–**

**1. Śodhana–** Śodhana drugs– Nimbu rasa.

Śodhana Procedure– Svedana in dolāyantra for one yāma.

**2. Māraṇa–** Just like Maṇikya or as per general method.

**Dose–** $^{1}/_{4}$th to one Guñjā.

## 8. Muktā (Pearl) ($CaCO_3$)

**Group–** Ratna varga.

Chemically it contains Calcium, Carbon and Oxygen mainly, but some other elements are also found present in traces which make the Pearls more useful for medicinal purposes than any other Calcium compounds. Though Śaṅkha, Śukti, Varāṭa, Marble, Muktā, Pravāla etc. are calcium Carbonate compounds however these differ in their medicinal values only because of the presence of some trace elements.

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45. **गुणाः–**

गोमेदं कफपित्तघ्नं क्षयपाण्डुक्षयंकरम्। दीपनं पाचनं रुच्यं त्वच्यं बुद्धिप्रबोधनम्॥
(र.चू. १२/५०)

गोमेदकं पित्तहरं प्रदिष्टं पाण्डुक्षयघ्नं कफनाशनं च। संदीपनं पाचनमेव रुच्यमत्यन्तबुद्धिप्रविबोधनं च॥
(र.प्र.सु. ७/४८)

गोमेदकोऽम्लमुष्णश्च वातकोपविकारजित्। दीपनः पाचनश्चैव घृतोऽयं पापनाशनः॥
(आ.प्र. ५/११६)

**Occurence–** According to Ayurvedic view Muktās are obtained from the following eight sources,[46] i.e. Megha (Clouds), Varāha (Pigs), Śaṅkha (Conch cells), Śukti (Marine shell), Gaja (Elephant) Mīna (Fishes), Śarpa (Snecks) and Baṁśa (Bamboo trees). Out of these sources Muktās obtained from sea Śukti are considered best for medicinal purposes and a very common source. Muktās obtained from the sea of different countries vary greatly in their form, appearance and lustre. These are Australian, Vasarai and Cunā-Khāḍī. Of these Vasarai Pearls are best. Apart from these the Pearls obtained from Śukti are also of two types i.e. Prakṛita and Kṛitrima i.e. natural and cultured. Those formed naturally inside the Śukti are called natural and those which are formed artificially by culture method in Śukti are called cultured Pearls. Both types are formed with same source and in same environment.

Good variety of natural pearls are obtained either from the Eranion sea or Indian sea either near Kāṭhīavār or in South–Rāmeshwaram in shellow sea water.

**Formation of Muktā in Śukti–**

In the sea Muktas (Pearls) are formed in Muktāśukties. In some of these Śukties a Kṛimi (known) is found which secretes some secretion from its outer part of skin which make the inner surface of the Śukti very shining. It is a continuous process but some times by chance some granule of sand enters inside the Sukti then that secretion starts to adhere around the granule and goes on adhering and in due course of time a Muktā (Pearl) is formed in side the Śukti. Thus in the course of Muktā formation many layers of secretions are adhere around the granule and big size pearl is formed. As these Śuktis are always rolling in the sea with the waves and always their shape is not round. In Muktā formation two types of secretions adhere on granule one by one and give different shapes to Muktā. The first type of secretion is Calcium carbonate

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46. **मुक्ता भेदाः–**

येऽष्टौ मौक्तिम भूमयः करिकरित्वम्सारमत्स्यम्बुरुक्
कम्बूरोगतिशुक्तयोऽत्र चरमोत्पन्नं पुनर्विश्रुतम् ॥

(करि = हस्तिः) करिर्वराहः, त्वम्सारो वंशः, अम्बुरुक्-मेघः, कम्बुः शंखः, उरोगतिः सर्पः)

**मुक्ता पर्यायाः–**

मौक्तिकं शौक्तिकं मुक्ता तथा मुक्ताफलं च तत् ॥ (आ.प्र. ५/११$^{१}/_{२}$)

while second type is known as Kānchi Malini. The layers of these secretions give the structural appearance to Muktā very similar to onion. And because of these layers when the light rays fall on pearls some rays reflect from second, third, fourth layers and so on. This type of reflection of light rays looks most beautiful to the persons or viewer and make the pearl to look most beautiful and shinning. Some times some opaque substances also come in between the layers during formation of pearls and make them to look un-even, opaque and defective.

In this natural pearl formation process we have to depend on nature for the entrance of sand granule inside the Muktā Śukti. Hence now a days a culture method for the formation of Muktā is developed.

In this method a small granule is put in side the Muktā Śukti containing the Kṛimi and closed. It is then put under the shallow sea water to allow the layers of the secretions of the Krimi to adhere around the granule to get the good quality pearls to be formed in due course of time.

By this method good variety of pearls could be formed in comparatively shorter period. Thus there may not be much difference in cultured and natural pearls as both are formed in the same conditions and with the same materials.

Apart from the culture method there is another method for making artifical Pearls. In this method the shining part of fish is used after powdering. It is then filled in hollow glass bulbs with the wax to form the Pearls. So formed pearls are known as artifical pearls which have the shining but are likely to break with very little friction and also become shapeless with slight increase in temperature due to melting of wax.

All types of pearls are likely to be affected with acids and friction and as a result some defects are observed in their shape and appearances. Hence these should be protected carefully from acids and friction.

**Places of occurence–**

According to 'Garuḍa Purāṇa' and 'Yukti Kalpataru' pearls are said to occur in Singhal (Ceylone), Saurāṣṭra, Pāralaukika, Tāmraparṇī, Pārasīka, Kaurava, Pāndya, Vaṭaka and Haima.

**Varieties–**

**1. According to sources**[47]**–** Eight types[1]– 1. Meghaja, 2. Śaṅkhaja, 3. Bamśaja, 4. Varāhaja, 5. Hastija, 6. Mīnaja, 7. Faṇija and 8. Śuktija.

**2. According to formation–** Three types– 1. Prākṛita (Natural) 2. Cultured, 3. Kṛitrima (Artificial).

**Synonyms–** Muktā, Muktāphala, Śauktika, Candraratna, Śaśipriya, Sindhuja, Sindhujāta, Jīvaratna.

**Physical Properties–**

**For Superior Quality**[48]**–** Shining like stars, smooth, clear, light in wt. big in size, very pleasing, round, looking like clear water are considered to be of superior quality. Some scholars have mentioned that pearls heavy in wt. are considered best and they say that these on Dhāraṇa Prolongs Āyu, increase Lakṣmī and vanish pāpa (Sins).

**For Inferior Quality**[49]**–** Rough, Blackish or reddish in colour, look like salt, half white, lustreless, uneven, unclear, having

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47. **मुक्तायोनयः–**

शुक्तिः शंखो गजः क्रोडः फणी मत्स्यश्च दर्दुरः । वेणुश्चाष्टौ समाख्याताः सुज्ञैर्मौक्तिकयोनयः ॥ (आ.प्र. ५/१३)

48. **श्रेष्ठमौक्तिक लक्षणम् –**

ह्लादि श्वेतं लघु स्निग्धं रश्मिवन्निर्मलं महत् । ख्यातं तोयप्रभं वृत्तं मौक्तिकं नवधा शुभम् ॥ (र.चू. १२/८)

ह्लादि श्वेतं रश्मिवन्निर्मलं च वृत्तं ख्यातं मौक्तिकं तोयभासम् ।
स्निग्धं तौल्ये गौरवं चेन्महत्तल्लिंगैरेतैर्लिक्षितं तच्च शुद्धम् ॥ (र.प्र.सु. ७/८)
नक्षत्राभं वृत्तमत्यन्तमुक्तं स्निग्धं स्थूलं निर्मलं निर्व्रणं च ।
न्यस्तं धत्ते गौरवं यत्तुलायां तन्मौल्यं मौक्तिकं सौख्यदायि ॥ (आ.प्र. ५/९५)

४९. **त्याज्यमुक्ता लक्षणानि–**

रूक्षाङ्गं निर्जलं श्यावं(मं) ताम्राभं लवणोपमम् ।
अर्धशुभ्रं च विकटं ग्रन्थिलं मौक्तिकं त्यजेत् ॥ (र.चू. १२/९; र.र.स.४/१६)
रूक्षाङ्गं चेन्निष्पभं श्यावताम्रं चार्धशुभ्रं ग्रन्थिलं मौक्तिकं च ।
क्षाराभासं वैकटं युग्मकं च दोषैर्युक्तं सर्वथा त्याज्यमेभिः ॥ (र.प्र.सु. ७/९)
यद्विच्छायं मौक्तिकं व्यङ्गकायं शुक्तिस्पर्शं रक्ततां चापि धत्ते ।
मत्स्याक्षीकं रुक्षमुत्ताननिम्नं नैतद्धार्यं धीमताऽसौख्यदायि ॥ (आ.प्र. ५/९६)

nodules, shining like Kṣāra, and found twins are considered defective and inferior and not recommended for use.

**Defects of Pearls with their Effects[50]–**

Pearls are claimed to consist four (4) mahā doṣas and six (6) Sāmānya dosas. Viz–

| | | |
|---|---|---|
| 1. Śukti Khaṇḍa | – | Kaṣṭakara |
| 2. Matsyākṣa | – | Putranāśakara |
| 3. Jāṭhara | – | Mṛityu Kāraka |
| 4. Vidrumacchāya | – | Dāridryakara |
| 5. Trivṛitta | – | Saubhāgya nāśaka |
| 6. Cipiṭa | – | Akīrtikara |
| 7. Kṛiśa | – | Pragnā – Vidhwansakara |
| 8. Trikoṇa/Trāsa | – | Saubhāgya Kṣayakara |
| 9. Kriśa Pārśwa | – | Nirudyogakara |
| 10. Āvṛita | – | Sarva Saṁpattināśaka. |

**Lustre of Muktā–**

As per 'Rasa Paddhati' Pearls may have three types of lustres Viz– 1. Madhucchāya – Just like honey.

2. Sitacchāya – Just like Sitā (Sugar)

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50. **मुक्ता दोषाः–**
दोषान् पञ्च लघून्, गुरुंश्च चतुरः षट्चैव दोषेतरान्।
छायास्त्रित्वमिता गृणन्ति सुधियोमुक्तामणौ ते पुनः ॥
दीर्घं पार्श्वकृशं त्रिवृत्तमपि च त्र्यस्रं ततः कापिलं।
पञ्चैते खलु मौक्तिकेषु गदिता दोषास्तु साधारणाः।
नाम्नैवोदितलक्षणाः पुनरमी विच्छिन्नरुग्योगिता–
दौर्भाग्यप्रभुताविनाशलघुता कौलीनता कारिणः ॥
शुक्तिस्पर्शनमत्स्यनेत्रजठराकारातिरक्ताङ्गताः
शिवत्राक्रोश(?)दरिद्रता मृतिकरा दोषा बृहन्तस्त्वमी
तेष्वन्त्यौ विशदौ स्वशुक्तिसदृशस्त्वाद्यो द्वितीयस्ततो
मत्स्याक्षच्छविलाञ्छनः पुनरमी शस्ता न मुक्ताफले ॥
दीप्तिर्गौरव वृत्तता विमलता सुस्निग्धता कान्ततः।
स्युः षट् शुक्तिमणौ गुणा इति गुणैर्युक्तं पुनर्मौक्तिकम्। (आ.प्र. ५/६२-६५)

3. Śrīkhaṇḍacchāya – Just like Śṛīkaṇḍa (a preparation made of curd and sugar) i.e. butter/cream like, out of these the pearls having the lustre similar to Śṛīkhaṇḍa are said to be of superior quality.

**Test for Pearls[51]–**

Pearls rubbed with outer covering of Śāli (A variety of rice) and washed with salted Gomūtra should not loose their shining and shape then considered best. Bisides, pearls treated with sulphuric acid should loose their shining and could be broken easily.

**Mythological Origin[52]–**

1. The broken teeth of Bala Asur whereever fallen on the earth are claimed to be the source of pearls origin.

2. It is also[52] said about pearls that the drops of rain if falls in side the Śukti floating in the sea in Swātī nakṣatra then these drops of rain are claimed to convert in good variety of pearls. These floating Śukties are of different type. But if the rain drop falls in Rukmaṇī variety of Śukti. Then the best quality of pearls are produced/formed. Their lustre resembles with that of Kuṁkuma (Keśara). Such pearls are claimed highly auspicious and Kalyaṇakara and recommended for all purposes.

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51. **मुक्तापरीक्षण विधिः–**
लवणक्षारक्षोदिनिपात्रे गोमूत्रपूरिते क्षिप्तम् । मर्दितमपि शालितुषैर्यदविकृतं तत्तु मौक्तिकं जात्यम् ॥
(आ.प्र. ५/९७)

52. **मुक्तोत्पत्तिः–**
वज्राघातविघट्टिताद्रलमुखाद् भ्रष्टाः पुनर्ये द्विजाः क्षारोदन्वति यत्र यत्र पतितास्ते ते भवन्नाकराः ॥
आदौ यः पृथुवर्वरोजलनिधौस्यादारवाटस्ततो नाम्ना सिंहलकौर्मिजौ तदुपरि स्यात्पारसीकोऽपरः । अत्रोदन्वति शुक्तिजीवजठरक्रोडैककोणस्थिताः स्वातीशम्बर विन्दवः परिणमन्त्यक्लिन्न मुक्तातया सुस्निग्धं मधुवर्णमुत्तमरुचि स्यात्सिंहले मौक्तिकं स्निग्धं पीतरुगिन्दुविम्वरुचिरं स्यादारवा(ला)टोद्भवं श्वेतं स्निग्धमतीव बन्धुरतरं स्यात्पारसीकोद्भवं रूक्षं किंचन वर्णसंकरयुतं स्याद्वार्वरं मौक्तिकम् । शोणं तूर्मिज संभवं विदुरतिस्निग्धं तथाऽदायजं चातुर्वर्ण्ययुतं सुलक्षणमतिश्लक्ष्णं कविश्रीधरं षट् स्वेतेष्वपि रुक्मिणीव जगति ख्यातिं गतारुक्मिणी नाम्ना शुक्तिरनीद्युत्तमगुणा सिन्धौ समुज्जृम्भते । तस्या गर्भभवं तु कुङ्कुमनिभं सर्वाषु जातिष्वपि श्रेष्ठं भूमिगुणं वदन्ति कृतिनः श्रेयस्करं तद्भवेत् ॥
स्वच्छं ह्लादि लघूदकद्युतियुतं मुक्ताफलं किंचन स्थूलं स्निग्धमतीव निर्मलमिलाभूमौ प्रकाशं सदा ॥
(आ.प्र.५/५७-६१)

**Pharmacological & Therapeutic Properties[53]–**

**Rasa–** Madhura

**Guṇa–** Suśīta, Laghu

**Vīrya–** Śīta

**Karma–** Bṛimhaṇa, Vṛiṣya, Āyuṣya, Puṣṭikara, Tuṣṭikara, Viṣāpaha, Dāhaśamana, Medhya, Dīpana, Bhedana, Kāntiprada, Balya, Cakṣuṣya, Vīryaprada, Asthidanta vardhaka.

**Doṣa Prabhāva–** Pittahara, Kapha Pittahara.

**Vyādhi Prabhāva–** Rājayakṣmā, Kṣaya, Kāsa, Śwāsa, Dantodbhedaja jwara, Agnimāndya, Dāha, Santāpa, Kṣata, Dṛiṣtiroga, Unmāda, Prameha, Vāta vyādhi, Vīrya Kṣaya. In addition to above it is also recommended for the diseases caused due to Candra Prakopa, such as – Galaganḍa, Ganḍamālā, Kaphaduṣṭa jwara, Chardi, Kṣaya, Kāsa, Śūla, Slīpada, Jalodara, Āmapīḍā, Āmātisāra, Hṛidroga, Śwāsa.

**Pharmaceutical Process–**

**Śodhana[54]–** The drugs of Ratna group (Muktā, Pravāla etc.) could be used even without purification, however if these are purified these become more effective and useful.

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53. **मुक्ता गुणानि–**

कफपित्तक्षयध्वंसि कासश्वासाग्निमान्धनुत् ।
पुष्टिदं वृष्यमायुष्यं दाहघ्नं मौक्तिकं मतम् ।। (र.चू. १२/१८, र.र.स.४/१७)

कासं श्वासं बह्निमान्द्यं क्षयं च हन्याद् वृष्यं वृंहणंपित्तहारि ।
दाहश्लेष्मोन्मादवातादि रोगान् हन्योदेवं सेवितं सर्वकाले ।। (र.प्र.सु. ७/१०)

मुक्ताफलं मधु हिमं मधुरं च **कान्तिदृष्ट्यग्निपुष्टिकरणं** विषहारि भेदी । (र.र.स. ४/१५)
वीर्यप्रदम् .....
मौक्तिकं सुमधुरं सुशीतलं **दृष्टि**रोगशमनं विषापहम् ।
राजयक्ष्मपरिकोपनाशनं **क्षीणवी**र्यबलपुष्टिवर्धनम् ।। (आ.प्र. ५/९८)

54. **शोधनम् –**

जयन्त्या मौक्तिकं शुद्ध्यति स्वेदनेन । रत्नोपरत्नान्येतानि शोधनीयानि यत्नतः ।
अशुद्धानि न कुर्वन्ति गुणान् रोगांस्तु तन्वते ।। (आ.प्र. ५/१५०)

एतानि संस्विन्नान्याशुशुद्ध्यन्ति दोलया । (आ.प्र. ५/१५३)

**Śodhana Drugs–** Jayantī swarasa or decoction.

**Śodhana Procedures–** Svedana through Dolāyantra method for one yāma.

**Māraṇa**[55]**–** Generally Mukta bhasma is not prepared. Its Pisti[56] should be prepared after Śodhana by grinding it with Arka Gulāba for 21 days or till it becomes very fine and smooth. Its bhasma or pisti is of white colour.

**Muktā Drāvaṇam–**

Generally Druti making of any drug is not in practice as it is difficult to acheive. However it is found mentioned in the texts as follows–

**Procedure–** Muktā powder should be Triturated with Amla Vetas juice or decoction for seven days then keep it in side Jambīrī Nimbu (A big variety of lemon) and put it in the Dhānyarāśi (Heap of the pady) for seven days. It has been claimed that by this procedure pearls convert into stable liquid form.

## 9. Pravāla (Coral) ($CaCO_3$)

**Group–** Ratna varga. Hindi Name– Mūṅgā.

**Chemically–** It is Calcium Carbonate i.e. contains Calcium, Carbon and Oxygen mainly. It also contains some other elements in traces which make it therapeutically more effective than the other Calcium carbonate compounds.

**Varieties–** On the basis of colour Corals are of two types–

1. Rosy or Red Corals and
2. White Corals

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55. **मारणम् –**
न हन्याद्धीरकादीनि नवरत्नानि वुद्धिमान्। महामौल्यानि तेषां तु वधे रौरवमृच्छति ॥
(आ.प्र. ५/१५६)

56. **पिष्टिनिर्माणम् –**
गुलावजलेन मर्दनं त्रिसप्ताहपर्यन्तम्। मुक्ताचूर्णं तु सप्ताहं वेतसाम्लेन भावयेत्।
जम्बीरोदरमध्ये तु धान्यराशौ निधापयेत्॥ सप्ताहादुद्धृतं चैव पुटं दत्वा द्रुतिं हरेत्॥
(र.र.स. ४/६९, आ.प्र. ५/१८०)

Of these rosy or red coloured Pravāla (Corals) are considered best for all purposes i.e. Rasakarma, Rasāyana karma, Dāna and Dhāraṇa karma. White variety is considered inferior.

**Relation with Graha–** It is related to Maṅgala (Mars) graha.

**Occurence–** Generally Corals occur in shallow sea water, but red or rosy corals are obtained from the depth of at least 15 feets in side the sea.

**Origin of Pravāla–**

The Corals have their origin from the sea animals. When these sea animals drink sea water for their survival the Calcium present in sea water is absorbed in the body and get deposited in various parts of their body. As it is a continuous process hence after some times when the quantity of Calcium becomes excess in their body these animals die and their body is called Pravāla (Coral). Anthrozoan Polyps are the main animals from which Pravala is made. These animals are round in shape having many feets and ring like appearances which are hollow in middle. These require a special type of water and a particular temperature for their growth. Hence these are found only in some places in sea water and that is 'Bhūmadhya Sāgar' in between Europe and Africa, in Southern sea of Burma and in the north of Australia. In these places their reefs are spread over hundred of miles and still these are engaged in their work and growing continuously. These places are called Coral reefs.

**Origin of Pravāla According to Āyurveda[57]–** It has been described according to 'Āyurveda Prakāśa' that a latā like structure is found in the sea which had a red colour like morning sun which does not vanish even after rubbing on Nikaṣa (Touching stone used by Goldsmiths for testing the purity of various metals). This latā is known as Pravāla. The Pravāla obtained from this latā are best. Insteed of red colour mostly it is in white colour also.

**Varieties–** On the basis of colour Corals are of four types i.e. 1. White, 2. Grey, 3. Black and 4. Red or rosy. Of these white and

57. **प्रवाल उत्पत्ति–**

बालार्ककिरणारक्ता सागरसलिलोद्भवा लता याऽस्ति ।
न त्यजति निजरुचिं निकषे घृष्टाऽपिसास्मृता जात्या ॥

grey varieties are most commonly found varieties in almost all places but these are not useful for any purpose. The black Corals are also not considered good. The only rosy or red coloured Corals are considered good and are used as gems and in Ayurvedic medicine and these are obtained from 'Bhūmadya Sāgar' at the depth of 50 or 60 feets and are also found near Itali.

**Synonyms–** Vidram, Abdhi latā, Latā maṇi, Rakta kanda, and Bhauma ratna.

**Physical Properties–**

**For Superior Variety**[58]**–** The Pravāla which resembels ripe Bimbī phala in red colour, long, round, even, smooth, without holes, thick and not very long is considered to be best.

**For Inferior Variety**[59]**–** That which is whitish or grey, rough, containing holes, light in wt., very thin, uneven and having other defects is not considered to be good and not recommended for use.

**Chemical Composition–**

Calcium carbonate – $CaCO_3$ 87%
Magnessium carbonate – $MgCO_3$ 3%
Iron – Traces
Mangnese – Traces
Silica (Si) – 2%
Organic matter and water – 8%

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58. **उत्तम विद्रुमलक्षाणानि:–**
पक्वबिम्बफलच्छायं वृत्तायत्तमवक्रकम्। स्निग्धमव्रणकं स्थूलं प्रवालं सप्तधा मतम्॥ (र.चू. १२/११,आ.प्र. ५/८९)
स्निग्धं स्थूलं पक्वबिम्बीफलाभं वृत्तं दीर्घ निर्व्रणं चाप्यदीर्घम्।
ख्यातं सद्भि: सप्तधा विद्रुमं च दोषैर्मुक्तं सर्वकार्येषुशुद्धम्॥ (र.प्र.सु. ७/११)

59. **अग्राह्य (हेय) प्रवाल लक्षणानि:–**
पाण्डुरं धूसरं रूक्षं सव्रणं कोटरान्वितम्। निर्भारं शुभ्रवर्णं च प्रवालं नेष्यतेऽष्टधा॥ (र.चू. १२/१२)
रूक्षं श्वेतं सव्रणं धूसरं च निर्भारं चेच्छुल्ववर्णं प्रवालम्।
दोषैर्युक्तं कोटरैरावृतं च नेष्टं सद्भिर्भक्षणे धारणे च॥ (र.प्र.सु. ७/१२)
आगाररञ्जनाक्रान्तं वक्रं सूक्ष्मं सकोटरम्। रूक्षं कृष्णं लघु श्वेतं प्रवालमशुभं त्यजेत्॥ (आ.प्र. ५/९०)

**Pharmacological & Therapeutic Properties[60]–**

**Rasa–** Kaṣāya, Madhura and Amla.

**Guṇa–** Laghu, Snigdha, Śīta

**Vīrya–** Śīta

**Vipāka–** X

**Karma–** Dīpana, Pācana, Vīrya Vṛiddhikara, Kāntikara, Puṣṭikara, Balya, Bhūtādi Śamana, Maṅgala dāyaka, Grahadoṣahara, Cakṣuṣya, Sveda nirgamahara.

**Doṣa Prabhāva–** Pittajit, Kaphapittanut, Tridoṣaghna, Kaphavātanut.

**Vyādhi Prabhāva–** Rājayakṣmā, Kṣaya, Kṣata, Kāsa, Śwāsa, Raktapitta, Dṛiṣṭiroga, Raktaroga, Bhūtonmāda, Durnivāra Viṣajaroga. It also prevents the diseases caused by the Prakopa of Maṅgalagraha– Viz– Raktapitta, Bhagandara, Raktaduṣṭi, Dadru-roga, Prameha, Visphoṭa, Duṣṭa Vraṇa, Asthi-bhanga, Raktasrāva, Raktātisāra, Arśa, Agnijanyabhaya.

**Pharmaceutical Processes–**

**1. Śodhana[61]–** Śodhana drugs– Jayantī patra swarasa, Taṇḍulīya rasa/drava, Kṣāra drava.

Śodhana Procedure– Svedana in dolāyantra for one yāma.

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60. **प्रवाल गुणाः–**

क्षयपित्तास्रकासघ्नं दीपनं पाचनं लघु। विषभूतादिशमनं विद्रुमं नेत्ररोगनुत्॥ (र.चू. १२/१३)

पित्तास्रघ्नं श्वासकासादिरोगान् हन्यादेवं दुर्निवारं विषं च।
भूतोन्मादान् नेत्ररोगान् निहन्याद् सद्यः कुर्याद्दीपनं पाचनं च॥ (र.प्र.सु. ७/१३)

प्रवालं मधुरं साम्लं कफपित्तादिदोषनुत्। वीर्यकान्तिकरं स्त्रीणां धृतं मङ्गलदायकम्॥
क्षयपित्तास्रकासघ्नं दीपनं पाचनं लघु। शमनं विषभूतादेर्विद्रुमं नेत्ररोगहृत्॥ (आ.प्र. ५/९२-९३)

61. **शोधनम् –**

क्षारेण सर्वेण हिविद्रुमं च .....। (र.प्र.सु. ७/५४)

विद्रुमं क्षारवर्गेण .....॥ (र.चू. १२/५४)

**2. Māraṇa**[62]**–** Māraṇa drugs– No specific.

Bhāvanā drugs– Kumārī swarasa, Godugdha, Jayantī swarasa, Śatāvarī swarasa.

Procedure– Puṭapāka

Type of puṭa and number– Gajapuṭa –1-3 puṭas.

Bhasma colour– white.

**Piṣṭi Nirmāṇa–**

Just like Muktā its piṣṭi is also prepared. And for this it should be ground with Arka Gulāba (Rose water) in a mortar of very hard stone. Grinding should be continued till it becomes as fine as collyrium.

