wjpmr, 2023,9(7), 262-267

SJIF Impact Factor: 5.922

WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.wjpmr.com

Review Article

ISSN 2455-3301

WJPMR

SHODHANA & MARANA: NOT MERELY PURIFICATION & INCINERATION IN RASASHASTRA

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Article Received on 21/05/2023 **Article Revised on 11/06/2023** **Article Accepted on 01/07/2023**

ABSTRACT

Rasashastra can be defined as a science of study of minerals and metallic substances with respect to their therapeutic utility including processing of these substances to prepare a drug. It deals with the various pharmaceutical processes of Shodhan, Marana, Jarana, Murchana and other detailed descriptions of metals, minerals, poisonous drugs and animal products used therapeutically. Shodhana and Marana of the substance are done with some special processes and thereafter can be used therapeutically. Many types of drug preparatory method like Bhasma, Pishti, Parpati, Pottali, Kupipakva rasayana etc. are explained in Rasashastra. In simple line we can define Shodhana means purification and converting drug fit for further process as like Bhasmikarana (Incineration) and Maran can be defined as to make shodhit drugs in Bhasma form. Shodhit drugs can be administered directly or may be subjected to another process to enhance their potency like Maran, Amrutikaran, Satvapatan etc. These methods not only remove impurities of the raw drugs but also add some shodhit drugs properties also.

KEYWORDS: Shodhan, Purification, Marana, Bhasma.

INTRODUCTION

SHODHANA: The ancient Ayurvedic Texts like Charaka Samhita have defined the concept of Shodhana. It said that Karana (Processing) is the refinement of the natural products which means imparting other properties. These properties are infused by eight ways, one of them is Shauca (Cleansing). The concept of Shodhana treatment was highly accepted by the pioneer of Rasashastra (8th Century A.D.) especially for the purification of Herbo-mineral and Poisonous drugs. The purification treatments were basically meant to reduce the toxicity level to a body-sustainable limit. The Shodhana process described in classics of Ayurveda is not merely a process of separation, purification or detoxification rather it increases the therapeutic potency of the drug also. The Shodhana treatments include medium of acidic nature (e.g. Lemon, Butter-milk, Kanji), alkaline nature (e.g. Curnodaka) and of neutral nature (e.g. water). These treatments are performed with or without the help of heat given for a specified time. Before subjecting any Rasadravyas for its next stage Marana, the first and the foremost important step to be performed is Shodhana. Processing the substance along with the specific indicated Shodhana dravyas through the procedure like Peshana (triturition) etc. so as to remove the Malas from the substances, is called as Shodhana.[1] Shodhana means removing of doshas and increased its potency also.

Types of Shodhana

Two types of Shodhana are described in our Rasagranthas

1. Samanya Shodhana
2. Vishesha Shodhana

1. Samanya Shodhana: It is used as general procedure for Shodhana of all drugs of a particular group, in other words these drugs should be purified individually through the same Shodhana procedure. With the help of Samanya Shodhana general impurities can be removed. e.g., Samanya Shodhana of Dhatu varga.

2. Vishesha Shodhana: It is used as specific procedure for particular drug material individually, not for a group. After performing Samanya Shodhana, Vishesha Shodhana has to be applied for deriving some special Gunas i.e. qualities. Each drug of the Rasa varga may have different types of impurities. Which can different from one to another and it may be removed by Vishesh Shodhana.

Other type of Shodhana is also mention

Saagni Shodhana: In this type of method we use fire or Agni for shodhana eg. Nirvapa, Dhalana, Bharjana, Puta, Swedana, Patana.

Niraagni Shodhan: In this type of method we do not use fire or Agni for shodhana eg. Bhavana, Prakshalana, Shoshana, Sinchana, Nimajjana, Gharshana.

Media Used For Shodhan The use of specific media for particular drugs has its own importance. There are so many different medias are mention in Rasa-shastra text books. Media has play a specific role in Shodhana, due to this we remove toxic impurities and make physical transformation.

Table 1: Showing Different Medias used and its effect in Shodhana.

