Pharmaceutical fortification of Rasoushadhies for their better clinical utility

Shiv Om Dixit,1 Vatsalya DG,2 Ravindra Angadi,3 Ashok Kumar B.N.4
1,2 Post Graduate Scholar, 3,4 Associate Professor, Department of Rasashastra and Bhaishajya Kalpana, SDM College Of Ayurveda, Udupi.

ABSTRACT

Ayurveda is known to be the oldest system of medicine whose virtue of holistic approach towards life attracts the attention of people worldwide. Ayurvedic formulations are conjuncture of herbal, mineral/metal and animal origin drugs. To effectuate therapeutic properties in these raw drugs, they are subjected to different pharmaceutical procedures (Samskaras). The fate of the drugs is predominantly decided by these procedures only. In the case of medical emergencies as well as in the management of critical diseases drug which brings about hastened relief in subordinate dose and dosage is endorsed. In Rasashastra, metals and minerals are subjected to different Samskara like Shodhana etc to beget the properties like ‘Alpa Matra Upyogitvad’ and ‘Kshipram Aarogyam Daayitvad’ in them. The concept of incineration or Marana is the process which brings the particle size into nanometre range which makes the metal into absorbable and assimilable form. The present paper deals with the different pharmaceutical procedures which impregnate these properties in the rasa dravyas and make them suitable for use in various clinical manifestations.

Key words: Rasausahadhis, Samskara, Shodhana, Marana.

INTRODUCTION

Rasashastra is an offshoot of Ayurveda that flourished during the medieval period. The formulations of Ayurveda consists substances of herbal, mineral/metal and animal origin drugs which are processed pharmaceutically to have therapeutic effects. Rasashastra mainly explores the utilization of metals and minerals for medicinal purposes. It is understood that the term Rasashastra denotes Parada i.e. mercury (Hg), Maharasa, Uparasa, Sadharana Rasa but the term Rasa also includes incinerated or killed metals and poisonous tubers. Hence the formulation which consists above as one of the constituent can be termed as a Rasaoushadhi.

These Rasoushadhis are known to have properties like quicker and hastened action at subordinate dose and dosages. Furthermore, they are tasteless and hence don’t produce any complication like nausea and are more palatable.[1]

The presentation of clinical conditions varies from an acute onset to a long term chronic graveness. The acute onset of certain manifestations can be termed as medical emergency which require prompt management, often termed as critical care. A medical emergency is an acute injury or illness that poses an immediate risk to a person’s life or long term health. These emergencies require instant assistance and treatment. While at the same juncture critical care medicine is defined as the branch of medicine concerned with the diagnosis and management of life threatening conditions requiring sophisticated organ support and invasive monitoring.[2] Such conditions
require quicker management. *Rasaushadhis* can prove to be a better choice in such conditions.

*Rasaushadhis* not only prove their potential in the management of the acute conditions but their action is well established in the treatment of the chronic diseases. They are known to be beneficial in the cases of diseases which are considered to be incurable. These attributes of *Rasaushadhis* can be expected because of the different pharmaceutical procedures to which they are exposed to. Present paper is an attempt to review these procedures and their role in making these preparations more efficacious.

**Concept of Shodhana**

*Shodhana* is a process of purification and detoxification by which physical and chemical blemishes and toxic materials are eliminated or nullified after which the substances are made suitable for further proceedings. [3]

**Procedures of Shodhana**

*Shodhana* is a definitive term which includes many meanings in it. In simple words it defines many procedures which are helpful in the removal of blemishes from any drug. The selection of these procedures depends upon the drug and the impurities present in it. The examples of few of the procedures utilised for *Shodhana* are tabulated in table -1.