**Dose–** 2-4 Guñja (250-500 mg.).

## Description of Uparratnas (Semi precious stones)

Here the materials of Uparatna group are being described as these also belongs to the same group though, these are inferior to Ratnas in characters, shinning, briliancy, hardness and transparency and of course in cost also. In this group many materials are now a days included however in the present context this description is restricted to those materials which have been found described in Rasa texts. These are as follows–

1. Vaikrānta– Turmaline
2. Sūryakānta – Sun stone
3. Candrakānta – Moon stone
4. Rājāvarta – Lepus lazuli
5. Parojaka – Turquoise
6. Sphaṭika – Quartz/Rock crystal
7. Akīka – Agate
8. Tṛṇakānta – Amber

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62. **मारणम् –**

लकुचद्रावसंपिष्टैः शिलागन्धकतालकैः । वज्रं विनान्यरत्नानि म्रियन्तेऽष्टपुटैः खलु ॥ (र.चू. १२/५६)

कुमारीस्वरसमर्दनेन गजपुटपाकेन च विद्रुममारणम् ।

## 1. Vaikrānta (Turmaline)

As per the descriptions of Rasa text Vaikrānta is found included in two groups. i.e. Mahārasa group and Uparatna group. It is stony in nature and recommended to be used in place of Diamond hence its inclusion in Uparatna group seems to be more appropriate. The scholars of 20th Century like late Vaidya Sri Jādavajī Trikamajī Ācārya, Dr. Vamah Ganesh Desai and Prof. Kulakarni etc. have accepted Turmaline as Vaikrānta and have recommended to use it in place of Diamond.

According to some texts it is mentioned as 'Paṅka Vajra' or 'Dagdha Hīraka' which are indicative that it is a type of Diamond and on this basis some scholars have opined that the Irish Diamond known in modern science is Vaikranta of ancient scholars. But it may be pointed out here that as per the views of some modern scholars 'Irish Diamond' is a type of Sphaṭika (Quartz) and Sphaṭika is also included in Uparatna group by the ancient scholars along with Vaikrānta which means that both these can not be considered as one and the same. Possibly on the basis of above view now a days in Punjab state sphaṭika is being used in place of Vaikrānta considering original Vaikranta as doubtful and rare material.

As regards my view I also consider Turmaline as Vaikrānta which is included in Uparatna group. The Vaikrānta included in Mahārasa group has been discussed with the drugs of Mahārasa group.

**Description of Vaikrānta–**

**Mythological Origin**[63]– While Goddess Kātyayinī Killed the great Demon Mahisāsura a few drops of blood from his body wherever have fallen either on the north or on southern parts of Vindya mountain these have taken the shape of Vajra like substance and that become known as Vaikrānta.

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63. **वैक्रान्त उत्पत्तिः–**

देव्याहते महादैत्ये महिषासुरसंज्ञके । तद्देहरुधिरोद्धूता बिन्दवो यत्र यत्र हि ।।
पतिता विन्ध्यकाद्रेस्तु दक्षिणोत्तरतो रणे । वज्राकारास्तु ते जाता वैक्रान्ता इति विश्रुताः।।
(आ.प्र. ५/१६०-१६१)

There is another opinion about the origin[64] of Vaikrānta that while Vajra (Diamonds) are being formed in nature some pieces of Diamonds become defective and these defective Diamonds have been considered as Vaikranta. Hence the Characters, properties and their Śodhana & Māraṇa processes are just similar to Diamonds.

**Method of Collection of Vaikrānta[65]–** Before collection of Vaikranta one must perform the worship of Lord Bhairava, Gaṇanātha and also Balikarma on an auspicious moment.

**Varieties[66]–** On the basis of white and yellow etc. colours Viakrānta is considered to be of eight types/varieties.

**Specific Characters[67]–** The black coloured Vaikrānta which is having either six or eight angles, very smooth, heavy and clear look is considered to be of good variety and claimed auspicious.

## 2. Sūrya Kānta (Sun stone) ($Na_2O$, $Al_2O_3$, $6SiO_2$ or $CaO$, $Al_2O_2 2SiO_2$)

**Group–** Uparatna group.

Chemically it is a combination of Sodium, Aluminium, Silicon, Oxygen and Calcium. It is a variety of Adularia, its minerals is called Aventurine aligo class which is reddish in colour with bright yellow or red reflections from the included thin scales of heamatite. Its crystals are triclinic type. It is translucent exhibiting reddish

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64. **गौरीमते–**
विकृता वज्रखण्डा ये वैक्रान्ताख्यां भजन्ति ते । जातयः शोधनं हिंसा गुणास्तेषां तु वज्रवत् ॥ (आ.प्र. ५/१६२)

65. **ग्रहण विधि–**
भैरवं गणनाथं च संपूज्य बलिपूर्वकम् । सुमुहूर्ते ततः कार्यं वैक्रान्तग्रहणं बुधैः ॥

66. **प्रकार–**
वैक्रान्तः श्वेतपीतादिभेदेनाष्टप्रकारकः । करणे स्वर्णरूप्यादेः स्वस्ववर्णः शुभो मतः ॥

67. **स्वरूप–**
वैक्रान्तः कृष्णवर्णो यः षट्कोणो वसुकोणकः । मसृणो गुरुतायुक्तो निर्मलः सर्वसिद्धिदः ॥ (आ.प्र. ५/१६३-१६५)

**सत्व–**
पतति वै सत्वम् । अभ्रवैक्रान्तप्रभृतीनां तत्र लोहनिमम् । (र.ह.त.)

flashes owing to the admixture of mica or other platy minerals. It is reddish in colour and when Sun rays fall on its surface it looks like burning charcoal. When Sun rays accumulate on certain particular parts a thin cotton or paper piece starts burning due to hotness. It shines very much in Sun rays.

**Hardness–** 5.5-6, **Sp. Gr.–** 2.65.

**Relation with Graha–** It is related to Sūryagraha.

**Synonyms[68]–** Sūryakānta, Tapana maṇi, Tapana, Ravikanta, Dīptopala, Agnigarbha, Jwalanāśma, Arkopala, Vasu.

**Physical Properties–**

**For Superior Quality–** Sun stone of superior quality looks very clear, smooth, without layers or holes, round, and has the appearance like a lens. It should look like burning when it comes in contact with intense sun rays. The Sun stone without these properties is considered to be of inferior quality and not recommended for use.

It occurs in Burma, Russia, Norwey and Medagaskar.

**Pharmacological & Therapeutic Properties[69]–**

**Rasa–** X

**Guṇa–** Uṣṇa

**Vīrya–** Uṣṇa

**Karma–** Rasāyana, Medhya, Ravituṣṭikara.

**Doṣa Prabhāva–** Vāta Slesmahara

**Vyādhi Prabhāva–** Not specific.

**Pharmaceutical Process–**

Generally not in therapeutic use.

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68. **सूर्यकान्त पर्याया:–**
अथ भवतिं सूर्यकान्तस्तपनमणिस्तपनश्च रविकान्त: ।
दीप्तोपलोऽग्निगर्भोज्वलनाश्माऽर्कोपलश्च वसुनामा ।। (आ.प्र. ५/१३९)

69. **गुणा:–**
शुद्ध: स्निग्धो निर्व्रणो निस्तुषोऽन्तर्यो **निर्वृ**ष्टोऽत्यन्तनैर्मल्यमेति ।
य: सूर्यांशुस्पर्शनिष्ठ्यूतबह्निर्जात्य: सोऽयं कथ्यते **सू**र्यकान्त: ।। (आ.प्र.५/१४१)

**गुणा:–**
रविकान्तो भवेदुष्णो निर्मलश्च रसायन: । वातश्**लेष्म**हरो मेध्य: पूजनाद्रवितुष्टिद: ।।
(आ.प्र. ५/१४०)

### 3. Candrakānta (Moon stone) Na Al $Si_2O_8$/Ki Al $Si_2O_8$

**Group–** Uparatna group.

**Hardness–** 6, **Sp.Gr.–** 2.6.

Chemically it is a combination of Sodium, Aluminium, Silicon and Oxygen but some times it contain Potassium and Calcium in place of Sodium.

From minerological point of view a variety of Adularia which occurs usually in white or colourless crystals and may be transparent or cloudy and possess an excellent opalcence is termed as Moon stone. It is used as gems. Its lustre is vitrious to pearly. It comes under orthocless (Potash– Felspar) group. According to willium shirley Beyley Moon stone is translucent Aduleria, exhibiting a pearly lustre with very slight play of colours. Its crystals are monoclinic.

A variety of Albite (Soda Feldspar) which shows a bluish opalscence is also called Moon stone. Its crystals are Triclinic and usually small and found in twins. They are usually colourless or grey, rarely coloured.

According to Ayurvedic Rasa texts its colour is bluish white, some times it may have many colours. In moon rays it shines in such a way that it may give a look like water. It is also said about it that in Moon rays it starts to secrete but it is not correct. The only thing observed is that the Moon stone looks very beautiful, pleasing and very cold when it comes in contact with moon rays.

It occurs in Ceylone, Burma and Medagaskar.

**Physical Propertics[70]–**

**For Superior Quality–** Moon stone is very smooth, very cold to touch, looks yellowish on sides, very clear, without trāsa doṣa, in moon rays it looks like secreting. Moon stone having the above qualities is considered best and recommended for use.

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70. **भौतिक गुणाः–**
स्निग्धंशीतं पीतमत्रासमन्तर्धत्ते चित्ते स्वच्छतां यन्मुनीनाम् ।
यच्चस्त्रवां याति चन्द्रांशुसङ्गाज्जात्यं रत्नं चन्द्रकान्ताख्यमेतत् ॥ (आ.प्र. ५/१४४)

**Synonyms**[71]– Indukānta, Candrakānta, Candrāśma, Candropala, Śītāśmā, Candrikā drāva, Śaśikānta.

**Pharmacological & Therapeutic Properties**[72]–

**Rasa**– X

**Guṇa**– Snigdha, Śīta, Swaccha

**Vīrya**– Śīta

**Doṣa Prabhava**– Pitta-rakta Śāmaka

**Karma**– Asranut, Tāpanut, Grahālakṣmī nāśana, Sivaprīyakara.

**Vyādhi Prabhava**– Raktasrāva, Raktavikara, Pittavikāra, Santāpa, Dāha, Raktapitta.

### 4. Rājā-Vartā (Lapis lazulis) (Na $S_3$-Al) $Al_2$ $(SiO_4)_3$

**Group**– Uparatna group, Mahārasa group.

**Hardness**–About 5.5, Sp.Gr. 2.4-2.8. Its mineral is lasurite.

**Chemically**– It is a combination of Sodium, Sulphur, Aluminium, Silicon and Oxygen. It is known as Sulphur containing Silicate complex. It is also called Ultra marine. It is bright blue in colour and is much used as gem stone. Its crystals are cubical and rare. Fracture-uneven. Lustre-vitrious to greazy. Opaque to translucent. It is a contact mineral and occurs in crystaline lime stone.

It occurs mostly in Persia, Turkistan, Afghanisthān and Rusia. Also occurs in India near Ajmer in small quantities. In Germany it is made artificially also.

**Synonyms**[73]– Rājāvarta, Nripāvarta, Rājanyāvartaka, Āvartamaṇi, Āvarta and Śarāhwaya.

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71. **चन्द्रकान्त पर्यायाः–**
इन्दुकान्तश्चन्द्रकान्तश्चन्द्राश्मा चन्द्रजोपलः । शीतात्मा चन्द्रिका द्रावः शशिकान्तश्च सप्तधा ॥
(आ.प्र. ५/१४२)

72. **गुणाः–**
शिशिरश्चन्द्रकान्तस्तु स्निग्धःपित्तास्रतापनुत् । शिवप्रीतिकरः स्वच्छो ग्रहालक्ष्मीविनाशनः ॥
(आ.प्र. ५/१४३)

73. **राजावर्त्त पर्यायाः–**
राजावर्तो नृपावर्तो राजन्यावर्तकस्तथा । आवर्तमणिरावर्तः स्यादित्येष शराह्वयः ॥
(आ.प्र. ५/१४५)

**Varieties–**

| | |
|---|---|
| According to form– | 1. Gulikā swarūpa |
| | 2. Cūrṇa swarupa |
| According to colour– | 1. Rakta (Red) |
| | 2. Nīla (Blue) |
| | 3. Miśrita (Mixed colour) |
| According to source– | 1. Natural |
| | 2. Artificial |

**Physical Properties[74]–**

**For Superior Quality–** That which is blue with reddish tinze, heavy in wt., smooth or oily is considered best and recomended for use. In addition to above that which is clear, bright, without mala (dirt), blue like sky without clouds or which is just like Pecock's neck in colour or black is also considered best. The Rājāvarta without the above mentioned properties is inferior and not recommended for use.

**Pharmacological & Therapeutic Properties[75]–**

**Rasa–** Kaṭu, Tikta (B.P.)

**Guṇa–** Snigdha, Śīta

**Vīrya–** Śīta

**Karma–** Dīpana, Pācana, Vṛiṣya, Bṛimhaṇa, Rasāyana, Viṣāpaha.

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74. **भौतिक गुणाः–**
निर्गरमसितं मसृणंनीलं गुरु निर्मलं बहुच्छायम् ।
शिखिकण्ठसमं सौम्यं राजावर्त्तं वदन्ति जात्यमणिम् ॥ (आ.प्र. ५/१४७)

75. **गुणाः–**
राजा**वर्त्तः** कटुः स्निग्धः शिशिरः पित्तनाशनः । सौभाग्यं कुरुते नृणां भूषणेषु प्रयोजितः ॥
(आ.प्र. ५/१४६)

**लक्षण–**
राजवर्त्तोल्परक्तोरुनीलिमामिश्रितप्रभः । गुरुश्च मसृणः श्रेष्ठस्तदन्यो मध्यमःस्मृतः ॥
(र.चू. १०/५५)

**गुणाः–**
प्रमेहक्षयदुर्नामपाण्डुश्लेष्मानिलापहः । दीपनः पाचनोवृष्यो राजावर्त्तो रसायनः ॥
(र.चू. १०/५६)

**Doṣa Prabhāva–** Śleṣmahara, Anilāpaha, Pittanāśana (B.P.).

**Vyādhi Prabhāva–** Prameha, Kṣaya, Pāṇḍu, Arśa, Chardi, Mahāmūrcchā, Madātyaya, Śoṣa, Hikkā, Dāha, Klama.

**Pharmaceutical Process–**

**Śodhana–** Śodhana drugs– Gomūtra with Kṣāra, Nimbu rasa, Kṣāra drava, Amla drava, Śirīṣa puṣpa swarasa, Mahiṣīkṣīra, Goghṛita, Ārdraka swarasa.

**Śodhana Procedures[76]–**

1. Svedana in Dolāyantra for one yāma.
2. Pācana in lohapātra.
3. Bhāvanā with prescribed liquids– 2-3 times.

**Māraṇa[77]–**

**1. Māraṇa drugs–** Purified Gandhaka, Śukapiccha powder.

**2. Bhāvanā drugs–** Nimbu rasa, Bhṛiṅgarāja rasa.

**3. Puṭapāka–** In Sarāva saṃputa with Gajaputapāka seven to eight times.

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76. **शोधनम् –**

निम्बुद्रवैः सगोमूत्रैःसक्षारैः स्वेदिताः खलु । द्वित्रिवारेण शुद्ध्यन्ति राजावर्त्तादिधातवः ॥
(र.चू. १०/५७)

गोमूत्रेणाथक्षौरश्च तथाम्लैः स्वेदिताः खलु । त्रिवारेण विशुद्ध्यन्ति राजावर्त्तादिधातवः ॥
(र.प्र.सु. ५/५५)

**गुणाः–**

श्लेष्मप्रमेहदुर्नामपाण्डुक्षयनिवारणः । पाचनो दीपनश्चैव वृष्योऽनिलविषापहः ॥
(र.प्र.सु. ५/५८)

राजावर्त्तः कटुस्तिक्तः शिशिरः पित्तनाशनः । प्रमेहनाशकः प्रोक्तश्छर्दिहिक्कानिवारणः ॥
(आ.प्र. २/२४९)

77. **मारणम् –**

भृङ्गाम्भो गन्धकोपेतो राजावर्त्तोविचूर्णितः । पुटनात्सप्तरात्रेण राजावर्त्तोमृतो भवेत् ॥
(र.चू. १०/५८)

चूर्णितः शुकपिच्छेन भृङ्गराजरसेन वै । सप्तवारेण पुटितो राजवर्त्तोमरिष्यति ॥
(र.प्र.सु. ५/५६)

गन्धाश्ममातुलुङ्गाम्लभृङ्गवेररसेन च । शुद्ध्यति म्रियते चैव पुटितोनात्र संशयः ॥
(आ.प्र. २/२५०)

**4. Bhasma colour–** Not mentioned.

**Satvapātana– (Metal extraction)**[78]

**1. Satvapātana drugs–** Purified Manaḥ Śilā, Ghṛita, Mahiṣīkṣīra, Mitra Pañcaka.

**2. Procedure–** Mixing, Piṇḍa nirmāṇa and strong heating in a Mūṣā.

**3. Colour of satva–** Not mentioned.

**Note–** For Satvapātāna Rājāvarta of Mahārasa group may be taken. That which is in Uparatna group may not yeild Satva.

## 5. Perojakam (Turquoise) (CuOH) Al(OH) Z) $6H_5(PO_4)_4$

**Group–** Uparatna group.

**Hardness–** 5.6; **Sp.Gr.–** 2.61-2.89.

Chemically it is a combination of Copper, Aluminium, Iron, Phosphate and water. The percentage is – $P_2O_3$ is 34.12, $Al_2O_3$ 36.84, CuO 9.57 and $H_2O$ 19.47. Most specimens are isomorphos mixtures of unidentified Phosphates. It is either amorphos or crypto crystaline. Translucent or opaque. Waxy-lustre, sky blue, green or greenish grey in colour. Occurs in minute triclinic crystals. Fracture is conchoidal. It is brittle and has cleavage in two directions.

It occurs mostly in Iran, New Mexico, Persia, Turkey and Egypta. In India it comes from Iran.

According to Āyurvedic Texts it is blue[79] with a greenish tinge or green with yellowish tinge. When it comes in contact with

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78. **सत्वपातनम् –**

मनःशिलाज्यसंमिश्रः पाच्यः पात्रे हि लोहजे । पश्चाच्च महिषीक्षीरैर्मित्रपञ्चकसंयुतम् ।
मर्दयित्वाऽथ पिण्डं तु कृत्वामूषानिवेशितम् ॥ ध्मातस्तु खदिराङ्गारैः सत्त्वं मुञ्चति तद्गतम् ॥
(आ.प्र. २/२५१-२५२)

कोशातकी क्षीरकन्दो वन्ध्याकर्कोटकी तथा । काकमाची राजशमी त्रिफला गृध्रधूमकः ॥
राजावर्त्तो रसैरेषां सत्वं मुञ्चति मर्दितः । ध्मापितः खदिराङ्गारैर्भस्त्रिकाद्वितयेन च ॥
(र.प्र.सु. ५/५८-५९)

79. **पेरोजकम्–**

पेरोजं हरिताश्मा च भस्माङ्गं हरितं द्विधा । पिरोजं सुकषायं स्यान्मधुरं दीपनं सरम् ॥
(आ.प्र. ५/१४८)

Sunrays or heat its colour diminishes. Its blue colour is due to the presence of copper and the greenish tinge is due to iron.

**Varieties–** On the basis of colour its two varieties are described.

**Pharmacological & Therapeutic Properties**[80]**–**

**Rasa–** Madhura, Kaṣāya

**Guṇa–** Śīta, Sara

**Vīrya–** Śīta

**Karma–** Dīpana, Hṛidya, Viṣaghna, Sara.

**Vyādhi Prabhāva–** Śūla, Sthāvara viṣa, Jaṅgama viṣa, Dūṣī viṣa, Carācara viṣa, Samyogaja viṣa, Mūla bhūtādi janya roga, Netraroga, Aśmarī, Āntravraṇa, Hṛitspandana etc.

## 6. Sphāṭika (Quartz – Rock crystal ($SiO_2$)

**Group–** Uparatna group.

**Hardness–** 7; **Sp.Gr.–** 2.6-2.8.

Chemically it is a combination of Silica and Oxygen. But sometimes it may contain other elements in traces to which various colours are attributed, though generally it is of white colour. Pure quartz consists of 46.7 Si and 53.5 O. Massive varieties often contain, in addition to Opal ($SiOH_4$), traces of iron, Calcites ($CaCu_3$), clay and other impurities. It is very abundant and appears under a great variety of forms. Often it occurs in distinct crystals, which are commonly Prismatic. The crystals are hexagonal or trigonal in habit. The fracture of quartz is non Choncoidal. Its lustre is vitrious or greasy. Pure specimens are transparent or colourless but most varieties are coloured by the addition of pigments or impurities. It resists most of the chemical agents except alkalies. It is also used to prepare 'Śivaliṅga' which is liked very much by the persons having faith in Lord Śiva. It is regarded as the Priyaratna of Lord Śiva.

It occurs abundantly throughout the world. And 'Akīka' (Agate) is also one of its crystalline varieties.

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80. **गुणाः–**

स्थावरं जङ्गमं चैव संयोगाच्चापि यद्विषम् ॥ तत्सर्वं नाशयेच्छीघ्रं मूलभूतादि दोषजम् ॥
(आ.प्र. ५/१४८-१४९)

**Synonyms**[81]– Sphaṭika, Sphaṭikopala, Bhāsura, Niṣtuṣa, Dhautopala, Śālipiṣta, Sitopala, Amala maṇi, Kācamaṇi, Śivaratna. Sikhipriya.

**Physical Properties**[82]–

**For Superior Quality**– Sphaṭika should be white, clear like Gaṅgājala, very bright, without layers (scales), cool and smooth to touch, look clear from inside also, should not leave its brightness even after rubbing. It is considered best. And the Sphaṭika without these properties is considered inferior and not recomended for use.

**Pharmacological & Therapeutic Properties**[83]–

**Rasa**– Madhura

**Guṇa**– Snigdha, Atihima

**Vīrya**– Sama Vīrya

**Karma**– Hṛidya, Netrya, Dāha Śamana, Śubhakara

**Doṣa Prabhāva**– Pittanut.

**Vyādhi Prabhāva**– Dāha roga, Raktaroga, Raktasrāva, Netraroga, Hṛidroga, Pittaroga.

**Sphaṭika Jātī Ratna**–

According to Āyurveda Prakāśa following Ratnas belongs to Sphaṭika Jāti, Viz– Gomeda, Tākṣya, Vaidūrya, Puṣparāga, Candrakāṅta and Sūryakānta.

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81. **स्फटिक पर्यायाः–**
स्फटिकं सितोपलं स्यादमलमणिर्निर्मलोपलंस्वच्छम् ।
स्वच्छमणिरमलरत्नं निस्तुषरत्नं शिखिप्रियं नवधा ।। (आ.प्र. ५/१३६)

82. **स्फटिक भौतिक गुणाः–**
यद्गंगातोयविन्दुच्छविविमलतमं निष्तुषं नेत्रहृद्यं
स्निग्धं शुद्धान्तरालं मधुरमतिहिमं पित्तदाहास्त्रहारि ।
पाषाणैर्यन्निघृष्टं स्फुटितमपि निजांस्वच्छतां नैव जह्यात्
तज्जात्यं जात्वलभ्यं शुभमुपतनुते शैवरत्नं विचित्रम् ।। (आ.प्र. ५/१३८)

83. **गुणाः–**
स्फटिकः समवीर्यः स्यात्पित्तदाहार्त्तिशोषनुत् । तस्याक्षमालां जपतां दत्ते कोटिगुणं फलम् ।। (आ.प्र. ५/१३७)

## 7. Triṇakānta (Amber)

**Group–** Uparatna group.

**Hardness–** 2-2.5; **Sp.Gr.–** 1.1.

It is called Kaharuā in Parasi language. It can attract dried grass. If it is rubbed on woolen cloth electricity is produced in it then it may develop the power of attracting dried grass or thin cotton towards it like a magnet. It looks yellowish or reddish yellow like a dried grass. Hence the name Triṇakānta is given to it. It smells like lemon juice when rubbed on cloth. Actually it is a fossil resin which looks as clear and shining as gum.

**Pharmacological & Therapeutic Properties–**

**Rasa–** X

**Guṇa–** Rukṣa, Śīta

**Vīrya–** Śīta

**Karma–** Hṛidya, Indriya Prasādana, Grāhī, Raktastambhaka.

**Vyādhi Prabhāva–** Raktātisāra, Raktapitta, Rakta Pradara, Raktaṣṭhīvana, Hṛiddaurbalya, Hṛit-spandana.

**Pharmaceutical Processes–**

It is generally used in the form of Piṣṭi which is prepared by rubbing it with Arka Gulab or Arka Kevara or Arka Candana after powdering.

**Dose–** 1-2 grams with suitable anupāna.

## 8. Akīka (Agate) ($SiO_2$)

**Group–** Uparatna group.

It belongs to Sphaṭika Jātī (Quartz group). Its hardness is 7.2; Sp.Gr. 2.65; Chemically it is a combination of Silica and Oxygen, but may contain Manganese, Iron and Aluminium. It comes under crypto crystalline variety of quartz. Agates are white, pale to dark brown or bluish in colour. Its layers may be differently coloured giving rise to several varieties known as banded or clouded agates. The bending is usually parallel but has more or less waxy or irregular lines. According to Āyurvedic view the red coloured Akīka is considered the best.

**Pharmacological and Therapeutic Properties–**

**Rasa–** Madhura

**Guṇa–** Snigdha, Śīta

**Vīrya–** Śīta

**Karma–** Hṛidya, Balya, Netrya.

**Doṣa Prabhāva–** Pitta Śamana.

**Vyādhi Prabhāva–** Pittaroga, Raktapitta, Jwara, Dāha, Śoṣaroga.

**Uses–** May be used in the form of Piṣṭi or Bhasma.

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# CHAPTER-7
# DESCRIPTION OF SUDHĀVARGA MATERIALS

The materials containg Calcium compounds come under this group. In this group Śaṅkha (Conch shell), Śukti (Marine shell), Varāta/Kapardikā (Cowry), Śṛiṅga (Deer horn), Kukkuṭāṇḍa twak (Egg shell), Pravāla (Coral), Muktā (Pearls) and Godantī (Gypsum) Dugdha Pāṣāṇa (Talc) are included, of these Varāta/Kapardikā (Cowry) is included in Sādhāraṇa rasa group. Pravāla (Coral) and Muktā (Pearl) are included in Ratna group. But all these are Calcium compounds hence are included in Sudhā Varga also.

Of these Śaṅkha, Śukti and Varāta are obtained from sea and are mostly acting on digestive system. Śṛinga contains phosphate also in addition to Calcium. Godanti is calcium sulphate compound and it is used in cases of fevers and in Śiraḥśula. It contains mainly Magnesium and Aluminium silicate.

The Śodhana and Māraṇa processes of Śaṅkha, Śukti and Varāṭa are almost similar.

