ABSTRACT
Ayurvedic pharmaceutics depend upon various technical application in different stages and these different stages are called ‘Sanskara’ in Ayurvedic term. Accharya Charaka has defined Sanskara as the transformation of inherent properties of drugs. Various methods are employed for this purpose among them Bhavana is most important factor which is implemented for Shodhana, Marana and to enhances the therapeutic efficacy. It is a very common pharmaceutical process by which the drug or drugs are soaked or lavigated in a liquid media like Swarasa, Kwatha etc by which the powdered drugs become the soft mass. It has various definitions throughout the texts. As per Charaka Samhita, liquid used for Bhavana should be equal or similar in properties and potency as that of Bhavya Dravya. It is the basic concept between the Bhavana and Bhavita dravya for Samyoga. The desired potency of any medication can be enhanced with the addition of the same quality liquid media and this concept can be correlated with the synergistic effects of the drug in modern perspective. In pharmaceutics, its aims are to change in physico-chemical composition, to increase drug efficacy even in smaller dose, to achieve multiple action and induce new properties. It also makes the drug particles finer via their Sanghatabhedana and materials become suitable for further procedures such as Marana, Vati preparation etc. Factors responsible for Bhavana are quantity of liquid, number of Bhavana etc. In modern science, the process of Bhavana can be correlated with wet grinding technique.

KEYWORDS
Bhavana, Levigation, Sanskara, Synergism, Therapeutic Efficacy
INTRODUCTION

Ayurvedic pharmaceutics are depends upon various technical application in different stages and these different stages are called ‘Sanskara’ in Ayurvedic term. Accharya Charaka has defined Sanskara as the transformation of inherent properties of drugs. Various methods are employed for this purpose like Agnitoya Sannikarsha, Shouch, Manthan, Bhavana etc. Among them the Bhavana is the most important factor to reform therapeutic efficacy of a drug. Bhavana is a very common pharmaceutical process by which the drug or drugs are soaked or lavigated in a liquid media like Swarasa, Kwatha etc by which the powdered drugs are ground soft mass.

Aim of Bhavana:
1. Change their chemical composition & action (Shodhana of dravya).
2. Increase efficacy of drug.

Definition:
Bhavana has various definitions throughout the texts, varying on the amount of liquid and the required time for trituration or soaking. In this specific procedure in which the material/ materials are dipped, soaked and/or triturated to homogeneous mixing with the liquid media till complete absorption of liquid into the material, or allowed to dry. Another definition quoted by Bhaishajya Ratnawali is that the powdered drugs should be soaked in the liquid in the night and it should be kept in sun in the day and this procedure has to be repeated for seven times.

Types of Bhavana: The Bhavana process may be carried out by two methods according to different texts -
1. Levigation method.
2. Soaking method.
   - **Levigation method:** In this method, the material is mixed with particular liquid media and ground continuously for the specific period/time or till the whole material becomes like dry and required quantity of liquid that is enough to completely soak by the fine powder of the drug/drugs, according to Rasa Tarangini.
   - **Soaking method:** In soaking method powdered drugs should be soaked in the liquid in the night and it should be kept in sun in the day for drying. Trituration (Mardan) is not necessary in this method because only liquid is poured into the powder of drugs and whole mixture is left for dry.

Factors Responsible in Bhavana:
1. **Quantity of liquid for Bhavana:** The quantity of liquid should be taken as much as that the powder drug become completely wet or get immersed (i.e. Sarvamplutam Bhavet) and can be easily grinded. This further depends upon quantity of powder as well as its absorption capacity and also
penetrability of the liquid itself into the powder.

2. **Number/Day of Bhavana:** Number of Bhavana is not clearly mentioned in most of the classics except Vaidyaka Paribhasa Pradipa and Bhaishajya Ratnawali which says that if no any stipulation has been mentioned about number/day of Bhavana for a particular formulation then the Bhavana procedure should done for seven days\(^8,9\).

3. **Preparation of Kwatha for Bhavana:** If kwatha is employed for Bhavana process it may be equal to the quantity of the Bhavit Dravya. The kwatha is prepared by adding eight times water and reducing to one eighth\(^10\).