**Table 1: Table showing the procedure utilised for Shodhana.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the procedure</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Bhavana</td>
<td>Hingula Shodhana[5]</td>
</tr>
<tr>
<td>5.</td>
<td>Mardana</td>
<td>Parada Shodhana[8]</td>
</tr>
<tr>
<td>7.</td>
<td>Nirjalikarana</td>
<td>Sphatika Shodhana[10]</td>
</tr>
<tr>
<td>10.</td>
<td>Swedana</td>
<td>Shankha Shodhana[13]</td>
</tr>
</tbody>
</table>

**Concept of Marana**

The process which converts the purified metals and minerals into *Bhasma* form after subjecting them to levigation and incineration is called as *Marana*. [14]

**Procedure of Marana**

*Shodhita Dravya* is mixed with the drug for incineration i.e. the *Maraka Dravya* and *Bhavana* is given with the specified liquid for the specified period of time. After observing the *Subhavita Lakshana*, [15] pellets i.e. *Chakrika* are prepared from the doughy mass. After complete drying they are kept in an earthen saucer i.e. *Sharava* and covered with another saucer and the junction between the two is sealed with mud. This junction is then covered by seven layers of mud smeared cloth. Each layer is applied after the preceding one gets completely dried. This is called as *Sharava Samputa*. [16] This is then subjected to *Puta* [17] i.e. the quantum of heat applied for incineration. After self cooling, the *Samputa* is opened and the pellets are ground to powder form. Then again this process is repeated till the specified *Bhasma Pariksha* [18] can be appreciated in the prepared *Bhasma*.

**Rationale behind Shodhana**

The key point in *Shodhana* is that specific media is used for *Shodhana* of each *rasa Dravya*. At the same juncture different *Shodhana Dravya* are told for the same *Rasa Dravya*. Selection of these *Shodhana Dravya* should be done considering the expected therapeutic efficacies of the drug.

Sometimes *Shodhana* medium acts like solvent, to dissolve the material for easy separation from the insoluble impurities as in *Guggulu* and *Navsadara Shodhana*. [18] At some other instances *Shodhana* medium acts to remove or eradicate toxic chemical substance from the drug, eg. *Manahshila* i.e. native realgar is found along with white arsenic (*As₂O₃*) which is a highly toxic substance. This white arsenic
dissolves readily in alkaline solutions and here Choornodaka acts to eradicate highly toxic As$_2$O$_3$ from Manahshila.\[19\]

Some materials are used directly in therapeutics after Shodhana wherein media may have some organic and inorganic active principles which have important role to play in the body. In addition to this, Shodhana medium helps in physical transformation of some metals and minerals. In Nirvapa process repeated heating and quenching in liquid medium causes brittleness, breaking and size reduction of the metals and minerals.\[20\]

The objective of these physico-chemical changes of material is to increase its biological availability, i.e. to potentiate its biological efficacy. Reduction in particle size helps in absorption, smoothness leads to non-irritability and all chemical changes make the material cell friendly.

**Rationale behind Bhavana**

Bhavana process increases the therapeutic activity of the material. Organic components of the liquid media are transferred to the material to make it organo-metallic or organo-mineral compounds, which are favourable to the body. Attrition caused by the pestle and mortar further leads to size reduction and makes the material ready for quicker absorption.

**Rationale behind Marana**

The process of Marana is responsible for numerous changes which transforms these materials to a magnificent medicine. In brief these probable changes can be enumerated as under;

- Reduction in particle size.
- Conjugation of trace elements.
- Elimination of unwanted elements.
- Formation of desired compounds.
- Physical entity of the same chemical compound changes.

**Attributes of Bhasmas**

All Bhasmas have common properties like Rasayana, Yogavahi etc. Rasayana probably indicates immunomodulation and anti-aging properties and Yogavahi indicates ability to carry the drugs to the cellular level and impart targeted drug delivery at the desired site of action by the Bhasmas. Under Rasibhavana,\[21\] properly prepared Bhasma must be readily absorbable in the body and will be non-toxic. Shighravyapti indicates that after Marana, Bhasma becomes easily absorbable and assimilable in the body. Under Agnideepana, Bhasma probably increases the metabolism at cellular level and may also act as a catalyst.

These attributes of Bhasma are comparable with the action of nano-particles in the body. These are biodegradable, biocompatible and non-antigenic in nature.

**Bhasmas as Multi-Elemental Cocktail**

Bhasmas based on calcium, iron, zinc, mercury, silver, arsenic, tin and gemstones are analysed for elements including carbon, hydrogen, nitrogen and sulphur contents. In addition to major constituent element found at percentage level, several other essential elements like sodium, potassium, calcium, magnesium, molybednum, iron, copper and zinc have also been found in micrograms per grams amount. These seem to remain chelated with organic ligands derived from organic medicinal herbs.