## Śaṅkha (Conch shell)

It is a Calcium carbonate compound and obtained from sea. It is of two types–

1. Dakṣiṇāvarta – Durlabha & best.
2. Vāmāvarta – Common and used for medicine.

**Physical Properties–**

It should be Nirmala, white and shining like a moon, Snigdha, Guru. These may differ in size, shape and form. The small variety is also available in the small water lakes other than sea where medium to large size are available.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Kaṣāya, Kaṭu

**Guṇa–** Laghu, Hima

**Vīrya–** Śīta

**Karma–** Grahī, Balya, Vilekhana, Agnīdīpana, Varṇya, Tāruṇyapiḍikā praṇut, Viṣaghna.

**Vyādhi Prabhāva–** Udarāmaya,* Amlapitta, Śula, Viṣṭaṁbha, Ādhmāna, Grahaṇī, Atisāra, Prameha, Netra Puṣpa, Tāruṇya piḍikā, Raktapitta, Paktirujā, Viṣa doṣa.

**Specific Effect–** It is alkaline in nature hence may be used in hyperacidic conditions to neutralise the hyperacidic secretions of stomach.

**Procedure for Śodhana–**

Śodhana of Sudhā Varga drugs is done first by washing with hot water to clean their external impurities obtained physically. Then these are subjected to Svedana with boiling Kāñjīka or lemon juice in Dolāyantra. Then these are washed with hot water.

**Procedure for Māraṇa–**

First prepare small pieces of Śaṅkha, Śukti and Varāṭa, Put these in Sarāva saṁpuṭa and apply Gajapuṭa fire. Within one Puṭa-heating these become brittle. Then these are powdered and triturated with Kumārī juice, made into pellets, closed in Sarāva saṁpuṭa and applied Gajapuṭa heat, within two-three puṭas white colour bhasma is prepared. If electric Muffle furnace is used for applying heat then Śukti needs little less temp. i.e. 500°C for one hour and Śaṅkha and Varāṭa needs more temp. i.e. 600°C-700°C for one hour. At the last these are powdered and stored in glass bottles.

**Note–** These bhasmas should not produce any irritation in the mouth of user on internal use. But if by using these any irritation is produced in mucus membrane of the mouth these should again be triturated with Kumārī juice or simple water and applied Laghu puṭa (500°C) heat once. This treatment make these to turn in good quality bhasma.

Muktā Śukti bhasma may sometimes need more temp. than the ordinary Śukti bhasma.

**Dose–** 250 mg twice or thrice as per need.

All these Sudhā varga materials are Calcium carbonates initially but after applying heat through Māraṇa process some part of these may convert into oxide form. Though, all these are chemically the same but are found to differ slightly in their therapeutic properties as per the textual references. This may be due to the presence of trace elements in them,

## Śringa (Deer horn)

At present this is a banned item however if available it may be processed as follows.

Its Śodhana is done by washing with hot water only and for Māraṇa it is first devided in small pieces and applied strong heating. By heat treatment these become brittle then these are triturated with Arka dugdha or Kumārī juice and made into pellets and applied Gajaputa heat. Prabably because of their Phosphate content these may need some more puṭas. Within two three puṭas their slightly blackish colour bhasma is produced. But if more putas (4-5) are given then this bhasma also turns into white colour.

**Indications–**

It is specially indicated in Śwāsa, Kāsa and Parśwaśūla, Hṛcchūla, Aṁśaśūla and Pratiśyāya. In headache its paste prepared with water may be applied on forehead. It gives quick releif to the patient.

**Dose–** 125-250 mg. mixed with honey, ghee, butter & milk.

## Kukkuṭāṇḍa Twak

It is an external covering of Hen's eggs. These also contain Calcium carbonate.

**Procedure for Śodhana–**

These may be cleaned first with hot water, then their purification is done by keeping these in Kāñjīka liquid or in Ammonium chloride liquid (solution) for 5-6 days and then washing with hot water.

**Procedure for Māraṇa–**

For this first prepare their powder and then triturate with Kumārī rasa, prepare pellets, close in Sarāva saṁputa and apply laghu puṭa heat within one puṭa white colour bhasma is prepared.

**Dose–** 125-500 mg. with water or milk.

## Godantī (Gypsum) ($CaSO_4 2H_2O$)

Though, this mineral is not included in any of the groups described in ancient texts, it is widely used in Āyurvedic medicine for number of disease.

**Modern View–**

Gypsum is a most important of all the hydrous sulphates. It occurs with lime stone in crystals, in finely granular aggregates and in fibrous masses. Its crystals are monoclinic and usually developed in tubular or prismatic habit. Twining is very common. It is usually white, colourless and transparent when pure, but grey, red, yellow, blue, brown or black when impure. Lustre vitreous to pearly or silky. Massive varieties are often dull. Hardness 1.5-2, Sp.Gr. 2.2-2.4.

Though, it is a hydrous calcium sulphate which usually contains 32.6% CaO, 46.5% $SO_3$ and 20.9% $H_2O$. But also contains notable quantities of $Fe_2O_3$, $Al_2O_3$ and $SiO_2$ clay, sand and organic matters are common impurities often found mixed with it. Yield water when heated and becomes white and opaque. When heated between 322°F-400°F it loses water and disintegrated into powder, when ground becomes Plaster of Paris. This when moistened with water again combines with it and form Gypsum. It is soluble in 380-460 parts of water depending upon temp. and pressure but readily soluble in HCl. In a closed tube the mineral gives off water, falls into a white powder. It colours the flame yellowish red and yields Sulphur test on silver coin.

There are five varieties of Gypsum–

1. Selenite– Usually colourless and transparent.
2. Satin– A fibrous variety with a pronounced silky lustre.
3. Alabaster– A massive and a fine grained variety.
4. Rock– Gypsum – A compact scaly or granular variety often very impure.
5. Gypsite– An impure earthy or sandy variety.

Gypsum is a common mineral often occurs in extensive deposits of great thickness. It is usually found with lime stone. The common associates Helite, Salasite, Sulphur, Aragonite, Dolomite, Calcite, Pyrite and Quartz – It is used as a disinfectant and as a adulterant of foods, medicines and paints and to prepare Plaster of Paris.

According to ancient view the term Godanti given to this mineral is indicative of its resemblance with the teeth of a cow

in colour and appearance. It is mentioned further that it is a material of Pāṣāṇajātī (Mineral origin) and Saumya in nature (Śīta) in Vīrya. And it does not have any resembalance with Tālaka (Orpiment) except its scaly or massive (Patra and Piṇḍa) form and appearance.

**Physical Properties–**

It posses Patras (Scales or layers), smooth on touch, clear and shining in appearance just like moon.

**Pharmacological & Therapeutic Properties–**

**Rasa–** X

**Guṇa–** Śīta

**Vīrya–** Śīta

**Karma–** Balya, Dīpana, Jwarahara and Śūlahara.

**Doṣa Prabhāva–** Pittadoṣahara.

**Vyādhi Prabhāva–** Pittajwara, Jīrṇajwara, Śiraḥ Śūla, Kāsa, Śwāsa, Kṣaya, Uraḥkṣata, Pāṇḍu roga, Bālaśoṣa, Śveta Pradara.

**Śodhana–**

Svedana (Heating) in lemon juice or Droṇapuṣpi rasa by Dolāyantra method for $^1/_2$ yāma.

**Māraṇa–**

Purified Godanti powder is triturated with Kumārī rasa or Nimbu rasa, made into pellets, closed in Śarāva saṁputa and heated in Gajaputa fire – 1-3 times. At the end white colour bhasma is prepared.

**Dose–** $^1/_2$ to 1 gm. with honey, milk, ghee or water.

## Muktā (Pearl)

In Ayurvedic Rasaśāstra Muktā is included in Ratna Varga on account of its shining, beauty and high cost. It is also included in Sudhā varga as it contains Calcium carbonate as its main constituent along with some trace elements which make it therapeutically more effective than the other Calcium carbonate compounds like Śaṅkha, Śukti, Varāṭa and Pravāla.

Muktā is related to Candra graha from astrological point of view. It may be used for Dhāraṇa and Dāna.

**Occurence–**

As per the Ayurvedic literature Muktās can be obtained from the following eight sources– Viz– Megha, Varāha, Śaṅkha, Śukti, Gaja, Mīna, Sarpa and Vaṁśa. Of these the Muktā obtained from Śukti/Muktā Śukti in sea is considered as best for medicinal purposes. The Muktās obtained from other sources are rare.

The Muktās obtained from sea may also vary as regards their form, appearance, shining and lustre. Generally Pearls are obtained from Australia, Basara, Cūnā-Khādī. Out of these Vasarai pearls are best. The Pearls obtained from Śukti are of two types i.e. Prākṛita (Natural) and Kṛitrima (Cultured). Natural Pearls are rare and cultured pearls are now available in market frequently and these may be considered as good as natural one. Because these are also prepared with the same material (Secretions) and in same environment. Good varieties of natural pearls are obtained either from the Eranion sea or from the Indian sea near Kathiawar or Rāmeśwaram in the shallow sea water.

**Formation of Muktā in Śukti–**

In sea Mukās are formed in Muktā śukti, ordinarily there is a Kṛimi (Worm) in Muktā śukti which secretes a secretion from the outer portion of its skin. Which makes the inner portion of Śukti very shining. It goes on sticking to the inner portion of the Śukti and making it very much shining but some times when a granule of sand enters inside the Śukti then the secretion inside the Śukti starts adhering around the granules and Muktā is produced in due course of time. This is a continuous process and when many layers of the secretion are adhered on the granules a big pearl is formed.

These layers consists of two types of secretions. The first layer of secretion is of calcium carbonate while the second type secretion is known as Kanchi Maline. These layers of secretions adhere one by one and thus there are many layers of secretions in the pearl as in an onion. When light rays fall on the Pearls some time these rays are reflected from the second and third layers and some rays still go further deep and then they reflect. Thus this type of reflection of light rays looks very beautiful to the person or viewer and makes the pearls most beautiful and shining. But some times some opaque substance

also comes in between the layers during their formation and make the pearls un-even, opaque and defective. This is a natural process of Pearl formation where we have to depend on nature for the entrance of a sand granule inside the Śukti which sometimes may be very delayed but we can't do anything. Hence now a days culture method for the formation of Pearl is developed.

In this process small granules of some substance is put inside the Muktā Śukti which contains a Kṛimi and after closing it is put under the sea water to allow the layers of secretions to adhere on the granules to form a good Pearl in due course of time. By this process a good variety of Pearls can be formed in a comparatively shorter period. Thus there is not much difference in culture and natural Muktās as both are formed in the same conditions with the same materials. Thus with the development of this method culture pearls could now be prepared inlarge quantities.

Apart from the above, there is another method for making artificial Pearls in which powdered shining parts of fish are used and filled in a hollow glass balls with wax to form a Kṛitrima Muktā. These are very cheap but likely to break with very little friction. These also become shapeless when there is a slight increase in temp.

All types of Pearls are likely to be affected with acids and friction and as a result some defects are observed in their shape and appearance hence these should be protected carefully from the effect of acids and friction.

**Occurence–**

According to 'Garuḍa Purāṇa' and 'Yuktikalpataru' the Pearls are said to occur in Sinhal (Ceylone), Saurāṣṭra, Pāralaukika, Tāmraparṇī, Pārasīka (Iron), Kaurava, Pāṇḍya Vātaka and Haima.

**Physical Properties–**

**Superior variety–** Pearls should shine like a star or rays, should be smooth, clear, light in weight, big in size, round, pleasing out look, may look like clear water.

**As per others–** Pearls heavy in wt. are considered best and such pearls when used for Dhāraṇa are likely to increase Āyu and Lakṣmī and Vanish Pāpa (Sins).

**Inferior variety–** The Pearls which are rough, blackish or reddish in colour, look like salt, half white, lustreless, uneven,

unclear, having nodules, shine like Kṣāra and found in twins are considered defective or inferior and not recommended for use.

The Pearls have four Mahādoṣas and six-sāmānya doṣas–

These are– 1. Śukti Khaṇḍa – Kaṣṭakara

2. Matsyākṣa – Putra nāśaka

3. Jaṭhara – Mṛityukara

4. Vidrumaccchāya – Dāridryakara

5. Trivṛitta – Saubhāgya nāśaka

6. Cipiṭa – Akīrtikara

7. Kṛiśa – Prajnā Vidhwansakara

8. Trikoṇa/Trasā – Saubhagya Kṣayakara

9. Kṛiśapārśva – Nirudyogakara

10. Avṛitta – Sarvasampātti-nāśaka

**Lustre of Muktā–**

According to Rasa Paddhati Pearls have three types of lustre i.e.

1. Madhucchāya – like honey

2. Sitacchāya – like Sitā (Sugar)

3. Śṛikhaṇḍacchāya – like Śṛikhaṇḍa (a preparation made with curd and sugar)

The Pearls having last type of lustre are considered superior.

**Test for Pearls–**

The Pearls rubbed with the outer covering of Śālī (Rice) and then washed with salted Gomūtra does not produce any change in colour or lustre then these are considered good. Besides this good pearls loose their lustre when treated with sulphuric acid.

**Mythological Origin–**

1. According to Rasa Paddhati wherever the broken teeths of Bala Asura have fallen on alkaline earth all such places have turned into pearl (mines) origin.

2. It is also said about Pearls that if a drop of rain falls inside a Śukti floating in the sea in Swātī Nakṣatra. Then these convert into good variety of Muktā. Many types of Sukties float

in the sea and 'Rukmaṇī' is one of them and the Muktā formed in that Śukti is claimed to be the best of all. Their lustre is claimed to resemble with that of Kuṅkuma (Keśara). The religious persons consider these as Kalyāṇakara and recommend them for use.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Madhura

**Guṇa–** Suśīta, Laghu

**Vīrya–** Śīta

**Karma–** Bṛiṁhaṇa, Vṛiṣya, Āyuṣya, Asthidanta vivardhana, Puṣṭikara, Tuṣṭikara, Viṣāpaha, Dāhaśamana, Medhya, Dīpana, Bhedana, Kāntiprada, Balya, Cakṣuśya, Vīryaprada.

**Doṣa Prabhāva–** Pittahara, Kaphapittahara.

**Vyādhi Prabhāva–** Rājayakṣmā, Kṣaya, Kāsa, Śwāsa, Dantodbhedaja jwara, Agnimāndya, Vīryakṣaya, Dāha, Santāpa, Kṣata, Dṛiṣtiroga, Unmāda, Prameha, Vātavyādhi. In addition to this it is recommended for the diseases caused due to the Candra graha prakopa such as – Galaganḍa, Ganḍamālā, Kaphaduṣta jwara, Chardi, Śūla, Ślipada, Jalodara, Āmapīḍā, Āmātisāra, Hṛidroga.

**Śodhana–**

Śodhana of the drugs of Ratna group is not considered necessary however if these are purified these become more effective and useful.

**Śodhana of Muktā–**

It is done by applying Svedana in Dolāyantra with boiling Jayantīpatra rasa or lemon juice and then washed with hot water.

**Māraṇa of Muktā–**

Purified Muktā is first powdered by grinding and then it is triturated with Kumārī juice or Godugdha and close these in Sarāva saṁputa and apply Laghuputa heat. Repeat the process for three times.

Its bhasma will be white like moon.

**Piṣṭi Making of Muktā–**

Now a days Muktā piṣṭi is more commonly used then the bhasma.

For this purified Muktā is first powdered and then triturated with Rose water (Arka Gulaba or Arka Kevara) for 21 days in a very hard stone mortar. It should be made very fine like collyrium. After drying it is to be powdered and preserved. Its colour will be light pink.

**Dose–** It may be used in $^1/_2$ to 1 ratti dose with suitable Anupāna (Vehicle).

## Pravāla (Coral)

It is also a Calcium carbonate compound and included in Ratna Varga. It is related to Maṅgala (Mars) graha. Chemically it contains Calcium, Carbon and Oxygen but may also contain some other elements in traces which make it therapeutically more potent than the other compounds of Calcium carbonate group.

On the basis of colour Rosy or red Pravāla is considered best and recommended for Rasa karma, Rasāyana karma, Dānakarma and Dhāraṇa.

**Occurence–**

Generally Corals occur in shallow sea but red or rosy coloured corals are obtained form the sea at the depth of atleast 50 feets.

**Origin of Pravala–**

Corals have their origin from sea animals. When these animals drink sea water for their survival the Calcium present in the sea water is absorbed in their body and get deposited in various parts of the body. As it is a continuous process hence after some time when the quantity of Calcium becomes excess the animals die and their body is called Pravāla (Coral). Anthozoan Polyps are the main animals which make Pravāla. These animals are round in shape having many feet and ring like appearances which are hollow in middle. They require a special type of water and a particular temp. for their growth. Hence these are found only in some places in the sea such as 'Bhūmadhya Sāgar' in between Europe and Africa, in Southern sea of Burma and in the north of Australia. In these areas their reefs are spread over hundreds of miles and still these are engaged in their work. Such places are called Coral reefs.

**Varieties–**

On the basis of colour Corals are of the following varieties, 1. White, 2. Grey, 3. Black and 4. Red or rosy. Out of these white and Grey varieties are commonly found in all places but these are not used for any purpose. The black Corals are not good. Only red coloured Çorals are considered good and these are obtained from the 'Bhūmadhya Sāgar' at the depth of 50-60 feet. These are also found near Itali.

**Ayurvedic Concept of Pravāla Origin–**

As per the description of 'Āyurveda Prakāśa'. A latā like structure is found in the sea. It has a red colour just like morning Sun which it does not leave even after rubbing on Nikaṣa (A special type of touching stone used by Goldsmiths for testing the purity of various precious metals). This latā is known as Pravāla tree and Pravāla obtained from this are considered best.

**Synonyms–**

Vidruma, Abdhilatā, Latāmaṇi, Rakta kanda and Bhauma ratna.

**Physical Properties–**

**Superior variety–** Pravāla should resemble with ripe Bimbīphala i.e. it should be red in colour, long, round, uneven, smooth, without holes, thick and not very long is considered best. The deep red coloured pravāla is considered best.

**Inferior variety–** That which is whitish or grey, rough, having holes, light in weight is not considered good.

Its varieties are described on the basis of caste also.

**1. Brāhmaṇa–** It is red just like rabit's blood, smooth and soft.

**2. Kṣatriya–** It is red like Japāpuṣpa, Bandhūka and Dāḍima puṣpa or like Sindūra. It is hard and rough.

**3. Vaiśya–** Its colour resembles with Palāśa or Pāṭalā puṣpa. It is smooth but less shining.

**4. Śūdra–** Its colour resembels with lotus, it is hard and without shining.

**Pharmacological and Therapeutic Properties–**

**Rasa–** Kaṣāya, Madhura, Amla.

**Guṇa–** Laghu, Snigdha, Śita

**Vīrya–** Śīta

**Karma–** Dīpana, Pācana, Vṛiṣya, Balya, Puṣṭikara, Kāntikara, Vṛiddhikara, Cakṣuṣya, grahadoṣahara, Bhūtādi Śamana, Maṅgaladāyaka, Svedanirgamahara.

**Doṣa Prabhāva–** Pittajit, Kaphapittanut, Tridoṣaghna.

**Vyādhi Prabhāva–** Rājayakṣmā, Kṣaya, Kṣata, Kāsa, Śwāsa, Raktapitta, Dṛiṣtiroga, Raktaroga, Bhūtonmāda, Durnivāra Viṣaja roga. And the diseases caused by the Prakopa of Maṅgala graha, such as – Raktapitta, Raktaduṣṭi, Duṣṭavraṇa, Prameha, Dadru, Bhagandara, Visarpa, Asthibhaṅga, Raktasrāva, Arśa, Raktātisāra, Agnijanya bhaya.

**Śodhana–**

Pravāla is purified by subjecting it to Svedana in boiling Kṣāra drava or Taṇḍulīya rasa by Dolāyantra method and then washed with hot water.

**Māraṇa–**

Purified Pravāla should be powdered and triturated with Kumārī rasa or Godugdha, made into pellets, closed in Sarāva saṁpuṭa and applied Gajapuṭa heat within two-three puṭas its white colour bhasma is produced.

**Piṣṭi Nirmaṇa–**

For preparing its piṣṭi it should be ground with rose water or Kevera water in a hard stone mortar till it becomes very fine or for 21 days. If needed rose water may be added again and again.

**Dose–** 2 Guñjā (250 mg).

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# CHAPTER-8
# DESCRIPTION OF VISOPAVIṢA (POISONOUS) MATERIALS OF MEDICINAL VALUE

The Poisonous materials/drugs are broadly classified in two subgroups i.e. Viṣa group and Upaviṣa group, means poison group and sub-poison group on the basis of their virulence. From therapeutic point of view these are considered highly valuable on account of their quick effectiveness even in smallar doses. But at the same time these are very dangerous also as these may prove very fatal to human beings if used without proper care and in higher doses. Not only this these are likely to produce some toxic effects also in the body on internal use. Hence ancient Āyurvedic scholars have advised their purification methods to either minimise their toxic effects to great extent or to change their toxic effects into desirable therapeutic effects so as to make these highly useful for the human system if used in proper doses, with proper care and with suitable anupāna/drugs.

It is also said in the texts that the drugs of Viṣa and Upaviṣa groups if used with proper care and in proper doses may prove highly beneficial to the body or prove life saving drugs like an Amrita (Nector). And probably because of this their use in ancient times was very much limited. But after the development of Rasa Śāstra in about 8th/9th Cent. A.D. when different Śodhana methods are developed and these poisonous drugs were found treated with these treatments their uses became very safer and frequent in therapeutics.

As per ancient texts there are three types of Viṣas, viz– Sthāvara, Jaṅgama and Kṛitrima (Saṁyogaja or Gara viṣa). Of these Sthāvara viṣas are mainly used in therapeutic. Amongest Sthāvara viṣas Kanda and Mūla viṣas are commonly used as these are claimed to be more effective and potent.

As per Rasa literature the drugs of Viṣa nature are again classified in two subgroups i.e. Viṣa group and Upaviṣa group on the basis of their severity and virulence.

**Mythological Origin of Viṣa–**

Once upon a time the Gods and Demons started to Churn the Kṣīrābdhi with the help of Mandarācala and Nāgaraja (Sesanāga). At that time as a result of Kṣīrābdhi manthana various Ratnas along with Amrita and vary virulent Kāla kūṭa viṣa have come out of the milk ocean. On seeing that very virulent poison 'Kalakūta' all the Devas (Gods) and Dānavas (Demons) became vary sad and came to me and requested me to save all of them from that mahāviṣa. On their request I (Lord Shiva) drunkan that poison and whatever remained in the pot that has turned into the Mūla, Patra, Mṛittikā and Kanda viṣa form.

Out of these the Kanda viṣa is claimed to be of 18 types. Of the eighteen, eight types are considered as Saumya (mild type) viṣa which on ingestion (internal administration) kill the human beings and remaining ten viṣas are considered very Ugra (virulent) likely to kill the persons only by touch and smell. The eight Saumya viṣas are– 1. Saktuka, 2. Mustaka, 3. Kaurma, 4. Dārvīka, 5. Sārṣapa, 6. Saikata, 7. Vatsanābha and 8. Śringīka. These eight viṣas may be used for preparing medicines. And if used properly may destroy Jarā (Senile changes) and various type of diseases.

**Ugra or Varjya Viṣas (Virulent poisons)–**

1. Kālakūṭa, 2. Meṣa śṛiṅgī, 3. Darduraka, 4. Hālāhala, 5. Karkoṭī, 6. Granthī, 7. Hāridraka, 8. Rakta Śṛiṅgī, 9. Keśara, and 10. Yama danṣṭrā. These should not be used in medicinal preparations.

**Viṣa Guṇaḥ (Pharmacotherapeutic Properties)[1]–**

**Rasa–** Kaṭu, Tikta, Kaṣāya

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1. **विषगुणाः–**
विषं रसायनं बल्यं वातश्लेष्मविकारनुत्। कटु तिक्तं कषायं च मदकारि सुखप्रदम्॥
व्यवायि शीतनुद्ग्राही कुष्ठवातास्रनाशनम्। श्वासकासाग्निमान्धानि प्लीहोदरभगन्दरान्।
गुल्म पाण्डुव्रणार्शांसिनाशयेद्विधिसेवितम्॥ (आ.प्र. ६/४३-४४)
विष प्राणहरं प्रोक्तं व्यवायि च विकासि च। वातश्लेष्महृदाग्नेयं योगवाहि मदावहम्॥
तदेव युक्तियुक्तं तु प्राणदायि रसायनम्। पथ्याशिनां त्रिदोषघ्नं बृंहणंवीर्यवर्धनम्।
(आ.प्र. ६/४५-४६)

**Guṇa–** Uṣṇa

**Vīrya–** X

**Vipāka–** X

**Karma–** Madakāri, Sukha prada, Rasāyana, Balya, Vyavāyi, Śītanut, Grāhī,

**Doṣa Prabhāva–** Vāta Śleṣmahara

**Vyādhi Prabhāva–** Vāta Śleṣma vikāra, Kuṣṭha, Vātāsra, Śwāsa, Kāsa, Agnimāndya, Plīhodara, Bhagandara, Gulma, Pāṇḍuroga, Vraṇa, Arśas.

Further – **Rasa–** Vāta Śleṣmahṛit, **Guṇa–** Āgneya.

**Karm–** Vyavāyi, Vikaśi, Yogavāhī, Madāvaha, Prāṇahara.

If used with Yuktiyukta it may prove Prāṇadāyī, Rasāyana, Tridoṣaghna, Bṛiṃhaṇa and Vīrya vardhaka.

**Viṣa Śodhana[1]–**

Whatever poisnous properties have been mentioned in the Viṣas all these are removed if these are made Viśodhita, Hence in medicines always use only Sodhita viṣas.

**Viṣa Nirukti–**

Because these drugs on internal use produce a sense of sadness or sorrowfulness or depression in the minds of mankinds hence these are known as Viṣas- 'Viṣāda jananātviṣāṇi'.

**Collection of Viṣa drugs[2]–**

Viṣa drugs should be collected when these are fully ripe or when these bear fruits, these should be fresh, (Nava), heavy (Guru), smooth (Snigdha) and Solid (Ghana). And from the places where anti poisonous drugs are not found grown (Avyāpannam Viṣaghnaiḥ). Their plant should not be dried. These should be free from climatic effects.

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१. **विष शोधन निर्देश–:**
ये दुर्गुणा विषेऽशुद्धे ते स्युर्हीना विशोधिते। तस्माद्विषं प्रयोगेषु शोधितं योजयेद्भिषक् ॥
(आ.प्र. ६/४७)

२. **विषग्रहण नियमः–**
उद्धरेत्फलकाले तु नवं स्निग्धं घनं गुरु। अव्यावृत्तं विषध्नैस्तु वातादिभिरशोधितम् ॥
(आ.प्र. ६/४८)

**Properties of Viṣas[1,2]–**

Viṣa drugs should have 'laghutva' (lightness), Ruksatva (dryness) Sūkṣma (Subtleness), Viśada (clearness), Vyavāyitva (diffusiveness), Vikāsitva (expensive ness), Āśukāritva (quickly effective), Anirdeśya rasatva (Indistinct taste), Uṣṇatva (hotness) and Tīkṣṇatva (Acuteness). The almost same properties have been mentioned in 'Susruta Samhitā' also the only difference found is inplace of Anirdesyarasa it has said 'Apāki' means such drugs do not undergo any kind of pāka (digestion) means these immidiately produce their effects and need not weight for their digestion in the system.