4. **Relation between Bhavita Dravya & Bhavya Drava:** Properties and potency of Bhavana Dravya may be same or opposite of the main drug (Bhavita) as per Acharya Charaka\(^11\).

**Samyaka Bhavita Lakshana:** As per Accharya Shri Haridatt Shastri commentator of Rasa Tarangini, “Chipitibhuiya Churnitam” and “Mardavayuktam” are Samyaka Bhavita Lakshana. When drug attains these characters after completion of Bhavana, then it is termed as Subhavita Dravya\(^12\).

**DISCUSSION**

Bhavana is one of the most important pharmaceutical processes in Ayurveda. The term Bhavana is mention from Charaka Samhita in prospective of Sanskara. Although types of Bhavana is not mention in classics, it can be divided into two types on the basis of procedure. Firstly livigation method, in which the powders of drugs are grind with liquid substances up to a soft mass and allowed to dry. Secondly, the soaking or dipping method, in which the drugs are dipped in liquid media in the night and dried in day time. According to utility of Bhavana it may be again divided in two types viz. for the Sodhana purpose of minerals, Visha, Upvisha etc. and manufacturing process of drugs.

Usually grinding was done in lavigation type of Bhavana by which the physical and chemical composition of grinded drugs can be changed. This change may be possible due to trituration (Mardana) that the drugs become fine to finer by succeeding Bhavana by the process of “Sanghatabhedana”. Resulting this the bioavailability of the drug will be increased with more potent to active multiple action even in smaller dose\(^13,14\).

In Rasashastra, Bhavana is a most important Shodhana process for metals, minerals, Visha and Upvisha (Table No 1&2).
Table 1 Shodhana of Minerals through Bhavana

<table>
<thead>
<tr>
<th>S.No</th>
<th>Minerals</th>
<th>Shodhana Drava</th>
<th>Day or No of Bhavana</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Sasyaka</td>
<td>RaktaVarga</td>
<td>-</td>
<td>Rasrnava 7/45</td>
</tr>
<tr>
<td>2.</td>
<td>Gandhaka</td>
<td>Godugdha or Ardraka or Bhringraj or NimbuSwarasa</td>
<td>7 times</td>
<td>Rasrnava 7/72-73</td>
</tr>
<tr>
<td>3.</td>
<td>Gairika</td>
<td>Godugdha</td>
<td>7 times</td>
<td>RasaRatnaSamucchya3/49</td>
</tr>
<tr>
<td>4.</td>
<td>Kasisa</td>
<td>Bhringraj or JambiranimbuSwarasa</td>
<td>1 day</td>
<td>RasaRatnaSamucchya3/45, Brihad Rasa Raj Sunder</td>
</tr>
<tr>
<td>5.</td>
<td>Manahshila</td>
<td>Agastayapatra/Ardraka/ BijournimbuSwarasa</td>
<td>7 times</td>
<td>RasaRatnaSamucchya3/93, RasaTarangini11/101</td>
</tr>
<tr>
<td>6.</td>
<td>All Anjana</td>
<td>BhringrajSwarasa</td>
<td>-</td>
<td>RasaRatnaSamucchya3/105</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Kankushtha ShunthiKwatha</td>
<td>3 times</td>
<td>RasaRatnaSamucchya3/114</td>
</tr>
<tr>
<td>7.</td>
<td>Hingula</td>
<td>Nimbu/Ardraka/LakuchaSwarasa</td>
<td>7 times</td>
<td>RasaTarangini 9/16, RasaRatnaSamucchya3/142</td>
</tr>
</tbody>
</table>