**DISCUSSION**

The concept of Shodhana as said earlier includes different procedures which are considered to remove or nullify the toxic effects and the impurities from the drugs. Furthermore, it also helps in increasing the efficacy of the drug. This can be explained by giving an example of Vatsanabha Shodhana where in, it is said to be cut into small pieces and soaked in gomutra and kept under sunlight for seven days. Here cutting Vatsanabha into small pieces increases the surface area for the absorption of Gomutra. Gomutra being an alkali by nature may remove or reduce the effect of aconite present in Vatsanabha by either chemically reacting with it or altering the physical form of aconite to a non-toxic one. Probably certain amount of heat is required to facilitate the reaction or to bring about the change in the physical form. This could be the probable reason behind keeping it under sunlight.
Gomutra probably helps in increasing the efficacy of the drug also.

Similarly for Guggulu Shodhana different media have been mentioned which when used for its purification can be used in different sets of diseases. The usage of these particular media implies the ability of it to reduce the toxic effect as well as improve or enhance the therapeutic effect of the drug when administered in specific disease.

Gandhaka is told to be purified by the procedure called Galana i.e. filtering through a cloth smeared with ghee into the milk. Filtering it through a cloth removes the external impurities present in Gandhaka. The application of Ghrita may help in either nullifying the impurities or transforming them to a state which is soluble in milk. Moreover, Ghrita being Yogavahi imparts its properties to Gandhaka and makes it more efficacious. With these points in mind it can be inferred that this method of purification makes Gandhaka free from both chemical and physical impurities.[22]

If we look into the concept of Marana, the general procedure is to heat the drug in a Sharava Samputa which is sealed by seven layers of mud smeared cloth. This sealing does not allow the oxygen to enter and the formation of desired compounds of the drug and change in the physical entity of the same chemical compound may take place under the low supply of oxygen. The same procedure when repeated several times may probably transform the drug into a form suitable to the body by formation of desired compounds and changing the physical form of the drug.

Jarana is another procedure used for the drugs/metals with low melting point which when given heat may melt and will not form into Bhasma. Hence these drugs are first converted into powder form for easy processing of incineration. The Marana of Naga and Vanga are carried out by this method. Once the metal is melted, powders of drugs like Apamarga, Pippali etc. are added in one fourth quantity to that of the metal and heated to red hot. Later it is allowed to cool and the product so obtained is used for further Marana procedure by subjecting it to Bhavana and Puta. The drugs explained for the purpose of Jarana probably increase the melting point of the metal thereby making it to tolerate the heat given during incineration and to convert it to Bhasma form.[23]

Hence all these procedures used for the transformation of the drugs in to a suitable form are inter linked with each other which helps in improving the therapeutic efficacy of the drug step by step and as all the procedures involves size reduction of the drug to minute particles it probably helps to gain properties like Yogavahi, Sheegragami, Rasayana etc. which makes the medicine very potent and makes it useful for the critical care in both acute and chronic manifestations.

CONCLUSION

The enormous complexity of human body offers scope to conceptualize its dynamic organisation in a number of ways such as structural, biochemical, functional etc. Ayurveda understands the human body from the perspective of functions like Tridoshas. This view point itself helps in the better management of the illness caused by any origin. Moreover the Rasaushadhis due to various Samskaras as discussed earlier helps in curing the disease not merely by relieving the symptoms but by giving target oriented action. This is achieved with the use of particular Anupana which in turn helps in the quicker absorption and prolonged action of the drug. Due to these attributes of the Rasaushadhis, their pertinence in the management of both acute and chronic manifestations is proven. Likewise the use of Rasaushadhis as the critical care medicine and emergency medicine has now become the need of the hour.

REFERENCES

Shiv Om Dixit et.al. Pharmaceutical fortification of Rasoushadhies for their better clinical utility.

ISSN: 2456-3110


Source of Support: Nil, Conflict of Interest: None declared.