**Explanation for the effects of Viṣas–**

Viṣa drugs are likely to produce Vāta prakopa due to Rūkṣatva, Pitta prakopa due to Uṣṇatva, Rakta prakopa due to Sūkṣmatva, and Kapha prakopa due to Avyaktarasatva. These may mix with Annarasa (nutrient fluids) immediately and may spread quickly throughout the body due to Vyavāyī property. It may prove injurious to vital organs due to Tīkṣṇatva and may even prove fatal to the body due to Vikāśitva.

**Susruta has added a few more explanations–**

These may produce Matimoha (mental confusion) due to Tīkṣṇatva, may reach to all the tissues of the body and cause toxic manifestations due to their Sūkṣmatva, and likly to destroy Doṣa, Dhātu and Malas of the body due to Vikāśitva property and may produce any kind of trouble in the body due to Avipākitva property as without any pāka (digestion) their excretion from the body is not easy.

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1. **वत्सनाभवर्णनम् –**

१. यः कन्दो गोस्तनाकारो न दीर्घोऽङ्गुलिपञ्चकात् । न स्थूलो गोस्तनादूर्ध्वं द्विविधोवत्सनाभकः ॥
आशुकारी लघुस्त्यागी शुक्लः कृष्णोऽन्यथाभवेत् । प्रयोज्योरोगनाशेतु जारणायां रसायने ॥
(आ.प्र. ६/१६$^{१}/_{२}$-१७$^{१}/_{२}$)

२. पलाशपत्रवत्पत्रे तद्वीजसदृशैःफलैः। स्थूलकन्दो भवेत्तस्य प्रभावस्तुमहान् स्मृतः ।
सिन्दुवारसदृक्पत्रो वत्सनाब्याकृतिस्तथा । यत्पार्श्वेनतरोर्वृद्धि वत्सनाभः सभाषितः ॥
(आ.प्र. ६/३६-३७)

As per 'Bhāva miśra' the fatalness of Viṣas may be due to their vyavāyī, Vikāśī, Āgneyatva, Kaphavātaharatva, Yogavāhitva and Madakāritva properties.

**Viṣa Vegas (Stages of poisoning)–**

It is said in 'Rasendra chintāmaṇi' that if Viṣas are taken in-side the body knowingly or unknowingly in over doses these are likly to produce following eight Vegas (stages).

In first vega (stage) the man becomes calm. In second vega (stage) he starts trembling. In third vega (stage) he develops a burning sensation. In 4th vega (stage) the senselessness or unconciousness is produced. In 5th vega (stage) frothing from the mouth starts. In 6th vega (stage) the breaking of shoulders (the control on shoulder joint is lost), starts and the man can not lift his hands. In 7th vega (stage) Jāḍyatā (Rigidity or in ability to move) comes. In 8th vega (stage) maraṇa (death) occurs. These viṣa vegas may be treated by reciting Mantras or by using anti poisonous measures/drugs.

**Method for Viṣa Śodhana[1]–**

All the Viṣas may be purified before internal use and for this Viṣas should be cut into small pieees and should be dipped or kept in a vessel filled with Gomūtra (cow urine) for 3 days, changing Gomūtra daily. On 4th day these may be washed with water and dried in sun rays.

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1. **वत्सनाभशोधन विधि–**

कृत्वाचणकवत्स्थूलान् विषभागांस्तु भाजने । तत्र गोमूत्रकं क्षिप्त्वा प्रत्यहं नित्यनूतनम् ॥
शोषयेत्त्रिरिनादूर्ध्वं धृत्वातीव्रातपे ततः । प्रयोगेषु प्रयुञ्जीत भागमानेन तद्विषम् ॥
(आ.प्र. ६/४९-५०)

गोदुग्धे स्वेदनं तस्य कर्त्तव्यं शुद्धिकारकम् ।

**अन्य शोधन प्रकारः–**

खण्डीकृत्य विषं वस्त्रपरिवद्धंतुदोलया । अजापयसिंसंस्विन्नं यामतः शुद्धिमाप्नुयात् ॥
क्षीराभावे ह्यजायास्तु गव्यक्षीरेणशोधयेत् । जायतेदोषनिर्मुक्तं विषं योगेषु योजयेत् ॥
(आ.प्र. ६/५७-५८)

**Detoxication of Viṣas–**

After Śodhana viṣas may be mixed with equal part of Ṭaṅkaṇa (Borax) and may be ground to make a paste. Viṣas treated with Ṭaṅkaṇa become least toxic and on internal use may not produce harmful toxic effects in the body.

If Rasa preparations fail to produce good effects then Viṣayogas may be used and specially in Vāta kaphaja vyādhies.

**Doses[1]–**

Viṣa dravyas may be used in one Sarsapa to one Guñjā dose. The dose may be increased or reduced gradually. In Kuṣṭha roga. Viṣas may be used in one Guñjā dose.

**Antidotes of Viṣas in General[1]–**

If toxics symptoms of Viṣa dravyas are produced either with their prolonged use or with their excessive doses then stop the use of Viṣa drugs and following drugs may be used to relieve their toxic effects.

The drugs are–

Ṭaṅkaṇa, Haridrā, Megha nādā, Sarpākṣī, Putrajīvaka, Nimbūrasa, Arjunatwak, Vandhyā Karkotakī, Triśūlikā, Gojihvā, Goghrita & Ajādugdha.

If Viṣa dravyas are used in excessive doses then immediately use ghee mixed with Ṭaṅkaṇa to counter act viṣa toxic effects certainly.

**Description of Viṣa (Vatsanābha)–**

In Viṣa group though eighteen drugs are included however at present only Vatsanābha (Aconitum ferox) is in use for preparing various Rasa yogas. Hence the detailed description of Vatsanābha is given as follows–

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1. **विषसेवनविधान–**
नानारसौषधैर्येतु दुष्टा यान्तीह नो गदाः । ते नश्यन्ति हि विषेदत्ते शीघ्रंवातकफोद्भवाः ॥
(आ.प्र. ६/६२)

**विषमात्रा–**
यवाष्टकं भवेद्यावदम्यस्तं तिलमात्रया । सर्वरोगहरं नृणां जायते शोधितं विषम् ॥
(आ.प्र. ६/७१)

**Historical Consideration–**

Dr. R.N. Chopara in his book 'Poisonous drugs of India' has stated that now a days about 24 species of Aconite are known. On this basis it may be mentioned here that the many drugs of Viṣa group may be the species of Aconite. In ancient Rasa literature 30 types of Kanda visas are found mentioned and most of them may be the species of Aconite only.

**Varieties–** There are three varieties of Vatsanābha

1. Kṛiṣṇābha – Blackish – Good
2. Kapiśa – Reddish brown – Better
3. Pāṇḍu – Pale white – Best

**Properties of Good variety–**

That which is sthūla (thick), Snigdha (oily), Guru (heavy), Nava (fresh), Phalapākottarodhṛita (collected after the fruits are ripped), Kīṭādyabhakṣita (free from insect bites) is considered to be of superior quality, and is recommended for therapeutic use. Further it is also said about its identity that its leaves are similar to Sindubāra, its Ākṛiti (form) should resemble to the form of Vatsa nābhi. No other plant should grow in its side or vicinity.

It is also said about it that its Kand should be similar to Gostana (Cow's Udder). Its length should not be more than five Aṅgulies. Its thickness also should not be more than Gostana (Cows Udder). It has two types i.e. white and black.

**Effects of unpurified Vatsanābha–**

When it is impure it may cause Dāha (burning sensation), Mada (Delusion of mind), Hṛid gati rodha (heart block) and Mṛityu (death). hence it should be purified before internal use.

**Śodhana–**

1. It should be cut into small pieces just like Horse Gram (Caṇakavat sthūla). These may be kept in a pot full of Gomūtra (cows urine). The cow's urine should be changed daily and wait for three days, on 4th day take out these pieces from Gomūtra and dried in intense sun heat.

2. Its small pieces should be tied in a small cloth and may be subjected to Svedana in boiling cows milk for five ghaṭikas.

Svedana may be done in Goats milk (Ajāksīra) also for one yāma.

**Māraṇa[1]–**

Vatsnābha made into paste with equal part of Ṭaṅkaṇa is considered as Mrita. It may then be used in all the diseases. It may not likely to produce any Vikāra (toxic effects) on internal use.

It is further said about it that Vatsanābha may be mixed with equal part of Ṭaṅkaṇa and double part of Kṛiṣṇa marich is also considered equal to Mrita.

**Treatment for Excessive use[2]–**

If any one has taken it internally in over doses then he should use Ṭaṅkaṇa powder with ghee. It may certainly destroy Vatsnābha's toxic effects.

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१. **विषमारणम्–**

समटंकणसंपिष्टं तद्विषं मृतमुच्यते। योजयेत्सर्वरोगेषु न विकारं करोति च॥

(आ.प्र. ६/६०)

तुल्येन टंकणेनैव द्विगुणेनोषणेन च। विषं नि योजितं शुद्धं मृतंभषति सर्वथा॥

(आ.प्र. ६/६१)

**विषेपथ्यानि–**

घृतं क्षीरं सितां क्षौद्रं गोधूमांस्तण्डुलान्यवान्। मरिचं सैन्धवं द्राक्षां माधुरं पानकं हिमम्॥
ब्रह्मचर्यं हिमं देशं हिमकालं हिमं जलम्। विषस्य सेवकोमत्यों भजेदतिविचक्षमः॥

(आ.प्र. ६/७८-७९)

२. **अतिमात्रा सेवने कर्त्तव्यानि–**

अतिमात्रं यदाभुक्तं तदाऽज्यं टंकणं पिवेत्। विषं सवेगं तेनाशुनाशामाप्रोति निश्चितम्॥

(आ.प्र. ६/८९)

**विषप्रभावनाशन द्रव्याणि–**

विषंहन्याद्रसः पीतो रजनी मेघनादयोः। सर्पाक्षी टंकणं वापि घृतेन विषहृत्परय्॥

(आ.प्र. ६/८६)

**Description of Upaviṣas[1]–**

The drugs included in Upaviṣa group.

1. (1) Arka kṣīra
   (2) Snuhī kṣīra
   (3) Dhattūra
   (4) Lāṅgalī
   (5) Karavīraka
   (6) Guñjā
   (7) Ahiphen

2. (1) Arka kṣīra
   (2) Snuhī kṣīra
   (3) Lāṅgalī
   (4) Guñjā
   (5) Hayāri (Karavīra)
   (6) Viṣamuṣṭi (Kupīlu)
   (7) Ahiphena
   (8) Unmatta (Dhattūra)
   (9) Jaipāla

3. (1) Arka kṣīra
   (2) Snuhī kṣīra
   (3) Dhattūra bīja
   (4) Karavīra Pañchāṅga
   (5) Lāṅgalī (Kalihārī) mūla
   (6) Viṣa muṣṭi (Kupīlu vija/phala)
   (7) Jayā (Vijayā) – Bhaṅgā (Pañchāṅga)
   (8) Nīlaka (Bhallātaka phala)
   (9) Guñjā (Phala)
   (10) Ahiphena (Niryasa)
   (11) Jaipāla bīja.

It is evident from this table that in 'Rasārṇava' only five drugs are included in Upaviṣa group. In 'Rasa Saṅketa Kalikā' there are six drugs in this group. In 'R. Ci', 'R.R.S.' and 'R.K.D.' there are seven drugs in this group. In 'Rasa Taraṅgiṇī' there are eleven drugs in upaviṣa group.

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१. **उपविषाणि–**

अर्कसेहिण्डधत्तूरलाङ्गलीकरवीरका: गुञ्जाहिफेनमित्येता: सप्तोव्यविषजातय ॥
उपविषानि अर्कस्नुग्लाङ्गली गुञ्जा ह्यारिविषमुष्टय: । आफेनोन्मत्त जेपाला: सप्तोपविष जातय: ।
(आ.प्र. ६/१११)

These drugs also produce some toxic effects in the body on prolonged internal use and in excessive doses. They are comparatively less virulent than Viṣas. In addition to their therapeutic uses these Viṣopaviṣa groups[1] of drugs are also used in Rasakarmas i.e. for making mercury (Chinna pakṣa) Agnisthayī (thermostable), Bubhukṣita (after to consume more metal content), Baddha (fixed/solidified) and Mārita (reduced to ashes)–

## Description of Drugs Upaviṣa group

### 1. Arka Kṣīra (Latex of Calotropis procera (Ait) R.Br.

**Synonyms–** Arka kṣīra, Sūrya kṣīra

**Pharmacological & Therapeutic Properties–**

**Rasa–** Tikta

**Guṇa–** Uṣṇa, Snigdha

**Vīrya–** Uṣṇa

**Karma–** Recana, Vāntikara, Kṣārakarmakara on external application.

**Vyādhi Prabhāva–** Udara roga, Arśas, Gudāṅkura, Gulma, Kuṣṭha, Kṛimi, Danta vyādhi.

**Toxic effects–** Severe purgation. Sphoṭajanana,

**Treatment–** Goghritapāna, Ciñcāpatra lepa.

**Śodhana–** Not needed.

### 2. Snuhī Kṣīra – (Latex of Euphorbia nerifolia Linn.)

**Synonyms–** Sudhā kṣīra, Sehuṇḍa kṣīra

**Śodhana–** Śodhana drugs – Ciñcā drava

Process – Mix with Cincā drava **&** put in Sun rays.

**Pharmacological & Therapeutic Properties –**

**Rasa–** Kaṭu,

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1. **गुणाः–**
एतैर्विमर्दितः सूतश्छिन्नपक्षः प्रजायते। मुखं च जायते तस्य धातूंश्च ग्रसतेक्षणात्॥
अर्कसेहुण्डयोर्दुग्धमितरासाजटाभवेत्। प्रयोज्यो रसयोगेषु यद्वा पंचाङ्गजोरसः॥
(आ.प. ६/१०८-११०)

**Guṇa–** Guru, Tīkṣṇa

**Karma–** Dīpana, Parama Virecana, Kṣāra karma

**Doṣa Prabhāva–** Vātahara.

**Vyādhi Prabhāva–** Gulma, Udara, Ādhmāna, Gudāṅkura, Śūla, Aṣṭhīlā, Śopha, Yakṛid doṣa, Plīharoga, Kuṣṭha, Unmāda, Aśmarī, Pāṇḍu.

**May be used External application–** In Gudāṅkura it may be applied mixed with Niśa, Kośātakī and saindhava and pasted with Gomūtra.

**Toxic effects–** Severe purgation

**Antidote–** Goghrita, Ciñcāpatra rasa.

### 3. Dhattūra Bīja (Dhaturā stramonium Seeds)

**Varieties–** 1. White flower 2. Black flower – Best, 3. Blue flower, 4. Red flower, 5. Yellow flower.

**Synonyms–** Madana, Kanaka, Unmatta, Śiva priya, Mahāmohī, Kitava.

**Śodhana**[1]**–** Śodhana drugs– Godugdha, Gomūtra

Process– Svedana in Dolāyantra for one yāma
Gomūtra madhyasthāpana and Pācana for 4 yāmas and remove external coverings

**Pharmacological & Therapeutic Properties–**

**Rasa–** Kaṣāya, Tikta, Kaṭu, Madhura.

**Guṇa–** Uṣṇa, Guru, **Vīrya–** Uṣṇa

**Karma–** Agnidīpaka, Madakṛit, Vānti kṛit, Mūrchājanana, Varṇya, Twak-doṣa nāśana, Kāntikṛit, Stambhana, Harṣa vardhana,

**Doṣa Prabhāva–** Śleṣma Śamana, Pitta nāśana.

**Vyādhi Prabhava–** Śwāsa, Kāsa, Ākṣepaka, Unmāda, Āmaviṣa, Yukālikṣā nāsana.

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१. **धत्तूरबीजशोधनम्–**
धूर्तबीजं तु गोमूत्रे चतुर्यामोषितं पुनः । कण्डितं निस्तुषं कृत्वा शुद्धं योगेषु योजयेत् ॥
(आ.प्र. ६/१७ पृ०)

**Dose–** Bīja – $^1/_4$th - $^1/_2$ ratti

Patra Cūrṇa– $^1/_2$-1$^1/_2$ guñjā

**Toxic effects–** Mukhā Śoṣa, Lālāsrāva nāśaka, Galasothakara, Dṛiṣṭimāndyakara, Swara bheda, Kanīnikā vistārakara. Aṅga raukṣyakara Mṛityukara.

## (Internal application)

**Treatment–** 1. Samudraphena kalka prepared with Gomūtra

2. Vacā cūrṇa with Dadhi.

3. Godugdha with sugar

4. Eraṇḍa mūla kalka prepared with Kārpāsabija kaṣāya.

## 4. Bhaṅgā (Canavis indica)

**Synonyms–** Mātulānī, Mādikā, Vijayā, Tandrā kārī, Bahuvādinī, Jayā.

**Śodhana[1]–**

**Śodhana drugs–** Goghrita, Godugdha, Babbūla twak Kaṣāya, Simple water.

Process– Salila nimājjana, Ātapa Śoṣaṇa, Ghrita Bharjana Bhāvanā with Godugdha.
Swedana in Babbūla twak - Kaṣāya.

**Toxic effects–** Pralāpa, Mada, Mūrcchā, Tandrā.

**Treatment–** Dadhi mixed with Śunṭhīkalka, Takrapāna

Taṇḍulodaka with Ciñcākalka, Bahubīja phalakalka sevana.

**Pharmacological and Therapeutic Properties–**

**Rasa–** Tikta,

**Guṇa–** Laghu, Tīkṣṇa

**Vīrya–** Uṣṇa

**Vipāka–** X

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1. **भंगा शोधनम्–**
बब्बूलत्वक् कषायेण भङ्गां संस्वेद्यशोषयेत्। गोदुग्धभावनां दत्वा शुष्कांसर्वत्र योजयेत्॥
(आ.प्र. ६/११६)

**Karma–** Dīpana, Pācana, Grāhī, Madakārī, Nidrā Pradāyanī, Kāmoddīpana Kāri, Āmāśaya balaprada,

**Doṣa Prabhāva–** Kapha-hāriṇī, Pittalā

**Vyādhi Prabhāva–** Grahaṇī, Atisāra, Āntraśūla, Vṛikkaśūla, Pitta śoṣaja śūla, Dhanustambha, Pralāpa, Nidrānāśa.

**Dose–** 2-4 Guñjā.

## 5. Jaipāla (Croton tiglium Linn)

**Synonyms–** Jaipāla, Sāraka, Tiṅtidīphala, Jayapāla

**Śodhana**[1]**–** Śodhana drugs– Godugdha, Gomayatoya.

**Process–** Remove the upper coverings of fruits first, cut it into two pieces from the middle and remove the thin green and small layer known as Rasanā, Tie in cloth piece and apply swedana in Dolāyantra for one yāma filled with milk. Repeat the process for three times. In the end after washing these with water prepare their paste and apply it on earthen pot so as to absorb their oily content to some extent. It is then collected from the earthen pot and kept on Bloting paper to remove still remained oily portion **Śodhana** may also be done by frying the seeds in cow's ghee.

**Effect of Śodhana–** To lessen the oily content of the seeds to desired extent and treat it with boiling Godugdha as its oily content is highly toxic.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Tikta,

**Guṇa–** Guru, Sara, Uṣṇa.

**Vīrya–** Uṣṇa

**Karma–** Vāntikṛit, Tībra virecaka, Vṛiscikādi viṣapraṇut.

**Doṣa Prabhāva–** Vāta śleṣma nisūdana, Pittajanana.

**Vyādhi Prabhāva–** Kṛimi, Kuṣtha, Jwara, Vraṇa, Śleṣma roga, Viṣaroga, Kaṇḍu.

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१. **जयपाल बीजशोधनम् –**

जेपालं रहितं त्वगङ्कुररसज्ञाभिर्मले माहिषे निक्षिप्तं त्र्यहमुष्णतोयविमलं खल्वे सवासोऽर्दितम् । लिप्तं नूतन खर्परेषुविगतस्नेहं रजः सन्निभम् । निम्बूकाम्बुविभावितं च बहुशः शुद्धं गुणाढ्यं भवेत् ।
(आ.प्र. ६/११३)

**Jaipāla Taila–** Ugra recana, Ānāha, Udara roga, Jwara, Unmāda, Sanyāsa, Śiroroga, Dhanustaṁbha, Ekāṅgavāta, Kāsa, Āmavāta, Śotha.

**Contra-indications–** Bāla, Vṛiddha, Kṛiśa, Kṣīṇa, Garbhiṇī, Arśas, Pravahikā, Āmāśaya or Pakvāśaya Śotha, Gudabhraṁśa, Āntra Śotha, Baddha Gudodara.

**Toxic effects–** Severe Purgation, Śūlātopakara, Āntra Śothajanana, Sweating all over the body. Nāḍī māndya.

**Treatment–** Use goghrita, Elā cūrṇa, Dadhi, Dhānya Cūrṇa, Śarkarā.

**Dose–** 1/8th to 1/4th part of Guñjā.

Externally its paste may be applied on Vriscika Daṁśa.

## 6. Kāraskara-Kupīlu-Viṣamuṣṭi (Strychnus Nux Vomica)

**Synonyms–** Viṣa Tiṅduka, Viṣa druma, Viṣa muṣṭi, Ramyaphala, Kupāka, Kupīlu, Kāla kūṭa.

**Śodhana**[1]**–** Śodhana drugs – Ājya, Godugdha, Kāñjika.

Process– Swedana in Dolāyantra for 1 yāma to 3 days in cows milk.

Ājya bharjana (frying in ghee)

**After Treatment–** After Swedana Kāraskara fruits should be washed with water and their outer covering should be removed immediately in wet state and their powder should also be made in wet state otherwise these become so hard that their powdering will be a problem. Practically their powder is then fried in ghee.

**Pharmacotherapeutic Properties–**

**Rasa–** Kaṭu, Tikta, Kaṣāya

**Guṇa–** Laghu– Pakva phala Guru, Uṣṇa, Tīkṣṇa,

**Vīrya–** Uṣṇa

**Vipāka–** Madhura.

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1. **विषमुष्टि-कारस्कर शोधनम् –**
किञ्चिदाज्येन संभृष्टोविषमुष्टिर्विशुद्ध्यति । (आ.प्र. ६/११२ A.)

**Doṣa Prabhāva–** Śleṣma Vātahara.

**Vyādhi Prabhāva–** Sāramya Viṣāpaha, Unmāda, Rakta vikāra, Kuṣṭha, Kaṇḍu, Kaphavātaroga, Prameha, Pitta Vikāra.

**Dose–** 1/2 to 1 Guñjā

**Toxic Effects–** Dhanustaṁbha, Ākṣepaka, Aṅgamarda Kampavāta, Danta harṣa, Nādīmandatā, Kaninikā visphāra.

**Treatment–** Goghritapāna, Nāgaballidala rasa.

## 7. Bhallātaka (Semicarpus anacardium linn)

**Synonyms–** Āruṣkara, Tapana, Kṛimighna, Nīlaka, Vātāri, Bhallātaka.

Test for good Bhallātaka– collect ripe Bhallātaka fruits and then these may be put in water. Those which sink in water may only be taken. Floating fruits should be rejected.

**Necessity for Śodhana–** Bhallātaka rasa (extract) mixed with its oily content is very irritant and produce severe dāha (burning sensation) Śotha (inflammation) and Vraṇa (wounds) and if it falls on the face it may cause severe type of Visarpa (cellulitis) hence it should be purified before used internally.

**Śodhana–**

**Śodhana drugs–** Iṣṭikā cūrṇa, hot water, Nārikelāṁbu

**Process–** These fruits should be cut from its top, mixed with Iṣṭikā cūrṇa kept on jute piece, prepare their pottalī (bundle) rub it vigorously till their external covering is removed and oily content is absorbed to some extent. After rubbing remove these from poṭṭalī and wash with hot water to clean brick powder adhered with fruits.

2. These may also be subjected to Sveḍana in Dolāyantra for one yāma with Nārikelāṁbu (coconut water).

**Pharmacological & Therapeutic Properties–**

**Rasa–** Kaṭu, Tikta, Kaṣāya, Madhura.

**Guṇa–** Uṣṇa, Tīkṣṇa, laghu

**Vīrya–** Uṣṇa.

**Karma–** Rasāyana, Balakara, Krimināśaka, Śukrala.

**Doṣa Prabhāva–** Kaphavātahara

**Vyādhi Prabhāva–** Gulma, Kaphaja Arśa, Grahaṇī, Kuṣṭha, Kṛimi, Vibandha, Ādhmāna, Śūla, Jwara, Agnimāndya, Świtra, Vāta Śleṣmodara, Śwāsa, Kāsa, Āmaśula, Kṛimi roga.

**Dose–** 1-3 Guñjā

**Treatment for Toxic Manifestations–**

1. Tila kalka with Navanīta, 2. Dhānyaka kalka lepa, 3. Arjuna Patrakalka lepa, 4. Bibhītaka majjā lepa, 5. Narikelaphala kalka lepa, 6. Kāsamarda Patrakalka lepa, 7. Rajanī kalka lepa.

## 8. Karavīra (Nerium indicum Mill)

**Synonyms–** Hayāri, Aśwamāra, Caṇḍālaka.

**Varieties–** 1. Sveta puṣpa 2. Rakta puṣpa
3. Pīta puṣpa

**Śodhana–** Swedana in Dolāyantra with Godugdha.

**Pharmacological & Therapeutic Properties–**

**Guṇa–** Laghu, Uṣṇa

**Vyādhi Prabhāva–** Kṛimi, Kaṇḍu, Kuṣṭha, Vraṇa, Netra roga, Upadaṁśa vraṇa, Abhiṣyanda.

**Toxic Effects–** Aṅga staimitya (Rigidity, Numbness), Ākṣepaka, Nāḍīmāndya, Swāsāvarodha, and Mṛityu.

**Treatment–** Navanita– Godugdha with sugar.

## 9. Lāṅgalī (Gloriosa superva linn)

**Synonyms–** Halini, Viśalyā, Kalihārikā, Swarṇa-puṣpā, Diptā, Garbha Pātinī.

**Śodhana**[1]**–** Keep it in Gomūtra for one day.

**Toxic Effects–** Lāṅgalī should be used either fresh or dried when used internally even in small doses may cause Dāha (burning sensation all over the body) Moha/unconciousness), Atisāra (Diarhhoea) and Bhrama (Vertigo) etc. symptoms.