S.N.	Media	Example	Effect
1	Sneha varga	Dugdh, Taila, Ghrita	-Fat soluble impurities are dissolved in media - Metal sheets are heated and dipped in the oils then metal may get dissociated and oil molecules comes in contact with the metal sheets by which the fat-soluble impurities dissolved in the oil.
2	Amla varga	Nimbu, Kanji, Takra etc.	Amla rasa is having dissociative property by which it softens the drug under purification
3	Katu varga	Bhringaraja, Haritaki etc.	Katu rasa has Lekhana, Ruksha, properties. With the help of such qualities, Katu rasa may shows its effect on Sodhana Dravya
4	Tikta varga	Vasa, Shirisha etc.	Due to Ruksha properties of Tikta rasa, these vargas are absorbent of Moisture, causes coarsen less in channels, produces Lekhana karma.
5	Kashaya varga	Vibhitaki, Kanchanara etc.	The main properties of Kashaya rasa are Shoshaka i.e., absorption
6	Kshara varga	Kadali kanda, Mutra etc.	Kshara varga drugs absorb watery part and oily part. It also helps in dissociation of molecules and softens the metals and makes them Bhangura.
7	Lavana varga	Saindhava, Vida, Samudra etc.	Sarvaloha Dravana and Shodhana
8	Dravaka varga	Guda, Guggula, Gunja etc.	For soften and liquation

Importance of Shodhan

- Elimination of physical and chemical impurities, which are not desired
- Fully eradication or minimization of toxicity of the material
- Transformation/Changing of the hard material in to soft and brittle material
- Induction/addition of desired qualities i.e. Gunavardhana
- Potentiating of therapeutic efficacy of the drug material to fit for internal use
- Conversion of the material in suitable form for further processing like Marana
- Leads to unique and suitable physio-chemical changes
- For direct therapeutic uses in some cases after Shodhana
- To make heterogeneous material in to homogeneous material

Changes During/After Shodhana Process

- **Elimination of physical impurities:** Some drugs are separated from insoluble physical impurities.
- **Reduction in hardness:** By repeated heating and quenching and other process hardness of the metals and minerals becosme less.
- **Increase brittleness:** By repeated heating and quenching in liquid media, cracks are seen on the surface of metals and minerals and these become brittle.
- Reduction in particle sizes of materials
- Elimination/reduction of chemical impurities
- **Formation of chemical compounds:** Makshika when fried, sulphur is eliminated and iron and copper part convert into oxide form. So, after Shodhana formation of some chemical compounds take place.
- **Change into desired compound:** During Shodhana of Tankana and Kankshi, water portion is evaporated and desired chemical compound is formed like crystalline to amorphous form.
- Increase its biological availability
- Potentiate its biological efficacy.
- Helps in absorption, smoothness leads to non-irritability and all changes make the drugs body friendly.

Shodhana Procedures

Table 2: Showing Procedures involved in Shodhana.

S.N.	Procedures	Purpose/Probable action
1	Abhisheka (Sprinkling)	To make brittleness and softness
2	Aachushana (Absorption)	Absorption of impurities in different media
3	Aatapa / Agni Shoshana (Drying)	Absorption and drying of impurities and some oily things also
4	Bharjana (Frying or roasting)	Evaporation of water and remove oiliness
5	Bhavana (Levigation)	Reduction of particle size
6	Dhalana (Melting and quenching)	Separation of adulterants and reducing brittleness
7	Galan (Filtration)	Separation of adulterants and heterogeneous substances
8	Mardana (Trituration)	Particle sizes became homogenous, due to addition of medicine causes an agonistic effect
9	Nimajjana (Dipping in liquid media)	Removal of impurities in liquid media, higher concentration to lower concentration takes place
10	Nirjalikarana (Evaporation of water)	Evaporation of water
11	Nirvapa (Heating and quenching)	To make brittleness and softness
12	Pachana	To make softness and reduce stickiness
13	Patana (Sublimation)	Separation of adulterated things
14	Prakshalana (Washing)	Removal of dust and spurious material
15	Prithakikarana/Vibhag (Separation)	Separation of unwanted parts
16	Swedana (Boiling under liquid media)	To remove toxicity and impurities and make it soft
17	Vibhag (Remove)	Removal of adulterants
18	Samyog (Addition)	Addition of medicinal properties

MARANA: Marana is an indigenous process of Rasashastra in which metals and minerals are converting in to Bhasma form. This process is also called Bhasmikarana. Marana is a process by which, raw materials like metals, minerals and gems etc. are converted into a micro fine, tasteless, non-hazardous, acceptable & absorbable form, which can be used as a medicine.

Definition of Marana: Marana is the process where Loha, Dhatu etc. have undergone Shodhana previously are triturated with Bhavana drugs swarasa and then whole mixture is subjected to agni, which yields very fine powder and this process is called Marana. According to Rasatatanginikara,[2] when Dhatus are processed with Gandhakadi aushadhi dravyas through various systematic steps they attain the state of Bhasma which is having capacity to eliminate the diseases, and this whole process is called Marana.

Historical Background

In Vedic Kala

In Atharvaveda here is description of internal use of Swarna.

In Samhita kala

Aacharya Charaka has mentioned a method for the internal use of Lauha, including other metals. In this process, the red hot, thin lauha leaves were immersed into Triphala kwath, Gomutra, Herbal Ksharasa etc. When the iron is converted into blackish made it in to powdered form. He has also described about powder of Suvarna, Rajata, Pravala, Tamra etc. in so many yogas. Acharya Sushruta has described about Ayaskruti. Ayaskruti is a little more modified form. In which the thin leaves of Lauha etc. should be coated with Lavana Varga and heated with cow dung cakes, then is to be immersed into decoction of Triphala Kwath and again heated in khadiragni and lastly it may convert in to fine powder. Acharya Vagbhata has also adopted above mentioned process and described about Andhamusha.

In Rasa-Kala

Rasarnavakara has mentioned detailed description regarding to the Marana of different metals and minerals. It has also mentioned various equipment like Musha and Puta. Thereafter so many Rasacharyas have described about metals, minerals Marana and their Bhasma.

Types of Marana[3]

In Rasashastra texts four basic types of Marana processes used for metals. They are as follow:

- With the help of Rasa Bhasma i.e. Shreshtha
- With the help of Plant materials i.e. Madhyama
- With the help of Gandhaka & Gandhaka containing materials i.e. Kanishtha
- With the help of Ariloha i.e. Durgunaprada

The best process is that, where Rasa Bhasma is used for Marana process.

Necessity of Marana

According to Rasavagbhata[4] Ratnas, Uparatnasa, Loha, Varatika, Shukti, Khura, Shringa etc. when converted in

to bhasma form they give up their Kathoradeha (Hardness) and achieve the status equivalent to Suta.

Marana Process

We can divide Marana process in to three main steps, these are:

1. 1st Step: It can be divided further in to three processes

- Mardana and Bhavana (Trituration & Lavigation)
- Chakrikakarana (Pelletization)
- Sharava samputikarana

Mardana and Bhavana

Mardana: Mardana enhances the properties of Dravyas. It is the process of trituration of drugs to a fine state of division with or without prescribed liquid media.

Rasa Vagbhata has described Mardana under Parada samskara as - Processing parada with the indicated aushadhi dravyas along with various amla dravyas mixed with Kanji through the Peshana i.e. trituration process is termed as Mardana.

Bhavana: Bhavana is an important process to be performed during Marana process. Acharya Charaka has described that, for enhancing the bala (potency) of aushadhi dravya, Bhavana of swarasa of specific Dravyas is given. Thus, the subhavita dravya can work efficiently even in small quantity. For the purpose of Bhavana, swarasa can be of the dravya having same virya that of Bhavya dravya or it can be of the same i.e. of Bhavya dravya.[5]

Definition of bhavana

- When powder of any substance like dhatu, maharasa etc. is grind with specific liquid till it soaks the liquid completely and become dry, then the process is called as Bhavana.[6]
- Bhavana dravyas is added to the substances in daytime and placed in sunlight for drying purpose. Then it is kept over knight for complete soaking in that powder. This procedure is repeated for one week. Such a process is called as Bhavana.[7]

Quantity of bhavana dravya

- The amount of Dravyas i.e. liquid to be added in the Bhavya dravya should be such that it should sufficiently soak the Bhavya dravya.[8]
- For Bhavana process where is Kwath is indicated, the kwath should be prepared by adding eight times water to the indicated churna and heating the mixture to reduce it up to 1/4th of its quantity. Such prepared Kwath should be utilized for Bhavana.[9]

Importance of Bhavana

- ☞ Particle size became smaller and smaller after each Bhavana.
- ☞ Shodhita materials and Bhavana dravyas are come in close contact to make a homogenous mixture.
- ☞ Bhavana dravyas acts like a binding material for the pellet formation stage.
- ☞ By using particular Bhavana dravya one can induce the desired therapeutic efficacy in to the end products.