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1. **लाङ्गली शोधनम्–**
लाङ्गली शुद्धिमायाति दिनंगोमूत्रसंस्थिता।

**Pharmacological & Therapeutic Properties–**

**Rasa–** Kaṭu

**Guṇa–** Uṣṇa, Sara, Tīkṣṇa, laghu.

**Vīrya–** Uṣṇa.

**Karma–** Aparāpātinī, Sadyaḥ Prasava Kārikā, Sothāpahā, Kṛiminut.

**Dosa Prabhāva–** Kaphavātāpahā, Pittalā.

**Vyādhi Prabhāva–** Śotha, Vraṇa, Kṛimi, Kuṣṭha, Arśas Śūla.

**Note–** As for as possible it should not be used internally. Its external use is only prefered.

**External use–** Lāṅgalī mūla should be pasted with water after it is washed properly. This paste should be applied over Nābhi (Ambilicus) or yoni (Vagina) for easy evacuation of foetus.

## 10. Guñjā (Abrus precatorious)

**Synonyms–** Raktikā, Tāmrikā, Kṛiṣṇā, Uccaṭā, Bhillabhūṣaṇikā, Śikhaṇḍī, Kṛiṣṇalatā, Kāṁbojī, Guñjā

**Śodhana**[1]**–** It should be subjected to Swedana with Dolāyantra method in boiling godugdha or Kāñjika.

**Bad effects–** Excessive use of Guñjābīja in over dose may produce vomiting and purgation similar to cholera.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Mūla – Madhura, Patra Niryasa-Madhura, Kaṭu,

**Guṇa–** Laghu, Rūkṣa, hima.

**Vīrya–** Śīta

**Karma–** Vṛiṣya, Bhedana, Śothaghna, Vedanāhara, Kāmoddīpana, Bala Saṁvardhana, Kaphanissāraka.

**Doṣa Prabhāva–** Vātapittahara, Mūla śleṣma pittahara.

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1. **गुञ्जा शोधनम् –**
गुञ्जा काञ्जिक सांस्विन्ना प्रहरंशुद्धिमृच्छति

**Vyādhi Prabhāva–** Urustambha, Āmavāta, Swarabheda, Śotha, Vedanā, Triṣṇā, Swāsa, Kāsa, Kuṣṭha, Kaṇḍu, Vraṇa.

**Dose–** $^1/_2$ to $1^1/_2$ Guñjā

Locally– Sandhi Śotha janya Vedanā, Indra lupta, Pakṣabadha, Dāruṇa Gridhrasī, Ghora Avabāhuka, Switra, Kuṣṭha.

## 11. Ahiphena (Opium)

**Synonyms–** Āphena, Āphūka, Phaṇiphena, Nāgaphena, Niphena.

**Utpatti–** The fruits of Khastila (seeds of Papavar somniferum linn) while cut in the middle may allow some excudate to come out like the latex. This Niryāsa is known as Ahiphena.

**Nirmalīkaraṇa–** First dissolve Ahiphena in clear water and filter it with cloth. Now mix this liquid with cow's milk and heat it on slow heat (low temp.). When it attains a semisolid consistency heating should be stopped and clear Ahiphena may be collected.

**Śodhan[1]–** Śriṅgavera (Ārdraka) rasa bhāvanā for 21 times.

**Pharmacological & Therapeutic Properties–**

**Rasa–** Tikta **Guṇa-Virya-Vipaka–** X

**Karma–** Śoṣaṇa, Grāhī, Dīpana, Pācana, Mohakṛit, Stambhana, Āyāsakṛit, Mada-Trit– Dāhakrit, Nidrājanana Vedanāhara, Śukrastambhana, Sevitatyāga-akṣama (habit forming), Yuktyā-Amritavat, Anyathā viṣa– Vad māraka.

**Doṣa Prabhāva–** Śleṣmahara, Vātapittala

**Vyādhi Prabhāva–** Atisāra, Grahaṇī, Sannipāta Vedanā, Nidrā nāśa, Vamana, On external application it may effective for the following diseases, viz– Fuffusāvraṇa Śotha, Āntrāvaraṇa Śotha, all kinds of pains, Abhiśyanda, Karṇa śūla, Kṛimi danta śūla, Āmavāta, Arśas, Pāyūstha vedanā (Fissures & fistula in anus) Nādī avasāda.

**Dose–** 1/4th to 1 Guñjā considering Bala and Kāla.

**Contra-indications–** Children, Old & Diabetic persons, cholera, where Palma and feets are cold, Vrikka śotha, Ślaiṣmika kāsa etc.

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१. अहिफेन शोधनम्–

शृङ्गवेररसैर्भाव्यमहिफेनं त्रिसप्तधा। शुद्धत्युक्तेषु योगेषु योजयेत्तद्विधानतः॥

(आ.प्र. ६/११५)

**Treatment–** Use Saurāṣṭrī cūrṇa, Kārpāsa twak cūrṇa, Hiṅgu, Jalapippalī twak-kaṣāya and Ārdraka swarasa.

## 12. Kṛiṣṇa Sarpa Viṣa (Snake Venom)

**Synonyms–** Garala, Darada, Jaṅgama viṣa,

**Śodhana–** Śodhana drugs–Sarṣapa taila
Gomūtra

**Process–** Collect Snake Venum in Suktikā, mix 1/4th part Sarṣapa taila and put it in sun-rays for drying. On drying it looks yellow. Then it should also be mixed with equal part of Gomūtra and dried in Sun rays for 3 days.

**Properties–** In jaṅgama viṣas only Snake venom is found used. It is claimed to be highly Tridoṣaghna. Agnidīpana and Sanni-pātahara.

**Contra-indications–** It should not be used in Bāla, Vṛiddha and persons suffering from Rāja yakṣmā. Sanyāsa, Mūrcchā, Jīrṇa jwara, Raktapitta, and those who are very weak because of prolonged illness.

Preparations– Sūcikābharaṇa rasa, Mṛita sanjivana rasa and Viṣūcī vidhvanśana rasa.

# CHAPTER-9
# DESCRIPTIONS OF EQUIPMENTS (MŪṢĀ, PUṬA, KOṢṬHĪ & YANTRAS)

## Definition of Mūṣā–

Mūṣās[1] (crucibles) are used to remove doṣas mainly or to apply heat to the substances specially for preparing bhasmas of the mercury, metals and minerals and for the extraction of satvas (core metal content) from the Dhātus (minerals).

## Historical Consideration–

From historical point of view Mūṣās of different kinds are used or found described as a medium to tolerate different degrees of heat only after the development of Rasa śāstra i.e. from 8th/9th Cent. A.D. and onwards in the field of Āyurvedic Pharmaceutics. In Rasa texts different types of Mūṣās having different shapes, sizes and different degree of heat tolerance power are found described. These are made with different types of materials for different purposes.

Different types of Mūṣās found described in different texts are shown in following Table.

| S. N. | Name of Musas | Name of Texts | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Ras | R.Cū | R.P.S. | R.R.S. | R.R. | R.K.D. | R.T. |
| 1. | Vajra Mūṣā | + | + | + | + | + | – | – |
| 2. | Gāra Mūṣā | + | + | + | + | + | – | – |
| 3. | Vara Mūṣā | + | + | + | – | + | – | + |
| 4. | Vajra Drāvaṇī-Mūṣā | – | + | – | – | + | – | + |
| 5. | Varṇa Mūṣā | – | + | + | – | + | – | – |
| 6. | Andha Mūṣā | + | – | – | – | – | + | – |
| 7. | Raupya Mūṣā | – | + | + | – | + | – | – |
| 8. | Bhasma Mūṣā | + | – | – | – | – | + | – |
| 9. | Yoga Mūṣā | – | – | + | – | + | – | – |

1. **मूषापरिभाषा–**
मुष्णाति दोषान् मूषेयान्सामूषेति निगधते।

| S. N. | Name of Musas | Name of Texts | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Ras | R.Cu | R.P.S. | R.R.S. | R.R. | R.K.D. | R.T. |
| 10. | Prakāśa Mūṣā | + | – | – | – | – | – | – |
| 11. | Vṛintāka Mūṣā | – | + | + | – | + | – | + |
| 12. | Pakva Mūṣā | – | + | + | – | + | + | – |
| 13. | Malla Mūṣā | – | + | + | – | + | – | + |
| 14. | Gola Mūṣā | – | + | + | – | + | – | + |
| 15. | Mahā Mūṣā | – | + | + | – | + | + | + |
| 16. | Maṇḍūka Mūṣā (Mañjūṣa Mūṣā) | – | + | + | – | + | + | – |
| 17. | Muśala Mūṣā | – | + | + | – | + | – | – |
| 18. | Dīrgha Mūṣā | – | – | – | – | – | + | – |
| 19. | Garbha Mūṣā | – | – | + | – | – | – | – |
| 20. | Śuṣka Mūṣā | – | – | – | – | – | + | – |
| 21. | Gostanī Mūṣā | – | + | + | – | + | – | + |
| 22. | Biḍa Mūṣā | – | + | + | – | + | – | – |
| 23. | Prakaṭa Mūsā | – | – | + | – | – | – | – |

1. Ras = Rasārṇava, 2. R.Cu.= Rasendra Cuḍāmaṇi. 3. R.P.S. = Rasa Prakāśa Sudhākara; 4. R.R.S. = Rasa Ratna Samuccaya, 5. R. R. = Rasa Rāja, 6. R.K.D. = Rasa Kāma Dhenu, 7. R.T. = Rasa Taraṅgiṇī.

In literature different types of Mṛittikas[1] (soils) and Lohas are found described for making different types of Mūṣās along

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1. **मूषोपादान द्रव्याणि–**
उपादानं भवेत्तस्या मृत्तिकालोहमेव च ॥ (र.चू. ५/९७)
**मूषोपयोगि द्रव्याणि–**
या मृत्तिकादग्धतुषैः शणेन शिखित्रिकैर्वाह्यलद्दिना च ।
लोहेन दण्डेन च कुहिता सा साधारणास्यात्खलुमूषिकार्थे ॥ (र.चू. ५/१०१)
**मूषोपयोगि मृत्तिका–**
मृत्तिका पाण्डुरस्थूला शर्करा शोणपाण्डुरा । चिराध्मानसहा सा हि मूषार्थमतिशस्यते ॥
तदभावे च वाल्मीकी कौलाली च निगधते ॥ (र.चू. ५/१००)
**मूषा मिश्रणीय द्रव्याणि–**
श्वेताश्मानः तुषादग्धाः शिखित्राशणकर्पटे । लद्दिः किट्टं यथायोग्यं संयोज्या मूषिका मृदि ॥
(र.चू. ५/१०२)

with other constituent materials. Not only this in literature different types of sealing and anointing/pasting materials are also found described to improve their heat tolerance power and to make these very much heat proof and leakage proof.

**Synonyms of Mūṣās–**

There are number of synonyms of Mūṣās according to texts which throw light on the shape, size, source and specific qualities and karmas of Mūṣās. Following synonyms deserve mention in this context.

**Important Synonyms and Their Significance–**

**1. Krauñcikā–** Mūṣās are usually made of soil obtained from the Krauñca Deśa/hill or their shape usually resembles with the bird known as Krauñca hence these are known as Krauñcikās.

**2. Karahāṭikā–** Some times their soil is obtained from Karahāṭa deśa hence this synonym is given to Mūsās.

**3. Kumudī–** As the shape of many Mūṣās resembles with the shape of Kumuda puṣpa hence these are called Kumudī.

**4. Pācinī–** As most of these are used for Pācana (heating) hence Pācinī synonym is given to these.

**5. Bahni Mitrā–** As most of these behave like a friend towards fire or these are heat resistants hence this name is given to Mūṣās.

**6. Mūṣā–** As Mūṣās are used to remove the removable doṣas (impurities) of the substances hence these are called Mūṣās.

**Materials for Makeing Mūṣās–**

According to texts following materials are needed or used for making Mūṣās, Viz–

1. Dagdha Tuṣa (Burnt husk), 2. Dagdha Vastra (Burnt cloth piece), 3. Aṅgāra (Burnt charcoals), 4. Puraṇa Loha Kiṭṭa (old iron slag), 5. Dagdha Balmīka Mṛittikā (Burnt hillock soil), 6. Balmīka Mṛittikā (Hillock soil), 7. Śvetāśmā (white stones), 8. Dagdha Gārā (Burnt clay), 9. Dagdha Gajamala (Burnt elephant faecal matter), 10. Dagdha-Aśvamala (Burnt horse faecal matter), 11. Kṛisṇa Mṛittikā (Black soil), 12. Bhūnāga satva (metal content extracted from earth worms), 14. Śaṇa (Jute piece), 15. Kūpī cūrṇa (Glass

powder), 16. Śukti cūrṇa (Marine shell powder), 17. Iṣṭikā cūrṇa (Brick powder), 18. Viṭ (a type of salt), 19. Vajra valli (a herbal drug), 20. Jala (water), 21. Chāgī dugdha (Goat's milk), 22. Mahiṣī Kṣīra (Buffalo milk), 23. Balārasa (Sida cardifolia juice), 24. Matkuṇa Śoṇita (Bed bug's blood), 25. Pāṣāṇa Cūrṇa (stone powder), 26. Bhūnāga mṛittikā (Earth worm's soil), 27. Rakta mṛittikā (Red soil), 28. Rakta varga curṇa (powder of red group of drugs), 29. Rakta varga rasa (juice of red group of drugs), 30. Tuvarī (Alum) and 30. Puṣpakāsisa (Ferrous sulphate powder).

Of the above mentioned materials of Mūṣā some belongs to mineral group. Some belongs to herbal group while other belongs to animal group. Beside these, various kinds of soils are also mentioned and these are essential materials for making Mūṣās. These are as follows–

**Different Soils–**

1. Balmīka Mṛittika (Hillock soil)
2. Kṛiṣṇa Mṛittikā (Black soil)
3. Bhūnāga Mṛittikā (Earth worm soil)
4. Rakta Mṛittikā (Red soil)
5. Pīta Mṛittikā (Yellow soil)
6. Śveta Mṛittikā (White soil)
7. Kaulālī Mṛittikā (Pot maker's soil)

Besides these, the soils[1] which are greyish in colour, without sand particles, greasy or sticky in nature are prefered for making Mūṣās.

**Parts of Mūṣās–**

Generally Mūṣās have two parts, viz– (1) Upper part
(2) Lower part

The lower part is used for keeping materials for heating.

The upper part is for covering Mūsā (Pidhānaka). It is not necessarily required for all Mūṣās. Some times Sandhī bandhana of both the parts is required and it is called Sandhi Bandhana, Randhraṇa or Andhraṇa.

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1. मृत्तिका पाण्डुरस्थूला शर्करा शोण पाण्डुरा। चिराध्मानसहासा हि मूषार्थमतिशस्यते॥
तदभावे च वल्मीकी कौलाली वा समीर्यते॥ (र.र.स. ९/६)

**Uses of Mūṣās–**

Mūṣās are used for following purposes–

1. Rasa Mūrcchana, 2. Rasa Śodhana, 3. Rasa Māraṇa, 4. Rasa Bandhana, 5. Dvanda Melāpana (for mixing two or more metals together), 6. Bījanirvāpaṇa, 7. Drāvaṇa or Vajra drāvaṇa, 8. Satvapātana, 9. Sāraṇa, 10. Patrālepa, 11. Rañjana, 12. Sūtaguṇa vriddhikaraṇa, 13. Svedana, 14. Pācana, 14. Varṇotkarṣakaraṇa.

**Description of Mūṣās–**

There are 23 types of Mūṣās, however complete description with regards to all the Mūṣās is not available. In some cases their constituent materials, their shape, size, method of preparation, heat tolerance power and uses are found described. In some cases their shape and purposes are found described. In some other cases their constituent materials and purposes are described.

**Description of Different Mūṣās–**

**1. Vajra Mūṣā–**

It is described in Rasārṇava, Rasa Ratnākara, Rasendra Cūḍāmaṇi, Rasa Prakāśa Sudhākra and Rasa Ratna Samuccaya.

**Shape–** Its shape is Gostanākāra (round/oval).

**Constituent materials**[1]**–** Dagdha Tuṣa, Dagdha vastra, Balmīka mṛittikā, Aṅgāra, Puraṇa loha kiṭṭa, white stone, Dagdha Gārā, Dagdha Gajamala, Dagdha Aśvamala, Kṛiṣṇa mṛittikā, Narakeśa, Bhūnāga satva, Śaṇa, glass bottle, Śukti, Iṣṭikā cūrṇa, Lavaṇa, Pāṣāṇa bheda patra.

**Bhāvanā drugs–** Vajra ballī rasa, Jala, Ajādugdha, Mahiṣī dugdha, Balārasa, Matkuṇa śoṇita.

**Method of preparation–** Powder all the constituent materials, mix these with Tuṣa, Vastra, Kūpī and Śukti cūrṇa, Narakeśa, Śaṇa and Bida lavaṇa, Pound these well till all are mixed well. Now triturate the mixture with the liquids of Bhāvanā drugs for 3 days or till the paste becomes smooth, soft and sticky. Then

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1. **वज्रमूषा–**
मृदास्थिभागा शणलद्दिभागौ भागश्चनिर्दग्धतुषोपलादे ।
किद्दार्धभागं परिखण्ड्य वज्रमूषां विदध्यात्खलु सत्वपाते ॥ (र.र.स. ९/९)

mould it in a round oval shape just like Gostana dry it in shade and heat it in strong fire to make it strong and heat resistant. It is called Vajra Mūṣā.

**Uses–** It is used for Rasa Śodhana, Māraṇa, Bandhana, Mūrcchanā, Dwanda melāpana, Bīja nirvāpaṇa, Vajra drāvaṇa, Satva pātana and for doing all karmas.

**Heat resistant power–** It may stand to strong heating for 4 yāmas. (12 hours)

**2. Gāra Mūṣā–**

It is mentioned in Rasend Cūḍāmaṇi, Rasa Pra. Sudhākara, Rasa Ratnākara and R.Ṟ. Samuccaya.

**Shape–** Similar to Vajra Mūṣā

**Constituent materials**[1]**–** Dagdha Gārā, Loha Kiṭṭa, Aṅgāra, Śaṇa, Kriṣṇa, mṛittikā, Bhūnāga Satva, Dagdha Tuṣa and Mahiṣī kṣīra.

**Method of preparation–** Powder all the drugs finely, Triturate with Mahiṣī kṣīra and jala for 15 days to make these smooth and sticky, mould it like vajra Mūṣā. Dry and heat to make it strong and heat resistant.

**Uses–** It is used for Rasakarma.

**Heat resistant power**[2]**–**May resist to strong heat for 2 yāmas.

**3. Vara Mūṣā–**

It is mentioned in Rasārṇava, R. Cūḍāmaṇi, R. Pra. Sudhākara and R.R.S.

**Shape–** Not mentioned

**Constituent materials**[3]**–** Dugdha Tuṣa and Vastra, Aṅgāra, Mṛittikā, Kūpīcūrṇa, Pāṣāṇa cūrṇa, Bhūnāga mṛittikā.

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1. **गारमूषा–**
   दग्धषड्गुणगाराढ्याकिट्टाङ्गारसमान्विता । कृष्णमृद्भिः कृतामूषागारमूषेत्युदाहृता ॥
   (र.र.स. ९/१४)
2. यामयुग्मपरिध्माता नासौद्रवति बह्निना । (र.र.स. ९/१४)
3. **वरमूषा–**
   वज्राङ्गारतुषास्तुल्यातच्चतुर्गुणमृत्तिका । गारा च मृत्तिकातुल्या सर्वैरेतैर्विनिर्मिता ॥
   वरमूषेति निर्दिष्टा याममग्निं सहेत सा । (र.र.स. ९/१५)

**Method of preparation–** Powder all the drugs finely, triturate these with water to make these in smooth and soft paste form. Now mould and dry it, then it is heated to make it strong and heat resistant.

**Uses– It** is used for various Rasakarmas.

**Heat resistance power–** It may tolarate strong heat for one yāma (3 hours).

**4. Vajra Drāvaṇī Mūṣā[1]–**

It is mentioned in R. Cūḍāmaṇi, R. Pra. Sudhākara, Rasa Ratnākara and R.R.S.

**Shape–** Not mentioned

**Constituent materials–** Gārā, Bhunāga satva, Śaṇa, Dagdha Tuṣa, Mahiṣīkṣīra.

**Lepana drugs–** Matkuṇa Śoṇita, Taṇḍuliya rasa.

**Method of preparation–** Powder all the materials, Triturate these with water to convert these in smooth and soft paste form. Mould it like vajra Mūṣā and dry it. Now apply liquids of lepaṇa drugs inside the Mūṣā and apply heat to make it strong and heat resistant.

**Heat resistant power–** It may resist strong heat for 2-4 yāmas. It is considered good for Vajra drāvaṇa.

**5. Varṇa Mūṣa[2]–**

It is mentioned in R. Cūḍāmaṇi, R. Pra. Sudhākara, and R.R. Samuccaya.

**Shape–** Not mentioned

**Lepana drugs–** Tuvary and Puṣpa Kāsīsa.

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1. **वज्रद्रावणीमूषा–**
गार भू नाग धौताभ्यां शणैर्दग्धतुषैरपि । समै. समा च मूषामृन्महिषीदुग्धमर्दिता ॥
(र.र.स. ९/१२)

2. **वर्णमूषा–**
पूर्वोक्तामृत्तिका या तुरक्त वर्गाम्बुभाविता । रक्तवर्गयुता मृत्स्नाकारिता मूषिका तुरीपुष्पकासीसचोपिता सा च मूषिका । वर्णोत्कर्षेप्रयोक्तव्यावर्णमूषेति सोच्यते ॥ (र.र.स. ९/ )

**Constituent materials–** Rakta varga drugs and Rakta Mṛittikā free from stones.

**Bhāvanā drugs–** Juices of Rakta varga drugs.

**Method of preparation–** Mix all the powdered materials with Bhāvanā drugs and triturate well till paste is made smooth and soft. Now mould it like Vajra Mūṣā and apply lepana drugs and dry it. At last it is heated strongly to make it strong and heat resistant.

**Uses–** It is used for Varṇotkarsa (to make the color more bright).

**Heat resistant power–** Not mentioned

**6. Andha Mūṣā–**

It is mentioned in Rasārṇava, R. Pra. Sudhākara, and Rasakāma Dhenu.

**Shape–** Gostanākāra with a pointed covering lid.

**Constituent materials–** Not mentioned

**Uses–** Patralepa, Rañjana, Sāraṇa and Dwandamelāpana.

**7. Raupya Mūṣā[1]–**

It is mentioned in Rasendra Cūḍāmaṇi, Rasa Prakāsa Sudhākara and Rasa Ratna Samuccaya.

**Shape–** Like Vajra Mūṣā.

**Constituent materials–** White soil free from stones, powder of Śvetavarga drugs. It is anointed with sphatikā (Alum).

**Method of preparation–** Mix all the finely powdered drugs, triturate these with the decoction of Śvetavarga drugs till paste is made smooth and soft. Now mould it like Vajra mūṣā and lepana drugs are painted and dried. Apply strong heat to make it strong and heat resistant.

**Uses–** For Varṇotkarṣa (to make its white colour as bright as silver).

**Heat resistant power–** Not mentioned.

1. **रूप्यमूषा–**
श्वेतवर्गेण वा लिप्ता रूप्यमूषा प्रकीर्त्तिता ॥

**8. Bhasma Mūṣā–**

It is mentioned in Rasārṇava and R. Kāma Dhenu.

**Shape–** Not mentioned

**Constituent materials–** One part Brick powder + 2 parts of Tila bhasma.

**Method of preparation–** Mix all the finely powdered drugs, Triturate these with water to make the paste smooth and soft. Mould it in Mūṣā shape and allow it to dry. In the end heat it strongly to make it strong and heat resistant.

**Uses–** For the purification of Silver.

**Heat resistant power–** Not mentioed.

**9. Yoga Mūṣā[1]–**

It is mentioned in Rasendra Cūḍāmaṇi, R. Prakāśa Sudhākara and R. Taraṅgiṇi. In R.R.S. Viḍa Mūṣā is mentioned in place of Yoga Mūṣā.

**Shape–** Not mentioned

**Constituent materials–** Tuṣa bhasma, ordinary mṛittika, Balmīka mṛittikā, Dagdhāṅgāra and Biḍa.

**Method of preparation–** Mix all the finely powdered materials, Triturate these with water to make the paste smooth and soft. Mould it in a Mūṣā form, paint it with Biḍa dravya and apply strong heat to make it strong and heat rasistant.

**Uses–** For mercurial processes.

**Heat resistant power–** Not mentioned

**10. Prakāśa Mūṣā–**

It is mentioend in Rasārṇava and R. Kāma Dhenu.

**Shape–** Its shape is just like Śarāva (lid) having a hole in its middle where a Pidhānaka (cover) is attached to it and joint

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1. **योगमूषा–**
तुषभस्मयुता मृत्स्ना बल्मीकीविडसंयुता। तया या रचितामूषा योगमूषेति कथ्यते॥
(र.प्र.सु. १०/१०)

is sealed with Sandhi bandhana materials. As there is a hole in its middle to allow light to enter in the mūṣā hence it is called Prakāśa Mūṣā.

**Constituent materials–** Not mentioned.

**Method of preparation–** Here Mūṣā and Pidhānaka are prepared separately and joined in such a way that both together look like Mūṣā.

**Uses–** Bija Nirvāpaṇa or Dravya Nirvāpaṇa and Sāraṇa.

**Heat resistant power–** Not mentioned.

**11. Vṛintāka Mūṣā[1]–**

It is mentioned R. Cūḍāmaṇī, R.P. Sudhākara, R.R. Samuccaya and Rasa Taraṅgṇī.

**Shape–** Its shape is just like Vṛintāka (Brinjal)

**Constituent materials–** Not mentioned

**Method of preparation–** After preparing a Mūṣā with an ordinary material 10-12 aṅgula long tube having a broad base like Dhattūra puṣpa is attached to its mouth, which should look like Brinjal in shape i.e. broad at the base and narrow at the open upper end.

**Uses–** For the Satvapātana from Mṛidu dravyas.

**Heat resistant power–** Not mentioned

**12. Pakva Mūṣā[2]–**

It is mentioned in R. Cūḍāmani, R.P. Sudhākara, R.R. Samuccaya and Rasa Kāma Dhenu.

**Shape–** Just like a Bhāṇḍa (pot) of Potmaker.

**Constituent materials–** Not mentioned

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1. **वृन्ताक मूषा–**
वृन्ताकाकारमूषायां नालं कृत्वादशाङ्गुलम् । (द्वादशाङ्गुलम्)
धत्तुरपुष्पवच्चोर्ध्वं सृदृढं चैव कारयेत् । अष्टाङ्गुलं च सच्छिद्रं भवेद् वृन्ताकमूषिका ।
अनया खर्परादीनां मृदूनां सत्वमाहरेत् ॥ (र.प्र.सु. १०/११-२०)

2. **पक्कमूषा–**
कुलाल भाण्डरूपा या दृढ़ा च परिपाचिता । पक्कमूषेति सा प्रोक्ता सत्वरद्रव्यपाचिनी ॥
(र.प्र.सु. १०/२४)

**Method of preparation–** Same as for an ordinary Mūṣā.

**Uses–** For Pācana, Svedana and Śodhana of the materials.

**Heat resistance power–** Not mentioned

**13. Malla Mūṣā[1]–**

Mentioned in R. Cūḍāmaṇi, R.P. Sudhākara, R.R. Samuccaya and R. Taraṅginī.

**Shape–** Just like a Ball made by joining two shallow cups.

**Constituent materials–** Ordinary Mūṣā materials.

**Method of preparation–** For this first prepare two shallow round cup like pots using ordinary Mūṣā materials, then join both cups together to make ball shaped Mūṣā or just like Saṁputa.

**Uses–** For the Svedana of Parpaṭī like preparations.

**Heat resistant power–** Not mentioned

**14. Gola Mūṣā[2]–**

Mentioned in R. Cūḍāmaṇi, R.R. Samuccaya and R. Kāma Dhenu.

**Shape–** Round like ball.

**Constituent materials–** Not specifically mentioned

**Method of preparation–** Make two round cups, put the roasting materials inside, join these together and give a Mūṣā shape.

**Uses–** For doing quick purification. Also used for Rodhana and Drāvaṇa.

**Heat resistance power–** Not mentioned.

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1. **मल्लमूषा–**
..... पोहल्यादि विपाचिनी ।। (र.र.स. १०/२७)
निर्दिष्टा मल्लमूषा या मल्लद्वितयसम्पुटात् । रसपर्पटिकादीनां स्वेदनाय प्रकीर्तिता ।।
(र.प्र.सु. १०/२३)

2. **गोलमूषा–**
निर्वक्त्र गोलकाकारा पुटनद्रव्यगर्भिणी । गोलमूषेति सा प्रोक्ता सत्वरद्रव्यवोधिनी ।।
(र.र.स. १०/२८)

### 15. Mahā Mūṣā[1]–

Mentioned in R. Cūḍāmaṇi, R.Pr. Sudhākara, R.R. Samuccaya and R. Taraṅgiṇī.

**Shape–** Its base is just like Kūrpara Sandhi (Elbow joint) i.e. small and pointed at the base. It is made wide gradually at the upper end. It should look broad just like big brinjal. As per R. Taraṅgiṇī its bottom is round and flat and broad at the mouth. As it is quite long and broad hence called Mahā Mūṣā.

**Constituent materials–** Not specifically mentioned.

**Method of preparation–** Its bottom should be made small, round and pointed or flat and upper portion should gradually be made broad and thus making the mouth quite big & broad.

**Uses–** Used for Lohapuṭapāka, for the Satvapātana from Abhraka and Mākṣika and for Drāvaṇa. It helps in quick Śodhana (purification) of dravyas.

### 16. Maṇḍūka (Mañjūṣa) Mūṣā[2]–

Mentioned in R. Cūḍāmaṇi, R.Pr. Sudhākara, R.R. Samuccaya and R. Kāma Dhenu.

**Shape–** Its shape is just like a Maṇḍūka (frog) or Mañjūṣā (box) i.e. it is square in shape having a depth, breadth, length and height of about 6 aṅgulas.

**Constituent materials–** Not specific

**Method of preparation–** Should be prepared in the square shape using ordinary Mūṣā materials.

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1. **महामूषा–**
   १. तले या कूर्पराकारा क्रमादुपरिविस्तृता । स्थूलवृन्ताकवत्स्थूला महामूषेतिसास्मृता ॥
   सा चायोऽभ्रकसत्वादेः पुटाय द्रावणाय च ॥ (र.र.स. १०/२९)
   २. अतिस्थूलातिदीर्घा च मुखे किञ्चिच्चविस्तृता । महामूषेति सा प्रोक्ता सत्वरद्रव्यशोधिनी ॥
   (र.प्र.सु. १०/२५)

2. **मञ्जूष(मण्डूक)मूषा–**
   षडङ्गुलोन्नता दीर्घा चतुरसा च निम्नका । मञ्जूषाकारमूषा या सा कथिता रसमारणे ॥
   (र.प्र.सु. १०/२६)
   मण्डूकाकारमूषाया निम्नताऽयामविस्तरा । षडङ्गुल प्रमाणेन मूषामण्डूक संज्ञिता ॥
   भमौ निखन्यतांमूषांदद्यात्पुटमथोपरि । (र.र.स. १०/३०)

**Uses–** Used for puṭapāka and Māraṇa.

**Heat resistant power–** Not specifically mentioned.

**17. Musala Mūṣā[1]–**

Mentioned in R. Cūḍāmaṇi, R.Pr. Sudhākara and R.R. Samuccaya.

**Shape–** It is just like a Musala (Cylinder like i.e. flat at the base, round on all sides and 8 aṅgula long in length.

**Constituent materials–** Not specific

**Method of preparation–** It should be moulded in Musala shape.

**Uses–** Used for preparing Cakribaddha rasa.

**Heat resistant power–** Not specifically mentioned

**18. Garbha Mūṣā[2]–**

Mentioned in R.Pr. Sudhākara and R. Kāma Dhenu.

**Shape–** Not mentioned

**Constituent materials–** Not mentioned

**Method of use–** It is kept in side the earth and covered with sand.

**Uses–** For Parada bandhana.

**Heat resistant power–** Not mentioned

**19. Gostanī Mūṣā[3]–**

It is mentioned in R. Cūḍāmaṇi, R. Pr. Sudhākara, R.R. Samuccaya and R. Taraṅgiṇī.

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1. **मुसलमूषा–**
मुषाया चिपिटामूले वर्तुलाष्टाङ्गुलोच्छ्रया । मूषा सा मुसलाख्यास्याच्चक्रिवद्धरसेहिता ॥
(र.र.स. १०/३१), (र.प्र.सु. १०/२८)

2. **गर्भमूषा–**
भूमौ निखन्यमानां हि मूषा माच्छाद्य बालुकैः । गर्भमूषा तु सा ज्ञेया पारदस्य निवन्धनी ॥
(र.प्र.सु. १०/२७)

3. **गोस्तनीमूषा–**
मूषा या गोस्तनाकारा शिखायुक्तपिधानका । सत्वानां द्रावणे शुद्धौ मूषा सा गोस्तनी भवेत् ॥
(र.र.स. १०/२५)
..... मुखोपरिविमुद्रिता ॥ (र.प्र.सु. १०/२२)

**Shape–** Its shape is mentioned as Gostanākāra (like a cow's Uddar) i.e. Mūṣā covered with Pidhānaka (covering dish) having a Sikhā (Projection) over its top (upper surface).

**Constituent materials–** Not specific

**Method of preparation–** First prepare an ordinary Mūṣā and Pidhānaka (Covering dish or lid). Pidhānaka should have Śikhā (Projection) at the middle portion of its Top. Mūṣā is then covered with Pidhānaka and sealed.

**Uses–** It is used for the Śodhana and Drāvaṇa of satvas.

**Heat resistant power–** Not mentioned

**20. Biḍa Mūṣā[1]–**

It is mentioned in R. Cūḍāmaṇi, R. Pra. Sudhākara and R.R. Samuccaya.

**Shape–** Not mentioned

**Constituent materials–** Various types of soils and Biḍa dravyas.

**Method of preparation–** After preparing Mūṣā with various soils it should be painted with Bida dravas.

**Uses–** Used for Loha siddhi and Deha siddhi.

**Heat resistant power–** Not mentioned

**21. Prakaṭa Mūṣā–**

Mentioned in R. Ratnākara.

**Shape–** Just like Srāvaka.

**Constituent materials–** Not specifically mentioned.

**Method of preparation–** It is said in R. Ratnākara that when Vajra Mūṣā is made deep like a Srāvaka with a hole in its middle it is called Prakaṭa Mūṣā.

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1. **विड़मूषा–**
तत्तद्भेदमृदोद्भूता तत्तद्विड़विलेपिता। देहलोहार्थसिद्ध्यर्थं बिड़मूषेत्युदाहृता॥ (र.र.स. १०/१८)
बिडेन रचिता यातु विडेनैव प्रलेपिता। (र.प्र.सु. १०/१६)

**Uses–** For the Sāraṇa karma and Bija Nirvāpaṇa

**Heat resistance power–** Not mentioned

**Mūṣāpyāyana–**

Found refered to in R. Cūḍāmaṇi and R.R. Samuccaya.

When the materials kept in the Mūṣā are about to melt due to strong heating Mūṣā is taken out of fire that is known as Mūṣāpyāyana. It is done just to prevent the breaking of Mūṣā due to strong heating.

## DESCRIPTION OF PUṬAS (HEATING SCHEDULES)

**Introduction–**

After the development of Rasaśāstra (Ayurvedic Pharmaceutics) in the field of Āyurveda metals and the drugs of mineral origin have found their uses in Āyurvedic therapeutics in the form of Bhasmas. And for the conversion of metals and minerals in the form of bhasmas heating at different degree of temp was considered as one of the highly essential procedure to transform these into desired compound forms very suitable to be absorbed into the biological system and to show their desired therapeutic effects without producing any harmful toxic effects.

In ancient Rasaśāstra literature these heating schedules are expressed in terms of various types of Puṭas the term 'PUṬA' used in ancient Rasaśāstra literature is defined as to express the quantum of heat required or considered neccessary for the 'Supāka' (proper conversion of Rasādi dravya (metal/mineral) into suitable dosage (compound) form so that it is made highly absorbable, therapeutically most effective and least or non-toxic to the body tissues and organs. Thus, the term 'PUṬAPĀKA' used in the context of Māraṇa Process is very important as it helps in the conversion of metals/minerals into suitable 'bhasma' form by disintegrating their particles to a fine state of sub-divisions and then into suitable/ desired compound form through the application of different degree of heat from different sources.

As regards the sources of heat in the context of 'Puṭa' following terms have been found refered to in ancient Rasa literature. Such as Agniputa, Sūryaputa and Candraputa, means heat obtained

through Agni (Fire), through Sūrya (Sun) and Candra (Moon). According to ancient concept all the above mentioned sources help in the pāka karm of different types of preparations.

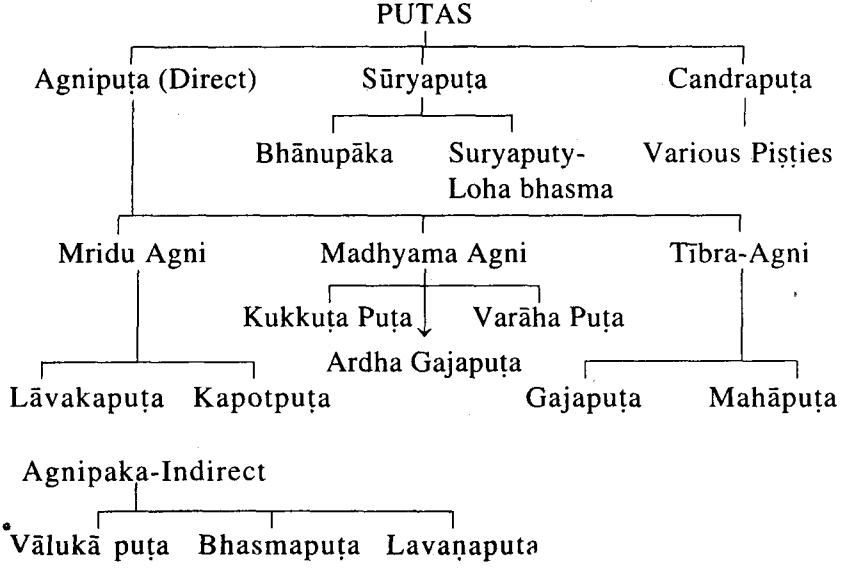
Out of these Agniputa is more common and may again be divided into three types depending upon the degree of heat applied for the different types of drugs of mineral origin, i.e. some need Mṛidu-Agni (mild heat), others need Madhyama Agni (Moderate heat) and some others need Tībra-Agni (strong heat). In the context of types of Puṭas each types may again be subdivided into sub-divisions depending upon the quantum of heat reliesed, type of fuel used and size of pit indicated.

**Classification of Puṭas–**

According to ancient Rasaśāstra literature Puṭas (Heating schedules) are classified in to following groups i.e.

1. Different sources of heat i.e. 1. Agniputa
   2. Sūrya puṭa
   3. Candraputa

Agni Puṭa may be of two types i.e. 1. Direct heat through fire; 2. Indirect heat through sand, Ash etc.



**Definition of Puṭa[1]–**

Puṭa is heating system and heating schedule and indicate the quantum of heat required by the Rasadi dravyas (metals/ minerals or the drugs of mineral origin) for their conversion into suitable pharmaceutical form or dosage form. As neither less nor excess heat is desired i.e. if the less heat is given metal or mineral may not convert into suitable or desired pharmaceutical form and as such it could not be used internally either for therapeutic purpose or for Rasāyana purposes. If more heat is given the metal particles may get melted and may not under go desired physical or chemical changes. Hence desired quantum of heat is needed to be applied for making it converted to desired pharmaceutical form suitable for internal use.

**Type of Puṭas–**

Following types of Puṭas are found mentioned in Rasa literature, such as–

Mahāpuṭa, Gajapuṭa; Varāhapuṭa, Kukkuṭapuṭa, Ardha Gajapuṭa, Kapotapuṭa, Lāvakapuṭa. Gorbarapuṭa, Bhāṇḍapuṭa, Bhūdharapuṭa and Vālukāpuṭa.

**Fuel used for Puṭas–**

Generally cow dung cakes collected from forest are advised to be used in desired numbers depending upon the nature and heat requirement of the Puṭana dravya (Metal or mineral). Now a days cow-dung cakes collected from forest (Vanyopalas) are not available in all places hence artificially made market dung cakes are in use. Hence while using these dung cakes one should ascertain their heating capacity and temperature range and then their quantity should be ascertained for particular drug and particular puṭa.

**Number of Puṭapākas–**

It is also observed that one puṭa of any type would not be found sufficient to convert the metal or mineral into good quality

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1. **पुटपरिभाषा–**
रसादि द्रव्यपाकानां प्रमाण ज्ञापनं पुटम्। नेष्टो न्यूनाधिकः पाकः सुपक्वं हितमौषधम्॥
(र.र.स. १०/४७)

bhasma form hence one should repeat Puṭapāka for number of times to get the desired quality of final product or the bhasma. In certain cases we get reference in the texts that so many puṭas may be repeated to prepare good quality bhasma but in certain cases we have to ascertain the repeatition of puṭas on the basis of traditional advice or with our own experiences.

**Method of Puṭapāka–**

For Puṭapāka metals/minerals are first mixed with prescribed type of Māraṇa drugs, then these are subjected to bhāvanā with prescribed vegetable extractives/liquids and then made into pellet form and closed & sealed either into Śarāva saṁpuṭa or Mūsā and then applied heat with prescribed Puṭa (heating schedule). Sarāva saṁpuṭa should be placed either in the middle of the fuel or furnace or little lower so that heat may be applied from all sides and may enter into saṁpuṭa[1] and react with metal or mineral particle and convert it into suitable chemical compound form. It is also mentioned in the texts that heat entering into the saṁpuṭa from out side burning fuel helps to convert metal particle into fine powder[1] and into desired compound form to acquire desired therapeutic effects by allowing and augmenting desired chemical reaction to set in.

**Aims and Objectives of Puṭapāka[2]–**

By doing Puṭapāka (applying heat through Puṭa system) the metals or the drugs of mineral origin convert into light form from heavy form and as a result these do not sink in water rather these may float on water surface i.e. these acheive 'laghutva', 'unapsu majjanatva', and 'Rekhāpūrṇatā' (these may enter into the fine furrow of the fingers). These get converted into fine powder form (Cūrṇatvāpti). There properties are enhanced or many new properties are induced (Guṇāvapti, Guṇādhi-Kyatā), these become more effective (Totogryatā). These get 'Apunarbhavatva'

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**पुटपाक फलम्–**

1. यथाऽश्मनि वेशेद्वह्निः बहिस्थपुटयोगतः। चूर्णत्वाप्तिर्गुणावाप्तिस्तथालोहेषु निश्चितम्॥
2. लोहादेरपुनर्भावो गुणाधिक्यं ततोऽग्रयता। अनप्सुमज्जनं रेखापूर्णता पुटतोभवेत्॥
   पुटादग्रावणोलघुत्वं च शीघ्र व्याप्तिश्च दीपनम्। जारितादपि सूतेन्द्रल्लोहानामधिकोगुणः॥
   (र.र.स. १०/४८-५०)

could not reveres/return to their original metal or mineral form as by this process these change into some most suitable chemical compound form, when used internally these are likely to spread quickly into the whole body tissues and organs (Śīghra vyāpti). These develop Dīpana property (stimulate digestive power of the body). Not only this the Puṭapakva lohas may develope better properties than the jārita Mercury.

It is also mentioned in some other texts that by the application of Puṭa (heating) their doṣas (Bad/toxic effects) are vanished means after conversion of metals/minerals into best quality bhasma form their therapeutic properties are not only enhanced rather these become non or least toxic to the body tissues and organs when used internally for therapeutic purposes. These are likely to stimulate whole metabolic process of the body by their Dīpana effect.

## Types of Puṭas–

As per the size of the pit, quantity and nature of the fuel and the apparatus or medium through which it is applied these are described in following types.

### 1. Mahāpuṭa[1]–

As the name indicates it is the biggest type of Puṭa described in the texts.

**Size or Measurement–**

Prepare a squire pit having the breadth and dept of two hasta (about 36") in side the earth.

**Quantity of Fuel–**

Here one thousand five hundred Vanyopalas are advised to be used. Of these first fill one thousand (1000) Vanyapalas

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1. **महापुटम् –**
निम्न विस्तरतःकुण्डे द्विहस्ते चतुरस्रके।
भूम्यां वै खनेद्वर्त्तं द्विहस्तं चतुरस्रकम्।
वन्योपलसहस्रेण पूरयेत्तदनन्तरम्॥ औषधगर्भितमूषां हि पिष्टिकोपरि निक्षिपेत्।
वनोत्पलसहस्रोर्ध्वं क्रौञ्चिकोपरि विन्यसेत्। बह्निं प्रज्वालयेत्रत्र महापुटमिदंस्मृतम्॥
(र.र.स. १०/५१-५२)

in the above mentioned pit. Now keep the Mūsā or Sarāva saṁpuṭa containing Puṭana dravya (metal or mineral pellets) over the Piṣṭikā made with Vanyopalas. Then remaining five hundred (500) Vanyopalas are filled or kept over the Mūsā or Saṁpuṭa.

Now ignite the fire and allow it to burn. It is known as Mahāpuṭa. On self cooling collect the material next day.

**Temperature Range and Its Duration–**

As it is a biggest puṭa (heating schedule) hence in this intense heat is maintained for longer duration i.e. about two hours, then slowly the temp. comes down. Here the posible temp. range may be about 950$^0$C-1000$^0$C for about two hours. The fuel used here is the same i.e. Vanyopalas and the difference is in its quantity. The highest expected temp. of this fuel is about 950$^0$C-1000$^0$C which on account of large quantity of fuel may be maintained for longer duration. There may not be much difference in the highest temp. range.

Generally this puta is not used by common Vaidyas. It is used by big pharmaceutical concerns as these prepare bhasmas in large quantities. Hence for them Mahāpuṭa is more useful.

**2. Gajapuṭa[1]–**

It is a commonly used Puṭa (heating schedule) to convert lohagroup of metals to ashes (Bhasma form). It is also a big puṭa but smaller than Mahāpuṭa.

**Size & Measurement–**

For this a squire pit, having breadth and depth of one Rājahasta 22$^1/_2$" size is prepared inside the earth.

**Quantity of Fuel–**

Though in R.R. Samuccay no specific quantity and nature of fuel is mentioned but in Rasa Prakāśa Sudhākar one thousand

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1. **गजपुटम् –**
राजहस्तप्रमाणेन चतुरस्रं च निम्नकम्। पूर्णंचोपलसाठीभिर्कण्ठवध्यथ विन्यसेत्॥
(वनोपलसहस्रेण गर्तमध्यं च पूरितम्) विन्यसेत्कुमुदीं तत्र पुटनद्रव्यपूरिताम्।
पूर्वच्छगणतोद्धीनि गिरिण्डानि विनिक्षिपेत्॥ एतद्गजपुटं प्रोक्तं महागुण बिधायकम्॥
(र.र.स. १०/५३-५४)

(1000) Vonopalas are found mentioned for Gajapuṭa, of this two parts of Vanyopalas are filled in the above mentioned pit, then keep Mūṣā containing Puṭana dravya (metal or mineral). There after remaining vanyopalas are kept over the Mūṣā and applied fire and allowed to burn. It is known as Gajaputa. It is claimed to induce number of properties in the preparation. On self cooling collect the material next day.

**Temperature Range and Duration–**

It is also a bigger puta as the name Gajapuṭa indicates. Here the quantity of fuel used is one thousand and nature of fuel is Vanopalas. Here also the temp. range is nearly the same but here the maintainance time is comparatively less. i.e. it may be maintained for about 45 to 50 minute. Thus here also the highest temp. goes to 950°C-1000°C. This puta is generally applied in open atmosphare hence its highest temp. is maintained for lesser duration. We may mention here that if Gajapuṭa is given in electric Muffle furnace then we recommend to maintain the furnace temp. at 700°C for one hour only and expected results are acheived (Lohas convert into bhasm form).

**3. Varāhapuṭa[1]–**

It is a medium size Puṭa (heating schedule).

**Size & Measurement–**

The size or the breadth and depth of this puṭa is mentioned as 'Aratni' Kuṇḍa (means its size is from Kūrpara sandhi (Elbow joint) tip of Kaniṣṭhikā (little finger).

This is equal to 20-21 Aṅgulas or 16" in length & breadth.

**Quantity of Fuel–**

No specific mention is made here, that means we must understand that Vanyopalas sufficient to fill the squire pit should be taken.

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1. **वराहपुट–**
   इत्थं चारलिके कुण्डे पुटं वारहमुच्यते। (र.र.स. १०/५५)
   अरलिमात्रे कुण्डेतु वाराहपुटमुच्यते॥ (र.प्र.सु. १०/४७)

**Temperature Range and Duration–**

As in this puṭa also cow dung cakes are used as fuel hence here also the highest temp. touches 900°C-950°C temp. range but it may remain maitained only for 10-15 minits and then starts to come down. In electric furnace we used to put the material at 600°C for 45-50 minits. The furnace is then switched off. And the material is collected next day from the furnace.

In this puṭa insteed of Gaja (elephant) pig (Varāha) is taken to represent its size. Pig is always smaller than elephant. Hence it is smaller than Gaja puṭa.

**Method of Heating–**

It is same as in other cases i.e. Puṭana dravya is kept either in Mūṣā or Sarāva saṁputa in side the dung cacks. And then fire is applied and allowed to burn completely.

**4. Kukkuṭa Puṭa[1]–**

Here Kukkuṭa (cock) is taken to represent its size which certainly quite small than pig. Thus it is a smaller Puṭa. In literature some confusion is seen about the size of this puṭa. In R.Pr. Sudhākara and R.R. Samuccaya two Vitasti size is found mentioned for this which does not seems to be correct. As the length of two Vitasti if combined then that becomes bigger than one Aratni. And in that case it becomes bigger than Varāha puṭa which, considering to the size of Kukkuṭa (cock) must be smallar than Varāha (pig).

The size of one Vitasti is always about 9" or 12 aṅgula. Thus the size of 'kukkuṭa puṭa' should be one Vitasti. And if we accept one Vitasti size then it becomes smallar than 'Varāha puṭa' and even Ardha Gajapuṭa. The another point which is found mentioned in R.R. Samuccaya is the use of term 'Bhūmitala' means for this we should not make a pit rather it is given over the ground means there is no need of protection for the heat loss through the pit walls as a result here the temp. rise

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1. **कुक्कुटपुटम् –**
   वितस्तिद्वयमानेन गर्त्तं चेच्चतुरस्रकम्। (र.प्र.सु.)
   पुटंभूमितले यत्तद् वितस्तिप्रमितोच्छ्रयम्। (र.र.स. १०/५६)

and its maintainance time will be less because of heat loss and probably that is desired as it is mentioned in texts that–

'Swarṇa rūpya badhegyeyam Putam Kukkuṭa kādikam' as both these metals (Gold and silver) require less heating temp. if more temp. is given during their Māraṇa (bhasmīkaraṇa) process a portion of these metals may get melted and we can't acheive their complete bhasmikaraṇa. Hence we are of the firm view that the size of 'Kukkuṭa puṭa' should be one Vitāsti (9") and it should be given over 'Bhūmitala' (ground).

**Fuel–**

Same fuel as Vanyopalas sifficient for this size. Some texts have recommended to use 10 upalas but we may use 10-20 upalas as per equirement i.e. starting from 10 in the bigining and slowly the number of upalas may be increased in the end of the process

**5. Kapota Puṭa[1]–**

Here Kapota (Parrot) bird is considered suitable to represent its size which means it should be very small in size just like peigon. For this the use of eight (8) cow dungs are advised and that too over the ground. It is advised to be used for preparing the bhasma of Baddha Suta (Solidified mercury).

**Size and Quantity of Fuel–**

No specific size is mentioned for this as it is given on the ground. No pit is needed for this. Here eight dung Cacks are advised to be used. It is advised for the māraṇa of Mridu dravyas means for Suvarṇa and Pārada māraṇa.

For Suvarṇa (Gold) māraṇa if furnace (electric) is used then we may use 300°C-400°C temp. range for 1/2 to 1 hour. And total 14-15 puṭas (heatings) (It may increase) are needed for Suvarṇa Māraṇa.

**6. Lāvaka Puṭa[2]–**

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1. **कपोतपुटम् –**
   यत्पुटं दीयते भूमौ-अष्ट संख्यैर्वनोपलैः । बद्धसूतकभस्मार्थं कपोतपुटमुच्यते ॥
   (र.र.स. १०/५७)

2. **लावकपुटम् –**
   ऊर्ध्वं षोडशिकामात्रैस्तुषैर्वा गोवरैः पुटम् । यत्र तल्लावकाख्यं स्यात् सुमृदुद्रव्यसाधने ॥
   (र.र.स. १०/६३)

It is a still smallar puṭa where Tuṣa (huska) or Gorvara Cūrṇa (dried powder of dung) are used as fuel and that too in one (1) pala quantity. These are likely to give very low temp. (about $45^0$C-$50^0$C) only. It is advised to be used for very mṛidu type of dravyas.

**7. Ardha Gajapuṭa–**

In many references of literature 'Ardha Gajapuṭa' is found advised for number of drugs. Now question is what is 'Ardha Gajaputa'. On the basis of references we may consider that it should be kept in between Varāhapuṭa and Kukkuṭa puṭa. Means smaller than Varāhapuṭa and bigger than Kukkuṭa puta and as such we have decided that its size should be eleven and quarter inches ($11^1/_4$") in breadth & depth. And the dung cackes sufficient to fill up this size pit may be used for this puṭa.