Shubhavita & Durbhavita: After bhavana if bhavita material becomes sticky when pressed with fingers and soft in touch, it should be considered Subhavita. On the contrary, if the bhavita material is not formed properly, the edge becomed long on pressing and if it is rough in the touch, it should be known as Durbhavita.

Chakrikakarana (Pelletization)

In this process Bhavita and Mardita Dravyas are subjected to pellet formation for achieving following objectives:

- ☞ It facilitates the drying process so that the duration will be less.
- ☞ By forming pellets one can adjust higher amount materials in to a limited space of sharavas.
- ☞ It helps to spread homogenous heat to each particle of the material.
- ☞ It enhances the surface area of the materials to allow maximum heat transfer during puta process.
- ☞ It helps to counter act the loss of prepared drugs after successive puta with advantage of easy handling.

In this process size of pellets should be small and not too thick.

Sharavasamputikarana

Joining the two joints of two vessels is called Sandhibandhan. In Rasashastra, where substances have to prove by the action of fire, there is need for sandhibandhan at most such places. Most of the vessels are made of clay and some of metals also. The purpose of Sandhibandhan is the safety of the vessel, safety of material contained in sharava. Putting two vessels of the same metal or clay face to face and joining the joint edge to edge and tying its joint with a piece of cloth is called Sharavasamputikarana. In this process above dried pellets are kept in to sharava and with the help of another sharava and help of mud and cotton cloth sandhi bandhana is made to prepare sharavasamputa. Due to this process ash produced by fuel could not be contaminate with materials.

2nd Step: This step can be named as Puta, it is the most important process of Marana.

Puta is the measure of heating arrangement for preparing various kinds of Bhasmas of Maharasa, Uparasa, Sadharana rasa, Dhatus etc.

Definition of Puta

The term which indicates the exact state of Paka of the Rasadi dravyas is called as Puta. Incomplete or hyper processed state of paka is not appreciated.[10] The term indicating the right amount of Paka of Rasa, Uparasa, Loha etc. when they are heated using cow dunk cakes is called as Puta.[11]

Necessity and advantages of Puta

- ✓ According to R.S.S. Puta is indicated in the preparation of Bhasma as it helps to eliminate Doshas from the Bhasma as well as enhances Gunas of Bhasma.[12]
- ✓ Rasa Taranginikara has described that Puta is indicated for the Rasa, Uparasa, Lohas etc. as it eliminates the Doshas and enhances Gunas. Due to Putapaka, Bhasma of Lohas aquires the properties like Niruttatwa, Deepana and Varitara properties.[13]
- ✓ As more and more Putas are given to the Bhasma, thousand times Gunas goes on adding to it.
- ✓ After giving a greater number of Putas, Bhasma acquires its specific colour.[14]
- ✓ Puta provides heat in definite amount and for definite time.

3rd Step: This is the final and last step of Marana process. This process can be divided in following ways

Trituration of Marita pellets – After Puta's final step, take chakrikas and make in to very fine powder.

Bhasma Pariksha – We can analyse this Bhasma by Ayurvedic and Modern parameters. This is most important to establish its importance on globally it is necessary to analysed them.

Ayurvedic parameter i.e. Varitara, Rekhapurnatva, Apunarbhava, Slakshanatva, Gatarasatva, Varnam etc.

Modern parameter i.e. pH, Loss on drying, Ash value, Water soluble ash, Acid insoluble ash, XRD, AAS, SEM etc.

Importance of Marana

- Metals and Minerals are converted in to Ash/Bhasma.
- Due to Marana Heaviness, Hardness, Roughness of drug is converted in to Lightness, Softness and Smoothness respectively.
- Marita drug became proper Adoptable, Absorbable and Assimilation
- Guna (Properties) of particular marita drugs increases
- Quick effectiveness in contrast of Herbal drugs
- To change physical characters
- To change chemical characters
- To induced various properties in same raw materials
- To convert the material into suitable compound form which are free from undesired effect & effective for humans being
- To make macro particle in to micro particle