**8. Gorbara Puṭa[1]–**

It is mentioned in 'R. Pr. Sudhākara' and 'R.R. Samuccaya'. In this also a low temp is applied.

**Fuel and its Quantity–**

For this Tuṣa (huska) or Gorbara Cūrṇa (dung powder) is used as fuel. In 'Rasa Prakāśa Sudhākara' their quantity is mentioned as two (2) Māṇikā–one Prastha (16 palas). In 'Bhāva Prakāśa' it is mentioned to fill these in a Bhāṇḍa and Mūṣā or Samputa is kept inside the fuel and then fire is applied. It is used to prepare Rasabhasma. with this puṭa mild temp. is applied for longer duration.

**9. Bhāṇḍa Puṭa[2]–**

It is mentioned in 'R. Pr. Sudhākara' and 'R.R. Samuccaya'.

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1. **गोर्वरपुटः–**
   तुषैर्वागोवर्रैवापि पुटं यत्र प्रदीयते। तद्गोर्वरपुटं प्रोक्त रसभस्मप्रसाधनम्।
   (र.र.प्र. १०/५९)

2. **भाण्डपुटः–**
   स्थूलभाण्डतुषापूर्णे मध्येमूषासमन्विते। बह्निना विहिते पाके तद्भाण्डपुटमुच्यते॥
   (र.र.स. १०/६०)
   मृदाभाण्डं प्रपूर्यैव मध्ये द्रव्यं तु विन्यसेत्। अधस्तात् ज्वालयदग्निं तद्भाण्डपुटमुच्यते॥
   (र.प्र.सु. १०/५०)

**Fuel Used–**

For this a big bhāṇḍa filled with fuel (Tuṣa (husk)) and containing Mūṣā or Saṁpuṭa is used to apply heat from down. As here heat is applied through bhāṇḍa filled with Tuṣa hence it is known as Bhāṇḍa Puṭa. In R. Pr. Sudhākara instead of Tuṣa Mṛid (Ordinary soil) is filled in Bhāṇḍa and in that case more heat may be expected through Bhāṇḍapuṭa.

**10. Bālukā Puṭa[1]–**

In Bālukā puṭa Mūṣā containing Puṭana material is kept and covered from up and down with hot sand in a pit and as here heat is applied through hot sand hence it is called Bālukā Puṭa.

**11. Bhūdhara Puṭa[2]–**

In Bhūdhara puṭa Mūṣā is kept under ground below two aṅgula level and heat is applied with burning dung cakes over the Mūṣā.

**What to do when Puṭamāna is not mentioned[3]–**

Where the texts are silent about mentioning Puṭamāna one should decide it after proper consideration of the nature of the material to be subjected. Nature means hardness or softness and the chemical nature of the particular material.

**Gorbara Swarupam[4]–**

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1. **बालुकापुटः–**
   अधस्तादुपरिष्टाच्च क्रौञ्चिकाच्छाद्यते खलु । बालुकाभिः प्रतप्ताभिर्यत्रतद्बालुकापुटम् ॥
   (र.र.स. १०/६१)
2. **भूधरपुटः–**
   मूषिकां भूमिमध्ये तु स्थापितां द्व्यङ्गुलादधः । उपरिष्टात्पुटं दद्यात् पुटं तद्भूधराह्वयम् ॥
   (र.प्र.सु. १०/५२)
3. **अनुक्तपुटमाने–**
   अनुक्तपुटमानेतु साध्य द्रव्यबलाबलम् । पुटं विज्ञाय दातव्यमूहापोहविचक्षणैः ॥
   (र.र.स. १०/६४)
4. **गोर्वरम् –**
   गोष्ठान्तर्गोक्षरक्षुण्णशुष्कं चूर्णितगोमयम् । गोर्वरं तत्समादिष्टं वरिष्ठं रससाधने ॥
   (र.र.स. १०/५८)

Oorbara is a dried dung-made into powder form in side the cattle shade with the heap of cattles. It is considered best for Rasasādhana (Mercurial processes).

## KOṢṬHĪ (HEATING DEVICE/FURNACE) YANTRAM

There are many types of Koṣthies (furnaces) having different forms. Their purposes are extraction of Satvas (metallic contents) from[1] the Abhraka (micas), Mākṣika (pyrites) etc. minerals, and the purification (Śodhana) of these extracted Satvas (metal contents).

These are as follows–

### 1. Aṅgāra Koṣṭī[2]–

The height of this Koṣthī (furnace) should be Rājahasta ($22^1/_2$"), its circumference or breadth should be half to its height. It should have a covering wall made of soil all around. It must have an opening of one Vitasti (9"). One another opening of one and half Vitasti ($13^1/_2$") should be made in one wall below its base for blowing air in the furnace. Now prepare another opening of 12 Aṅgula on the outer wall at the height of 10 angulas. It should be closed with a brick and sealed. Fill the furnace with Khadira charcoals and blow it with two blowers. Now go on adding 'Satva pātana balls' in five-five numbers and charcolas after some intervals or when earliar charcoals are burnt through the upper opening. It is known as Aṅgāra Koṣṭhī. And with this furnace 'Satva' from 'Khara (high melting point) dravyas' (materials) may be extracted.

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1. **कोष्ठीयन्त्रम् –**
सत्वानां पातनार्थाय पातितानां विशुद्धये । कोष्ठिका विविधाकारास्तासां लक्षणमुच्यते ॥
(र.र.स. १०/३२)

2. **अङ्गारकोष्ठी–**
राजहस्तसमुत्सेधा तदर्धायामविस्तरा । चतुरस्रा च कुड्येनवेष्टिता मृण्मयेन च ॥
एकभित्तौ चरेद् द्वारं वितस्त्याभोगसम्भितम् । द्वारंसार्धवितत्या च संमितं सुदृढं शुभम् ॥
देहल्यधोविधातव्यं धमनाय यथोचितम् । प्रादेशप्रमिताभित्तिरुत्तरङ्गस्य चोर्ध्वतः ॥
द्वारं चोपरिकर्त्तव्यं प्रादेशप्रमितं खलु । तश्चेष्टिकया रुध्द्वा द्वारसन्धिंविलिप्य च ॥
शिखित्रैतांसमापूर्यधमेद्भस्याद्वयेनं च । शिखित्रान्धमनद्रव्यमूर्ध्वद्वारेण निक्षिपेत् ।
सत्वपातनगोलाश्च पञ्चपञ्चपुनःपुनः । भवेदङ्गारकोष्ठीयं खराणां सत्वपातिनी ।
(र.र.स. १०/३३-३८)

**2. Pātāla Kosthi[1]–**

Prepare one Vitasti round garta (pit) on solid (ştiff) earth. Make another small pit inside this pit having 4 aṅgula breadth and depth. Its mouth should be tilted to downside and attached with a tilted tube. Now keep a circular earthen plate having five holes, over the mouth of inside pit. Fill this outer pit with charcoals and blow it with blower. It is known as Pātāla Koṣṭhī. It is used to extract Satvas from Mridu type of dravyas (having low melting point). It is mentioned by Ācārya Nandī.

**3. Gāra Koṣṭhī[2]–**

Prepare a furnace having the depth of Twelve (12) aṅgulas and breadth or circumference of Ten (10) aṅgulas. Prepare a valaya (circle) at the height of four (4) aṅgulas inside the furnace wall. Keep a circular plate or lid over this valaya (circle) containing hundreds of holes. Put charcoals over that circular plate and blow air through Vaṅka nāla to burn charcoals. It is known as Gāra Koṣṭhi. with this furnace adhered Lohas (mixed metals) are destroyed. As per Prof. Kulakarṇi it may also be called as Tiryak-Pradhamana Koṣṭhi as in this furnace air is blown through bent pipe.

**Siddharasa Koṣṭhi[3] – Tiryak-Pradhamana Koṣṭhi–**

The Koṣṭhi which is prepared for preparing Siddharasa etc. preparation is as follows–

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1. **पातालकोष्ठी–**
   दृढ़भूमौचरद्वर्त्तं वितस्तिसम्मितंशुभम्। वर्तुलं चाथतन्मध्ये गर्त्तमन्यं प्रकल्पयेत्॥
   चतुरङ्गुलविस्तार निम्नत्वेन समन्वितम्। गर्त्ताद्धरणिपर्यन्तं तिर्यङ्नालसमन्वितम्॥
   किञ्चित्समुन्नितं वाह्ये गर्त्तीभमुखनिम्नगम्।
   गृच्चक्रीं पञ्चरन्ध्राढ्यां गर्भगत्रोंदरेक्षिपेत्॥ आपूर्यकोकिलै:कोष्ठीं प्रधमेदेकभस्त्रया।
   पातालकोष्ठिकाह्येषा मृद्वनां सत्वपातिनी। ध्मानसाध्यपदार्थानां नन्दिना परिकीत्तिता॥

2. **गारकोष्ठी:–**
   द्वादशाङ्गलनिम्ना या प्रादेशविस्तराचया। चतुरङ्गुलतश्चोर्ध्वंवलयेन समन्विता।
   भूरिच्छिद्रवतीं चक्रीं वलयोपरिनिक्षिपेत्। शिखित्रांश्चविनिक्षिप्य प्रधमेद्वंकनालत:॥
   गारकोष्ठीयमाख्याता मृष्ठलोहविनाशिनी॥ (र.र.स. १०/३९-४४)

3. **सिद्धरस कोष्ठी:–**
   कोष्ठी सिद्धरसादीनां विधानाय विधीयते। द्वादशाङ्गुलकोत्सेधा सा वुध्ने चतुरङ्गुला॥
   तिर्यक्प्रधमनाऽस्या च मृदु द्रव्यविशोधिनी॥ (र.र.स. १०/४६)

Its hight should be of Twelve (12) aṅgulas. It must have a four (4) aṅgula wide hole at its base which may serve the purpose for blowing air through Vaṅkanāla. It may also serve the purpose of Tiryak-Pradhamaha Koṣṭhi. It is used for doing the Śodhana of Mṛidu dravyas.

**Vaṅka Nāla**[1]**–**

Prepare a strong Aratni size (16") long tube with the materials used for preparing Mūṣā. At its lower mouth (end) attach a five aṅgula long another bent tube. It is known as Vaṅka Nāla. It is used to blow air for burning charcoals strongly or applying strong heat through burning charcoals.

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1. **वंकनालः–**
मूषा मृद्भिर्विधातव्यभरत्निप्रमितं दृढम्। अधोमुखं च तद्वक्त्रे नालं पञ्चाङ्गुलं खलु॥
वंकनालमिदं प्रोक्तं दृढ़ध्मानाय कार्त्तितम्॥ (र.र.स. १०/४५)

# CHAPTER-10
# DESCRIPTION OF PĀRIBHĀṢIKA ŚABDĀḤ (TECHNICAL TERMS)

**Paribhāṣās[1]–**

The Technical Terms concerning to Rasendra (Mercury) mentioned in the Texts of Rasa śāstra and by Ancient Siddhas are being explained by 'Somadeo' for improving the knowledge of Mugdha Vaidyas (Ordinary physicians)

**1. Dhanvantari bhāga[2]–**

The portion of the preparations given by the patients to the physicians in the name of God Dhanvantari for obaining total health and happiness is known as Dhanvantari bhāga. It is fixed as follows– i.e. for Siddha rasas (prepared Rasas) it is half, for medicated oils, Ghees and Avalehas (confection like liking preparations) it is 1/8th part, for all the Loha preparations, (metallic preparations), cūrṇas (powders), Vaṭakas (pills-tablets) it is 1/7th part.

**2. Rudrabhāga[3]–**

Rudra bhāga is that which is taken by the Vaidyas (Physicians) from the traders from the cost of medicines which the Traders have collected from the patients. It is 1/11th part of the whole sum.

**3. Viśwāsa Ghātaka Vaidya[4]–**

The Physician who takes more amount from the traders than

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1. **परिभाषा–**
कथ्यते सोमदेवेन मुग्धवैद्य प्रवुद्धये । परिभाषा रसेन्द्रस्य शास्त्रै: सिद्धैश्च भाषिता ।।
(र.र.स. ८/१)

2. **धन्वन्तरिभाग:–**
अर्धं सिद्धरसस्य तैलघृतयोर्लेहस्य भागोऽष्टम: संसिद्धाखिल लोहचूर्णवटकादीनां तथा सप्तम: । योद्वीयेतभिषग्वरायगदिभि र्निदिश्यधन्वन्तरिम् सर्वारोग्यसुखाप्रये निगदितोभाग: स धन्वन्तरे: ।।
(र.र.स. ८/२)

3. **रुद्रभाग:–**
भैषज्यंक्रीणितद्रव्यभागोऽप्येकादशो हि य: । वणिग्भ्यो गृह्यते वैधैर्रुद्रभाग: स उच्यते ।।
(र.र.स. ८/३)

4. **विश्वासघातक वैद्य:–**
प्रगृह्याधिक रुद्रांशंयोऽसमीचीनमौषधम् । द्रापयेल्लुब्धधीर्वैद्य: सस्याद्विश्वासघातक: ।।
(र.र.स. ८/४)

Rudrāmśa and recommends substandard medicines due to his greedy nature is considered as Viśwāsa ghātaka Vaidya.

**4. Kajjali[1]–**

Kajjalī is that which is made by mixing Gandhaka etc. minerals to Rasa (mercury) and grinding the same without adding liquids. It is very smooth and black like Kajjala (collyrium).

**5. Rasa Paṅka[2]–**

While making Kajjalī if liquids are also added during grinding then the resultant material is called Rasa Paṅka.

**6. Rasa Piṣṭi[3]–**

Rasa Piṣṭi is made by grinding half (1/2) Niṣka ($1^1/_2$ Māṣaka) Gandhaka with arkāmśa (1/12th) part mercury in a Khalva (mortar) by grinding in intense sunheat then it turns into Navanīta (butter) like material in colour and consistancy.

**Another Type of Piṣṭi[4]–**

When Gandhaka and Pārada mixed togather and ground in a Khalva with milk and turns into Piṣṭi like form by forceful grinding then also the resultant material is called Piṣṭi.

**7. Pātana Piṣṭi[5]–**

When Pārada 1 part is mixed with 1/4th part Suvarṇa (Gold)

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1. **कज्जली–**
   धातुभिर्गन्धकाधैश्च निर्द्रवैर्मर्दितोरसः। सुश्लक्ष्णः कज्जलाभोऽसौ कज्जलीत्यभिधीयते॥ (र.र.स. ८/५)
2. **रसपङ्कः–**
   सद्रवा मर्दिता सैव रसपङ्क इति स्मृतः॥ (र.र.स. ८/६)
3. **रसपिष्टी–**
   अर्कांश तुल्याद्रसतोऽथगन्धात्रिष्कार्धतुल्यात्मुटिशोऽभिखल्ले।
   अर्कातपे तीव्रतरे विमर्द्यात् पिष्टी भवेत्सानवनीतरूपा॥ (र.र.स. ८/७)
4. **मतान्तरेणपिष्टी–**
   खल्ले विमर्द्य गन्धेन दुग्धेन सहपारदम्। पेषणात्पिष्टतां यातिं सापिष्टीति मतापरैः॥ (र.र.स. ८/८)
5. **पातन पिष्टी–**
   चतुर्थांश सुवर्णेन रसेन घृष्टपिष्टिका। भवेत्पातनपिष्टी सा रसस्योत्तमसिद्धिदा॥ (र.र.स. ८/९)

and made into Piṣṭi form by grinding then it is known as Pātana piṣṭi. It imparts best properties to mercury.

**8. Swarṇa Rūpya Kṛiṣṭi[1]–**

Gold or Silver reduced to ashes with mercury and sulphur and then made to convert into Gold and Silver several times the same is known as Swarṇa Kṛiṣṭi or Tārakṛiṣṭi.

Kriṣṭi[2] of Gold if mixed with Gold should not cause loss in Gold colour. As per 'Rasa Kāma Dhenu' the gold Kriṣṭi will not reduce the Gold colour rather it should improve its (Gold) colour.

**Function of Bīja made of Gold Kriṣṭi[3]–**

The Bīja prepared with Gold Kriṣṭi if mixed with mercury imparts colour to mercury.

**9. Vara Lohakam[4]–**

Tāmra (copper) mixed with Tīkṣṇa loha when melted and poured repeatedly in Lakuca drava mixed with sulphur. It when taken out is known as Varalohaka.

**10. Hema Rakti[5]–**

Gold made reddish with Varalohaka is known as Hemaraktī.

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1. **स्वर्णरूप्यकृष्टी–**
रूप्यंवाजातरूपं वा रसगन्धादिभिर्हतम्। समुत्थितं च बहुशः सा कृष्टी हेमतारयोः॥ (र.र.स. ८/१०)

**स्वर्णरौप्यकृष्टिः–**
रूप्यं वा जारूपं वा रसगन्धार्दिभिर्हतम्। समुत्थितं च बहुशः सा कृष्टी हेमतारयोः॥ (र.र.स. ८/१०)

2. **कृष्ट्याः कार्यम्–**
कृष्टी क्षिपेत्सुवर्णान्तर्न वर्णो हीयतेतया। (र.र.स. ८/११)
(वर्णं न नाशयति सा दत्तारागकरी स्मृता। (र.का.धे.)

3. **स्वर्णकृष्टी बीजकार्यम्–**
स्वर्णकृष्ट्या कृतं बीजं रसस्य परिरञ्जनम्॥ (र.र.स. ८/१२)

4. **वरलोहकम् –**
ताम्रंतीक्ष्णसमायुक्तं द्रुतं निक्षिप्य भूरिशः। सुगन्धलकुचद्राव निर्गतं वरलोहकम्॥ (र.र.स. ८/१३)

5. **हेमरक्ती–**
तेन रक्तीकृतं स्वर्णं हेमरक्तीत्युदाहृतम्।

**Function of Hemarakti[1]–**

If this 'hemarakti' is mixed with melted Gold improves Gold colour highly bright. It also imparts colour to Silver and also to Bija metals.

**11. Tāra Kṛiṣṭi[2]–**

In the same way a very charming 'Tārarakti' may also be made. It also improves the colour of Silver and Bīja metals.

**12. Śulva Nāga[3]–**

Copper reduced to ashes with Mākṣika and regained in copper form ten times. In the same way lead reduced to ashes with Nīlāñjana and regained seven times. Take both the regained metals each in four palas quantity and when these are mixed by melting is called Śulvanāga.

**Properties of Śulvanāga[4]–**

Mercury processed with Śulvanāga if kept in mouth destroys all the Mehas (urinary disorders) completely within a month's time. And if it is kept in mouth for one year following Pathya dietic regimen cures Palita along with Baliroga and imparts Gṛidha dṛiṣṭi (very powerful long vision), high nourishment of the body tissues and total health.

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1. **कार्यम् –**
   निक्षिप्तासा द्रुते स्वर्णे वर्णोत्कर्षविधायिनी । तारस्य रञ्जनी चापि बीजराग विधायिनी ॥
   (र.र.स. ८/१४-१५)

2. **तारारक्ती–**
   एवमेव प्रकर्त्तव्या तारारक्ती मनोहरा । रञ्जनी खलु रूप्यस्य बीजानपिरञ्जनी ॥
   (र.र.स. ८/१६)

3. **शुल्वनागम् –**
   माक्षिकेणहतं ताम्रं दशवारं समुत्थितम् । तद्विद्विशुद्धनागं हि द्वितयंतच्चतुष्पलम् ॥
   नीलाञ्जनहतं भूयः सप्तवारं समुत्थितम् । इति संशुद्धमेतद्धि शुल्वनागं प्रकीर्त्यते ॥
   (र.र.स. ८/१९-२०)

4. **शुल्वनागगुणाः–**
   साधितस्तेन सूतेन्द्रो बदने विधृतो नृणाम् । निहन्तिमासमात्रेण मेहव्यूहमशेषतः ।
   पथ्याशनस्य वर्षेण पलिंत बलिभिः सह । गृध्रदृष्टिर्लसत्पुष्टिः सर्वारोग्यसमन्वितः ॥
   (र.र.स. ८/२१-२२)

**13. Piñjarī[1]–**

Melted metal mixed in other melted metal when poured in Triphalā drava turns into white and yellowish colour then it is called Piñjarī.

**14. Candrārka[2]–**

Sixteen parts of Silver and twelve parts of copper when mixed together by melting then the same metal is called Candrārka.

**15. Nirvāpaṇa/Nirvāhaṇa[3]–**

In Sādhya loha (metal being processed) if another loha (melted) is poured through Vaṅkanāla then that procedure is known as Nirvāpaṇa or Nirvāhaṇa. The quantity of Nirvāpaṇa dravya should be mixed in equal quantity or as per his (Vaidya) experience (descretion).

**16. Vāritara Loha[4]–**

Metal reduced to ashes should float on water surface due to fineness and lightness of the metal particle that is known as Vāritara Loha.

**17. Rekhāpurṇa Loha[5]–**

When the metal reduced to ashes if enters into the fine furrows of fingers while rubbed in between first finger and thumb. Then that Mṛita loha is known a Rekhāpūrṇa.

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1. **पिञ्जरी–**
   लोहं लोहान्तरेक्षिप्तंध्मातं निर्वापितं द्रवे । पाण्डुपीतप्रभंजातं पिञ्जरीत्यीमधीयते ॥
   (र.र.स. ८/२३)
2. **चन्द्रार्कम् –**
   भागा: षोडशतारस्य तथाद्वादशभास्वत: । एकमावर्त्तितस्त्रेन चन्द्रार्कमितिशस्यते ॥
   (र.र.स. ८/२४)
3. **निर्वापण/निर्वाहण–**
   साध्यलोहेऽन्यलोहं चेत् प्रक्षिप्तं वंकनालत: । निर्वापणं तु तत्प्रोक्तं वैधैर्निवाहणं खलु ॥
   क्षिपेन्निर्वापणं द्रव्य निर्वाह्यो समभागिकम् । आवाप्यं वापनीये च भागे दृष्टे च दिष्टवत् ॥
   (र.र.स. ८/२५-२६)
4. **वारितरम् –**
   मृतं तरति यतोये लोहं वारितरं च तत् ।
5. **रेखापूर्णम् –**
   अङ्गुष्ठतर्जनी घृष्टं विशेर्द्रखान्तरे तु तत् । मृतं लोहं तदुद्दिष्टं रेखापूर्णाभिधानत: ॥
   (र.र.स. ८/२७-२८)

**18. Apunarbhava Loha[1]–**

When Mṛita loha mixed with Guḍa (Jaggary), Guñjā (Abras pricatorous seed), Sukhasparsa (Guggulu) – (Chamiphora mukul Gum), Madhu (honey) and Ghee (claerified butter) and heated strongly does not return to original metal form then that is known as Apunarbhava loha.

**19. Unamam[2]–**

When any Dhānya (Grain) or any heavy material if put on Mṛita loha floats on water surface along with mṛita loha like a Hamsa then that Mṛita loha is known as Unamam.

**20. Nirutth Loha[3]–**

Mṛita loha mixed with Silver piece and heated strongly if does not mixes with Silver (weight of Silver does not increase) then that Loha is known as Niruttha loha or Apunarbhava loha.

**21. Bīja Lakṣaṇam[4]–**

If a colour of melted metal changes as per the colour of specific Nirvāpaṇa dravya and the softness is produced then this type of specific Saṁskāra is known as Bija.

**22. Uttaraṇam[5]–**

If one metal is destroyed from the two mixed metals by Nirvāpaṇa viśeṣa then that is known as Uttaraṇa

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1. **अपुनर्भवम् –**
गुडगुञ्जा सुखस्पर्शमध्वाज्यैः सह योजितम्। नायाति प्रकृति ध्मानादपुनर्भवमुच्यते ॥
(र.र.स. ८/२९)

2. **ऊनमम् –**
तस्योपरिगुरु द्रव्यं धान्यञ्चोपनयेद्ध्रुवम्। हसवत्तीर्यते वारिण्मूनमं परिकीर्तितम् ॥
(र.र.स. ८/३०)

3. **निरुत्थलौहम् –**
रौप्येण सहसंयुक्तं ध्मातं रौप्येण न लगेत्। तथानिरुत्थमित्युक्तं लोहं तदपुनर्भवम् ॥
(र.र.स. ८/३१)

4. **बीजलक्षणम् –**
निर्वापणविशेषेण तत्तद्वर्णं भवेदयदा। मृदुलं चित्रसंस्कारं तद्बीजमिति कथ्यते ॥
(र.र.स. ८/३२)

5. **उत्तरणम् –**
इदमेवविनिर्दिष्टं वैधेरुत्तरणं खलु। संसृष्टलोहयोरेकलोहस्य परिणाशनम् ॥ (र.र.स.८/३३)

**23. Tāḍanam[1]–**

If one metal is destroyed from the two mixed metals by strong heating through Vaṅkanāla then that procedure is said as Tāḍana.

**24. Dhānyābhraka[2]–**

Black mica powder mixed with Śāli dhānya (paddy) and tied in cloth piece if kept in Kāñjika liquid for some time when comes out of cloth piece on forceful rubbing then that is known as Dhānyābhraka. It is a procedure for converting mica into fine powder form.

**25. Satva pātanam[3]–**

Minerals mixed with Kṣāra, Amla and Drāvaka drugs and heated strongly in Koṣṭhī yantra. When releases its Sāra (metal content) then that is known as Satva pātanam.

**26. Ekakolisakam[4]–**

While heating Mūṣā in a Koṣṭhi filled with burning charcoals the heated material when come up to Mūṣākaṇṭha due to intense heat that is known as Eka Kolisaka.

**Types of fuels used for various heating purposes[5]–**

For Drāvaṇa (melting) and Satvapātana (metal extraction) woods of Mādhūka and Khādira are best, for Durdrāva dravya

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1. **ताडनम् –**
प्रध्मातं वंकनालेन तत्ताडनमुदाहृतम् ॥ (र.र.स. ८/३४)

2. **धान्याभ्रकम् –**
चूर्णाभ्रंशालिसंयुक्तं वस्त्रवद्धंहिकाम्भिके । निर्यातंमर्दनाद्वस्त्रातद् धान्याभ्रमितिकथ्यते ॥
(र.र.स. ८/३५)

3. **सत्वपातनम् –**
क्षाराम्लद्रावकैर्युक्तं ध्मातमाकरकोष्ठके । यस्ततो निर्गतः सारः सत्वमित्यभिधीयते ॥
(र.र.स. ८/३६)

4. **एककोलीसकम् –**
कोष्ठिकाशिखरापूर्णैः कोकिलैधर्मानयोगतः । मूषाकण्ठमनुप्राप्तैरेककोलीसकोमतः ॥
(र.र.स. ८/३७)

5. **द्रावणादिषुकाष्ठ निर्देशः–**
द्रावणेसत्वपाते च माधुकाः खादिराः शुभाः । दुर्द्रावेवंशजास्तेतु स्वेदने बादराः शुभाः ॥
(र.र.स. ८/३८)

(very hard materials) woods of Vamśa (Bamboo tree) and for Svedana purpose (heating through boiling liquids) woods obtained from Badara (Zizyphus Jujuva linn) are considered good.