DISCUSSION

Rasa-Shastra is a branch of Ayurveda which deals with knowledge of alchemical and pharmaceutical processes and Shodhana, Marana, Jarana etc. processes of different Metallic, Mineral, Calcium substances and Poisonous herbal drugs. Treatment with Rasausadhi was considered to be superior in comparison with vegetable drugs and surgical procedures. Most of the raw materials used in Rasasatra are obtained from the Earth. So, there is strong possibility of impurities, toxicity, heterogeneous qualities, mixing of other substances and unwanted qualities to large extent. In Rasa-Shastra, two types of Shodhana are mentioned i.e. Samanya Shodhana and Vishesha Shodhana. Samanya Shodhana is used as general method for Shodhana of all drugs for a particular group e.g. Taila, Takra, Gomutra etc for Samanya Shodhana of Dhatu vargas and Sadharana Rasa by Matulunga, Aadraka swarasa. Vishesha Shodhana is used as specific method for particular drug material, not for a group e.g. Shilajita shodhana by Triphala Kwatha and Kasisa shodhana by Bhringaraja swarasa. Trituration of the material, completely soaked in prescribed liquid media, till the liquid is completely evaporated and the material is dried, is termed as 'Bhavana'. Sometimes the material may be soaked and left for drying on its own without grinding. 'Shuddha dravya', the end product of 'Shodhana' process is a basic raw material in the process of 'Marana'. This basic raw material is subjected to wet grinding in the juices or decoctions of prescribed plant material. The wet grinding is stopped when the contents in the grinder are converted into dough. The dough is then making into pellets of required size. The pellets are preferably air/sun dried and then subjected to further processing i.e. 'Marana'. The meaning of Marana is "To Kill". In Rasa-Shastra Marana represents the process of Bhasmikarana, means to make Rasa dravyas in Bhasma form. According to Acharya Yadavji Trikamji "The procedure which converts shodhita metals and minerals in to Bhasma form after subjecting them to Levigation with swarasa and Agni samyoga is called Marana". About the history of Marana, Atharvaveda has mentioned Swarna for internal use as therapeutic purpose. Acharya Charaka has mentioned a method for the internal use of iron and other metals. Acharya Sushruta has described Ayaskruti. Ayaskruti is a little more modified form. Aacharya Vagbhata has also adopted above mentioned process. In Rasa-Shastra Rasarnava has given detailed description regarding the incineration of different metals and minerals. He has also mentioned various equipments like Musha, Puta etc. During Bhavana, the physical form of the material is changed when stress in the form of friction is applied. It is observed that finer particles are achieved. During Putapaka, final change in the physical form of the material takes place. Puta helps to eliminate Doshas from the Bhasma as well as enhances Gunas of Bhasma. During rubbing in Khalva some heat is produced, so there might be possibility of occurrence of chemical reaction in between material and media or in between materials. After Marana the metals and minerals are generally converted in to their compound form, which are become biologically favourable to the body. The process starting from 'Bhavana' to the completion of Marana/Putapaka (incineration) constitutes one 'Puta'. This Puta process needs to be repeated till a fine powder i.e. 'Bhasma' of required quality is obtained. Usually, number of Putas are required to prepare 'Bhasma' of

required quality are prescribed by the texts, however if the 'Bhasma' fails to pass through the prescribed tests at the end of prescribed number of Putas, the Marana process needs to be continued further till 'Bhasma' passing through all the tests is obtained.

CONCLUSION

In Rasa-shastra there are so many groups of medicines as like Maharasa, Uparasa, Lauhadi varga, Ratna varga, Visha varga etc has possesses different types of impurities in their crude form (ashuddha form) which is harmful for body if taken internally, so Shodhana of these drugs is essential for further use. Shodhana is a process of removal of impurities from substances by means of pharmaceutical processing of swedana, mardana, peshana etc, some properties may be added which is quite essential for further drug procedures or for therapeutics and make drug suitable for further process as like Marana. Shodhana in Rasa-shastra is not merely a process of purification but also a process to enhance the potency and efficacy of the drug. After Shodhana of drugs it is necessary for some drugs to make them in Bhasma form and that process is called Marana or Bhasmikaran. There are so many tools or techniques are mention according to Ayurvedic and modern parameter to examine bhasma, which is need of present era. So Shodhana and Marana play an important role in Rasa-shastra and Ayurveda also.

ACKNOWLEDGEMENT: Nil.

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