**27. Hiṅgulākṛiṣṭa Rasa[1]–**

Hiṅgulākṛiṣṭa rasa is that which is extracted from Hiṅgula (Cinnebar) after it is being triturated with Ārdraka rasa and applied heat through Vidyādhara yantra or Damaru yantra.

**28. Ghoṣākṛiṣṭa Tāmra[2]–**

Kāṁsya (Bell metal) mixed with little Tālaka (orpiment) and heated strongly through Vaṅkanāla when becomes free from Vaṅga (Tin metal) then the remaining Tāmra is known as Ghoṣākriṣṭa.

**29. Varanāgam[3]–**

Mix Tīkṣṇa loha with Nīlāñjana in equal parts, keep these in a Mūṣā and heat strongly and repeatedly. By this procedure if a soft, blackish and quickly melting metal is produced. Then that is known as Varanāga.

**30. Utthāpanam[4]–**

Metal reduced to ashes and mixed with Drāvaṇa drugs if it returns to its original metal form after one strong heating that is known as Utthāpana.

Utthāpana is a 4th Saṁskāra of mercury in which mūrcchita mercury (converted into finest globules and loss its form). Returns to its original mercury form, that is also known as Utthāpana Saṁskārita mercury. It is done by washing with hot water, hot Āranāla and by Pātana Saṁskāra.

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1. **हिङ्गुलाकृष्ट रसः–**
विधाधराख्ययन्त्रस्थादार्द्रकद्रवमर्दितात्। समाकृष्टोरसोयोऽसौ हिङ्गुलाकृष्टउच्यते ॥
(र.र.स. ८/३९)

2. **घोषाकृष्ट रसः–**
स्वल्पतालयुतं कांस्यं वंकनालेन ताडितम्। मुक्तरंगं हि तत्ताम्रं घोषाकृष्टमुदाहृतम् ॥
(र.र.स. ८/४०)

3. **वरनागम् –**
तीक्ष्णं नीलाञ्जनोपेतं ध्मातं हि बहुशोदृढम्। मृदुकृष्णं द्रुतद्रावं वरनागं तदुच्यते ॥
(र.र.स. ८/४१)

4. **उत्थापनम्** – See footnote A on the page 382

**31. Ḍhālana[1]–**

Pouring of melted material into any liquid is known as Ḍhālana

**32. Nāga Saṁbhūta Capala[2]–**

Thirty palas of Nāga (lead) ground with Arka dugdha (latex of calotropes), closed in Sarāva Saṁpuṭa and applied puṭa heating (by puṭa system). Go on repeating the Arka dugdha bhāvanā and Puṭapāka of Nāga till it remains only in one Karṣa quantity which will not loose its wt. further even after being heated with thousands of putas then that is known as Nāga Saṁbhūta Capala by the experts.

**Vaṅga Sambhūta Capala[3]–**

In the same way Capala could be made from Vaṅga (Tin metal) also.

**Action/Functions of Capala[4]–**

After touching the above mentioned Capala if a person touches Mercury with the same hand then mercury becomes Baddha (solid or thermostable) without the help of any other process or metal.

Mercury made solid as above is advised useful for the purpose of Dhātuvāda only and not for Rasāyana karma (internal use). It is the opinion of Lokanātha 'Kharvaṇa' Ācārya.

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A. **उत्थापनम् –**

१. मृतस्य पुनरुद्भूतिः संप्रोक्तोथ्यपनाख्यया। (र.र.स. ८/४२)

२. जलैः सोष्णारनालैर्वा क्षालनादुत्थितो भवेत्॥ (आ.प्र. १/६७)
अथवा पातनायन्त्रे पातनादुत्थितो भवेत्॥

३. अस्माद्विरेकात् संशुद्धो रसः पात्यस्ततः परम्।
उद्धृतः काञ्जिकक्काथात् ..... ॥ (र.र.स. ११/३६)

1. **ढ़ालनम् –**
द्रुतद्रव्यस्य निक्षेपो द्रवेतद्ढालनं स्मृतम्॥ (र.र.स. ८/४३)

2. **नागसम्भूतचपलः–**
त्रिंशत्पलमितं नागं भानुदुग्धेन मर्दितम्। विमर्घ पुटयेत्तावद् यावत्कर्षावशेषितम्॥
न तत्पुटसहस्त्रेण क्षयमायाति सर्वथा। चपलोऽयं समादिष्टो वार्त्तिकैर्नागसम्भवः॥ (र.र.स. ८/४४-४५)

3. **वंगसम्भूत चपलः–**
इत्थं हि चपलः कार्यो वंगस्यापि न संशयः। (र.र.स. ८/४६)

4. **चपल कार्यम् –**
तत्स्पृष्टहस्त्रसंस्पृष्ठः केवलोबध्यते रसः॥ (र.र.स. ८/४७)
स रसो धातुवादेषु शस्यते न रसायने। अयंहि खर्वणाख्येन लोकनाथेन कीर्त्तितः॥ (र.र.स. ८/४८)

**33. Dhauta[1]–**

After washing the Earth worm's feacal matter with water a blackish powder remains that is known as Dhauta by Rasavādins.

**34. Dvandvāna[2]–**

The mixing of two metals by strong heating is known as Dvandvāna.

**35. Anuvarṇa/Suvarṇaka[3]–**

When more portion of other metal is mixed in Gold etc. metals either for loosing or for improving colour that is known as Anuvarna or Suvarṇa.

**36. Bhañjinī[4]–**

Extinguishing of fire by pouring any liquid is known as Bhañjinī by Rasa śāstra experts.

**37. Cullakā[5]–**

Golden colour produced in the Loha (iron) or Tāra (silver) with Patańgī Kalka if lost after keeping it for some days is known as Cullakā.

**38. Patańgī Rāga[6]–**

The redness or yellowishness of Loha (metal) when goes by

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1. **धौतम् –**
   भूभुजङ्गशाकृत्तोयैः प्रक्षाल्यापहृतं रजः। कृष्णवर्णं हित्प्रोक्तं धौताख्यं रसवादिभिः॥
   (र.र.स. ८/४९)
2. **द्वन्द्वानम् –**
   द्रव्ययोर्मर्दनाद्ध्मानाद् द्वन्द्वानं परिकीर्त्तितम्॥ (र.र.स. ८/५०)
3. **अनुवर्ण/सुवर्णक –**
   भागाद् द्रव्याधिक क्षेपादनुवर्ण सुवर्णके। (र.र.स. ८/५१)
4. **भंजिनी–**
   द्रवैर्वा बह्निका ह्रासो भंजिनीवादिभिर्मता॥ (र.र.स. ८/५१)
5. **चुल्लका–**
   पतङ्गीकल्कतो जाता लोहेतारे च हेमता। दिनानि कतिचित्स्थित्वा यत्यसौचुल्लकामता॥
   (र.र.स. ८/५२)
6. **पतङ्गीराग–**
   रञ्जिताद्धि चिराल्लोहाद्ध्मानाद्वाचिरकालतः। विनिर्गतः स निर्दिष्टः पतङ्गीराग संज्ञकः॥
   (र.र.स. ८/५३)

keeping it for long time or by heating it strongly for long time is known as Patāṅgī rāga.

**39. Āvāpa[1]–**

The throwing or droping of other material in a melted metal is known as Āvāpa or Pratīvāpa.and the same is also known as Ācchādana.

**40. Abhiṣcka[2]–**

Pouring of water in a molten metal kept on fire after waiting for eight Nimeṣa (less than a second) is known as 'Abhiṣeka'.

**41. Nirvāpa/Snapana[3]–**

Droping of red hot metal (material) in water or liquid is known as Nirvāpa or Snapana.

Āvāpa[4] or Pratīvāpa etc. should be done when the metals are melted clearly.

**42. Śuddhāvarta[5]–**

Śuddhāvarta is a state of fire in which the flame becomes very bright and its upper end attains the whitness. It is indicative that now Satva is about to be released from the minerals.

**43. Bījāvarta[6]–**

In this state the colour of flame becomes just similar to the

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1. **आवापः–**
द्रुतेद्रव्यान्तरक्षेपो लोहाघेक्रियतेहि यः । स आवायः प्रतीवापस्तदेवाच्छादनमतमू ॥ (र.र.स. ८/५४)
2. **अभिषेकः–**
द्रुते बह्निस्थितो लोहे विरम्याष्टनिमेषकम् । सलिलस्य परिक्षेपः सोऽभिषेक इतिस्मृतः ॥ (र.र.स. ८/५५)
3. **निर्वापः–** तप्तस्याप्सु विनिक्षेपो निर्वापः स्नपनं च तत् ॥ (र.र.स. ८/५६)
4. **प्रक्षेपकाल निर्देशः–**
प्रतीवापादिकं कार्यं द्रुते लोहे सुनिर्मले । (र.र.स. ८/५७)
5. **शुद्धावर्त्तः–**
यदा हुताशो दीप्तार्चिः शुक्लोत्थानसमन्वितः । शुद्धावर्त्तः सविज्ञेय सकालः सत्वनिर्गमे ॥ (र.र.स. ८/५८)
6. **बीजावर्त्तः–**
द्राव्यद्रव्यनिभाज्वाला दृश्यते धमने यदा । द्रवस्योन्मुखतासेयं बीजावर्त्तः स उच्यते ॥ (र.र.स. ८/५९)

melting material. It is indicative of melting of material and known as Bījāvarta. It may be taken as primary to Śuddhāvarta.

The later indicates starting of melting of materials while former indicates releasing of Satva (metal content) from minerals. Extraction of Satva is only possible when mineral gets complete melting.

**44. Swāṅga Śīta[1]–**

Swāṅga Śīta is that in which cooling of material is acheived automatically with the extinguishing of fire (No external means have been applied to get it cool).

**45. Bahiḥ Śīta[2]–**

In this material becomes cool after removing it from fire and it is called Bahiḥ Śīta.

**46. Svedanam[3]–**

Heating of the drugs (metals/minerals) kept in Dolāyantra with boiling Kṣārīya or Amlīya (Alkaline or Acidic) medicinal liquids is known as Svedana. Here heat is applied to the materials with boiling liquids. The objective of this Svedana is loosening of malas of mercury etc.

**47. Mardanam[4]–**

Mardana is that in which grinding is done with prescribed drugs, (all the Amla drugs and Kāñjika) in a Khalva. Its objective is to destroy Bahirmalas. In case of Pārada Saṁskāra grinding is done preferably on Tapta Khalva.

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1. **स्वाङ्गशीतम् –**
   बह्निस्थमेव शीत यत्रदुक्तं स्वाङ्गशीतलम् ।
2. **बहिःशीतम् –**
   बह्नेराकृष्य शीतं यत्रद वहिःशीतमीरितम् ॥ (र.र.स. ८/६०)
3. **स्वेदनम् –**
   क्षाराम्लैरौषधैः सार्धं दोलायन्त्रे स्थितस्य हि । पचनं स्वेदनाख्यं स्यान्मलशैथिल्य कारकम् ॥
   (र.र.स. ८/६२)
4. **मर्दनम् –**
   उतिदैरौषधैः सार्धं सर्वाम्लैः काञ्जिकैरपि । पेषणं मर्दनाख्यं स्याद्बहिर्मलविनाशनम् ॥
   (र.र.स. ८/६३)

**48. Mūrcchanam[1]–**

In Mūrcchana also grinding is done with the drugs prescribed for the purpose till Naṣṭa piṣṭatva of drugs is acheived, with this procedure Nāga, Vaṅga and other Malādi doṣas are destroyed. This is the third procedure of Pārada Saṁskāra in which mercury is ground with the prescribed drugs till it looses its physical characters and divides into very fine globules (particles) i.e. till its form is lost.

**49. Utthāpanam[2]–**

In this procedure the lost form of mercury is regained by Svedana, Ātapa yoga and Pātana etc. treatments by doing so the effect of Mūrcchana is vanished.

**50. Naṣṭapiṣṭa Lakṣaṇam[3]–**

In Naṣṭapiṣṭa state mercury looses its form, and attains a form of Piṣṭatva (divides into fine powder (globules) form). (In this its form and characteristics are lost by grinding) It is called Naṣṭapiṣṭa.

**51. Patanam[4]–**

In this Pārada (mercury) is first ground with prescribed drugs then its paste is transfered in Urdhwa, Adhaḥ and Tiryak Pātana yantras and heat is applied. So it goes in different directions in the form of vapours. as per apparatus. It is known as Pātana. And with this procedure the Kañcuka doṣas of mercury obtained with the contact of Nāga & Vaṅga metals are destroyed.

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1. **मूर्च्छनम् –**
मर्दनादिष्टभैषज्यैर्नष्टपिष्टत्वकारकम्। तन्मूर्च्छनं हि वङ्गाहिमलादिदोषनाशनम्॥
(र.र.स. ८/६४)

2. **उत्थापनम् –**
स्वेदातयादियोगेन स्वरूपापादनंहि यत्। तदुत्थापनमित्युक्तं मूर्च्छाव्यापत्तिनाशनम्॥
(र.र.स. ८/६५)

3. **नष्टपिष्ट लक्षण–**
स्वरूपस्यविनाशेन पिष्टत्वापादनं हियत्। विद्वद्भिर्जित सूतोऽसौ नष्टपिष्टः स उच्यते॥
(र.र.स. ८/६६)

4. **पातन लक्षणम् –**
उक्तौषधैर्मर्दित पारदस्य यन्त्रस्थितस्योर्ध्वमधश्चतिर्यक्।
निर्यातनं पातनं संज्ञमुक्तं वङ्गाहिसम्यर्कजकञ्चुकघ्नम्॥ (र.र.स. ८/६७)

**52. Ro(Bo)dhanam[1]–**

In this mercury is kept in an earthen pot filled with Saindhava yukta jala (Saturated saline solution) for three days. This state of mercury induces Āpyāyana (induction of potentiation) in mercury properties. It is known as Rodhana or Bodhana.

**53. Niyamanam[2]–**

In This mercury is treated with Svedana karma to remove Capaltva (high mobile nature) doṣa of mercury which it developed by Rodana karma. It is known as Niyamana.

**54. Dīpanam[3]–**

In this procedure also mercury is subjected to Svedana in an earthen pot filled with Kāñjika mixed with certain metals, stony materials and herbal drugs, for three days. Its objective is to induce desire to consume more Grāssa (metals) added as Satvas.

**55. Grāsamānam[4]–**

So much mercury may consume so much Bhojya dravya (consumable metal) that is known as Iyatī/Grāsamāna.

**56. Jāraṇā Traividyatva[5]–**

Rasa experts have said that Jāraṇā have three stages i.e. Grāsa Cāraṇa, Grāsa Garbha drāvaṇa and Grāsa Jāraṇa.

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1. **रो(बो)धनम् –**
   जलसैन्धवयुक्तस्य रसस्य दिवसत्रयम्। स्थितिराप्यायनीकुम्भे याऽसौ रोधनमुच्यते ॥
   (र.र.स. ८/६८)
2. **नियमनम् –**
   रोधनाल्लब्धवीर्यस्य चपलत्वनिवृत्तये। क्रियते पारदे स्वेदः प्रोक्तं नियमनं हि तत् ॥
   (र.र.स. ८/६९)
3. **दीपनम् –**
   धातुपाषाणमूलार्घैः संयुक्तोघटमध्यगः। ग्रासार्थं त्रिदिनं स्वेदो दीपनं तन्यतं वुधैः ॥
   (र.र.स. ८/७०)
4. **ग्रासमानम् –**
   इयन्मानस्य सूतस्य भोज्यद्रव्यात्मिका मिति। ईयतीत्युच्यतेयाऽसौ ग्रासमानं समीरितम् ॥
   (र.र.स. ८/७१)
5. **जारणावस्था–**
   ग्रासस्य चारणं गर्भेद्रावणं जारणं तथा।

**Three stages of Jāraṇā**[1]**–** Grāsa, Piṇḍa and Parīṇāma

**Other types–** Samukhā and Nirmukhā.

**57. Bīja**[2]**–**

Śuddha Swarṇa and Rūpya is called Bīja.

**58. Mukha**[3]**–**

Adding 64th part of Bīja in mercury is said as Mukha.

**59. Samukhā Jāraṇā**[4]**–**

By adding 64th part of Bīja to mercury it becomes Grāsa lolupa (Greedy to consume grāsa) and Mukhavān and when mercury becomes Mukhavān it can consume even very hard Lohas (metals). It is said as Samukhā Jāraṇā.

**60. Rākṣasa Vaktra Pārada**[5]**–**

Mercury associated with Divyauṣadhies and appllied strong heat in open Koṣṭhies (furnaces) may consume all types of Lohas. And the same is known as Rākṣasa Vaktra Pārada.

**61. Cāraṇā Laksaṇam**[6]**–**

Addition of grāsa in Rasa (mercury) is known as Cāraṇā.

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1. इति त्रिरूपा निर्दिष्टा जारणावरखार्त्तिकैः ॥ (र.र.स. ८/७२)
ग्रासःपिण्डः परीणामस्तिस्त्रश्चाख्या परापुनः । समुखा निर्मुखाचेति जारणा द्विविधापुनः ॥ (र.र.स. ८/७३-७४)
2. **बीज–**
शुद्धं स्वर्णं च रूप्यं च बीजमित्यीमधीयते ।
3. **मुखलक्षणम् –**
चतुःषष्टयंशतो वीजप्रक्षेपो मुखमुच्यते ॥ (र.र.स. ८/७६-७७)
4. **समुखजारणा–**
एवं कृते रसो ग्रासलोलुपो मुखवान् भवेत् । कठिनान्यपिलोहानि क्षमो भवति माक्षतुम् ॥ (र.र.स. ८/७८)
5. **राक्षसवक्त्रलक्षणम् –**
दिव्यौषधिसमायोगात्स्थितः प्रकटकोष्ठिसु । भुञ्जीताखिलतोहाघं योऽसौ राक्षसवक्त्रवान् ॥ (र.र.स. ८/७९)
6. **चारणा–**
रसस्य जठरे ग्रासक्षेपणं चारणामता । (र.र.स. ८/८०)

### 62. Garbha Druti[1]–

Drāvaṇ (liquification) of added Grāsa in mercury is known as Garbha druti. Ordinarily it is difficult to acheive by simple methods.

### 63. Bāhya Druti[2]–

Making of druti (liquification) of Abhraka Satva, Mākṣika Satva etc. out side of mercury for the purpose of Jāraṇa in mercury is called as Bāhya druti.

### 64. Pañcadhā Druti Lakṣaṇāni[3]–

Druti of any material should have five characteristics. Nirlepatva (Non sticking) Drutatva (liquification), Tejastva (brightness), Laghutā (lightness), Asaṁyoga with mercury (it should not react with mercury).

### 65. Druti Swarūpa[4]–

Metals or minerals when convert into liquid form either by addition of some drugs or by strong heating or with both. It is not only the melting of any metal or mineral rather in this metal or mineral should always remain in liquid form while in melting these melt due to strong heating and become solid after cooling.

### 66. Jāraṇā Swarūpa & Bheda[5]–

Jāraṇā is that in which liquified grāsa added to Pārada becomes digested in mercury by the treatment with Viḍa dravyas or with the treatment with any Jāraṇa yantra. It has many types.

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1. **गर्भद्रुति–** ग्रस्तस्य द्रावणं गर्भे गर्भद्रुतिरुदाहृता ॥ (र.र.स. ८/८१)
2. **बाह्यद्रुति–**
   बहिरेव द्रुतं कुर्याल्लोहधात्वादिकं खलु । जारणाय रसेन्द्रस्य सा बाह्यद्रुतिरुच्यते ॥
   (र.र.स. ८/८२)
3. **पञ्चधाद्रुतिः–**
   निर्लेयत्वं द्रुतत्वं च तेजस्त्वं लघुता तथा । अ(सु)संयोगश्च सूतेन पञ्चधाद्रुतिलक्षणम् ॥
   (र.र.स. ८/८३)
4. **द्रुति स्वरूपम् –**
   औषधाध्मानयोगेन लोहंधात्वादिकं तथा । संतिष्ठते द्रवाकारं सा द्रुतिः परिकीर्त्तिता ॥
   (र.र.स. ८/८४)
5. **जारणास्वरूपम् –**
   द्रुतग्रासपरीणामोविड्यन्त्रादियोगतः । जारणेत्युच्यते तस्याः प्रकाराः सन्तिकोटिशः ॥
   (र.र.स. ८/८५)

**67. Viḍa Lakṣaṇam[1]–**

Viḍas are made with Kṣāras (Alkaline materials) Amlas (acidic materials), Gandhaka (sulphur) etc. minerals), Mūtras (eight types of urines), Paṭubhiḥ (five types of Lavaṇas (salts) for the purpose of Jāraṇa (digestion & assimilation) of grāsa (added as metallic contents) with mercury.

**68. Rañjana Lakṣaṇam[2]–**

By doing Jāraṇa of well treated Bījas and Dhātus (metals/ minerals) etc. as grāsa materials in side the rasa Pitādirāgajanana (production of yellow, red etc. colours) in mercury is known as Rañjana Saṁskāra of Rasa.

**69. Sāraṇā Lakṣaṇam[3]–**

Addition of Gold etc. Prakṣepa materials in a Mūṣā or apparatus filled with specially prepared oils and mercury is known as Sāraṇā. It is done to stimulate/activate vedha (Transformation/transmutation power in mercury). It is an essential pre-requisit procedure for inducing Vedha power in mercury.

**70. Vedha Lakṣaṇam[4]–**

For Vedha (Transformation of lower metals into higher metals) mercury associated with the drugs of vyavāyī property is added to the drugs (metals) to be subjected to Vedha is known as Vedha. It is of many types.

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1. **विडलक्षणम् –**
क्षारैरम्लैश्च गन्धाधैर्मूत्रैश्चपटुभिस्तथा । रसग्रासस्य जीर्णार्थं तद्विडं परिकीर्त्तितम् ॥
(र.र.स. ८/८६)

2. **रञ्जनलक्षणम् –**
सुसिद्धबीजधात्वादि जारणेन रसस्यहि । पीतादिरागजननं रञ्जनं परिकीर्त्तितम् ॥
(र.र.स.८/८७)

3. **सारणा लक्षणम् –**
सूते सतैलयन्त्रस्थे स्वर्णादिक्षेपणं हियत् । वेधाधिक्यकरं लोहेसारणा सा प्रकीर्त्तिता ॥
(र.र.स. ८/८८)

4. **वेधलक्षणम् –**
व्यवायि भेषजोपेतो द्रव्येक्षिप्तोरस: खलु । वेध इत्युच्यते तज्ज्ञै: सचानेकविध:स्मृत: ॥
(र.र.स. ८/८९)

**Vedha Bhedāḥ[1]–**

1. Lepa, 2. Kṣepa, 3. Kunta, 4. Dhūmākhya, 5. Śabda.

**A. Lepa Vedha Lakṣaṇam[2]–**

In this type any metal is converted to either Gold or Silver by paseting of Pārada treated with previous (Jāraṇa, Rañjana and Sāraṇa) Saṁskāras. Here Sauraka puṭa is advised to apply heat.

**B. Kṣepa Vedha Lakṣaṇam[3]–**

In this type Vedhan (Transformation of metal) is done by adding well treated Pārada in melted metal.

**C. Kunta Vedha Lakṣaṇam[4]–**

In this type treated (baddha) Pārada cought with forcep is immersed into liquified metals to convert metals into Gold etc. superior metals then that is known as Kunta Vedha.

**D. Dhūma Vedha Lakṣaṇam[5]–**

In this type treated Pārada is put in fire associated with fumes and if a metal is brought in contact of this mercury fume it converts into Gold etc. superior metals then it is called as Dhūma Vedha.

**E. Śabda Vedha Lakṣaṇam[6]–**

In this type a small piece of metal is transformed into Gold or

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1. **वेधप्रकारा–** लेप:क्षेपश्च कुन्तश्च धूमाख्य: शब्दसंज्ञक: । (र.र.स. ८/९०)
2. **लेपवेधलक्षणम् –**
   लेपेन कुरुते लोहं स्वर्णं वा रजतं तथा । लेपवेध: स विज्ञेय: पुटमत्र च सौरकम् ॥
   (र.र.स. ८/९१)
3. **क्षेपवेधलक्षणम् –**
   प्रक्षेपणं द्रुते लोहे वेध:स्यात्क्षेपसंज्ञित: । (र.र.स. ८/९२)
4. **कुन्तवेधलक्षणम् –**
   संदंशधृतसूतेन द्रुतद्रव्याहृतिश्च या । सुवर्णत्वादिकरणं कुन्तवेध: स उच्यते ॥
   (र.र.स. ८/९३)
5. **धूमवेधलक्षणम् –**
   बह्नौधूमायमानेऽन्त: प्रक्षिप्तरसधूमत: । स्वर्णाधापादनं लोहे धूमवेध: स उच्यते ॥
   (र.र.स. ८/९४)
6. **शब्दवेधलक्षणम् –**
   मुखस्थितरसेनाल्प लोहस्य धमनात्खलु । स्वर्णरूप्यत्वजननं शब्दवेध: सकीर्त्तित: ।
   (र.र.स. ८/९५)

Silver by blowing fire with mouth wind containing treated (solidified) mercury. It is called Śabda Vedha.

**71. Udghāṭanam[1]–**

Brightning of colour of transformed metal is known as Udghāṭana.

**72. Svedana Lakṣaṇa[2]–**

Keeping of well closed and Sealed bhāṇḍa (pot) containing Kṣāra (alkaline) and Amla (acidic) liquids and medicines underground is called Svedana. In this process Svedana (heating) of materials is done with underground heat.

**73. Sanyāsa[3]–**

Keep mercury and other Svedana drugs in the closed Bhāṇḍa (pot) carefully and kept on Culhi (containing mild fire) for sometime is known as Sanyāsa.

**Effects of Sveda and Sanyāsa[4]–**

Both these Sveda and Sanyāsa procedurs employed on mercury certainly improve its properties and effects to great extent and make it capable to spread quickly in the body tissues and organs.

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1. **उद्घाटनम् –**
   प्रकाशनं च वर्णस्य तदुद्घाटनमीरितम् । (र.र.स. ८/९६)
2. **स्वेदनम् –**
   क्षाराम्लैरौषधैः सार्धभाण्डं रुध्वाऽतियत्नतः । भूमौ निखन्यते यत्नात्स्वेदनं सम्प्रकीर्त्तितम् ॥ (र.र.स. ८/९७)
3. **सन्यासः–**
   रसस्यौषधयुक्तस्य भाण्डरुद्धस्ययत्नतः । मन्दाग्नियुतचुल्यन्तः क्षेपः सन्यास उच्यते ॥ (र.र.स. ८/९८)
4. **स्वेदसन्यास फलम् –**
   द्वावेतौ स्वेद सन्यासौ रसराजस्यनिश्चितम् । गुणप्रभावजनकौशीघ्रव्याप्तिकरौतथा ॥ (र.र.स. ८/९९)

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