By this, drug may detoxify from Dosha through chemical changes. Chemical changes has been done in material by several factors comes from the liquid which is used in Bhavana process. As for example, in Manahshila Shodhana with ginger juice occurs phytochelation & methylation. Here liquid media i.e. ginger juice contain two important sulphur based amino acids called Cysteine and Methionine which can act as phytochelatins which are heavy metal-binding peptides that play an important role in detoxification of heavy metals by chelation. Also Cysteine is a methyl donor peptide which helps in the process of methylation of arsenic present in Manahshila. In another study, it is claimed that ginger is acidic in nature where as Manashila is alkaline. Because of acid-base reaction the alkalinity of Manashila is reduced and is safer to use. By this process arsenic present in the Manashila becomes nontoxic showed in experimental study. In Tuttha Shodhana with lemon juice through Bhavana its changes into bright blue to light blue colour. It may be due to some chemical changes. Bhavana implemented in Marana process for various metals and mineral also. This is to help the metal or mineral drugs to change their physical and chemical structures to reach the expected particle size and colour of Bhasma. To obtain desired colour of Bhasma, Bhavana has to be given with different liquid, e.g. to prepare red colour of

Table 2 Shodhana of Visha & Upvisha through Bhavana

<table>
<thead>
<tr>
<th>S.No</th>
<th>Visha&amp;Upvisha</th>
<th>Shodhana Drava</th>
<th>Day or No of Bhavana</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Krishna SarpaVisha</td>
<td>SarshapaTaila</td>
<td>-</td>
<td>RasaTarangini24/536</td>
</tr>
<tr>
<td>2.</td>
<td>Ahiphena</td>
<td>ArdrakaSwarasa</td>
<td>21 times</td>
<td>RasaTarangini24/242</td>
</tr>
<tr>
<td>3.</td>
<td>SnuhiKsheer</td>
<td>ChinchaPatraSwarasa</td>
<td>-</td>
<td>RasaTarangini 4/517</td>
</tr>
<tr>
<td>4.</td>
<td>RaktaChitroka</td>
<td>ChurnaUdaka</td>
<td>-</td>
<td>RasaTarangini24/575</td>
</tr>
</tbody>
</table>
Abharaka Bhasma, Bhavana should be given with kwatha of Nagbala, Nagarmotha, Vata Moola, Haridra & Manjistha and milk of Vata\textsuperscript{17}. It also provides the trace elements in finished product from liquid material; thereby it will be suitable for use directly in further pharmaceutical processing. Soaking method of Bhavana is applied for purification of Vatsnabhā, Shilajatu etc and also in preparation of thousand Puti Abhraka Bhasma\textsuperscript{18}.

Through the Bhavana process, action of any drug may increase or decrease by adding different Bhavana dravyas (liquid)\textsuperscript{19}. Bhavana with Swarasa or Kwatha of similar quality (Tulyavirya Dravya) of drug enhanced potency of main drug by which therapeutic dose will be reduces\textsuperscript{20}, e.g. in Amlaki Rasayana, Amlaki Churna is given Bhavana with Amlaki Swarasa or Kwatha. It also brings lowering the Tikshnatva of drug to prevent adverse effects and desired efficacy, e.g. Ahiphena is lavigated with Tulasi or Ardraka Swarasa. These can be correlated with the synergism and antagonism action of modern science.

Bhavana is even disease specified e.g. same formulation can be used in different diseases by using different liquid as Bhavana e.g. Basantkusamaker Rasa in Prameha\textsuperscript{21} and Rasayana-Vajikarana\textsuperscript{22}. The Shodhita Bhanga Patra are lavigated with Godugdha which is used in aphrodisiac formulations\textsuperscript{23}. In Kharaliya Rasayana preparation with Bhavana process, somewhere it increases potency of drug, somewhere it reduces undesirable pharmacological actions, somewhere it helps to preparation of pills (Table No 3 & 4).

**Table 3 Formulations with Different Ingredients & Bhavana Drava**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Formulations</th>
<th>Ingredients</th>
<th>Bhavana Drava</th>
<th>Indication</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Chandraudaya Rasa</td>
<td>ShuddhaParada, Gandhaka, Vanga&amp;AbhrakaBhasma, ChotiEla, Shilajatu</td>
<td>KadliArka</td>
<td>20 Prameha</td>
<td>BrihatNigantu Raj</td>
</tr>
<tr>
<td>3.</td>
<td>Dhaatriloham</td>
<td>AamlakiChurna, LauhaBhasma</td>
<td>TriphalaSwarasa</td>
<td>Vajikaran</td>
<td>RasaRatnakar</td>
</tr>
<tr>
<td>4.</td>
<td>Dhaatriloham</td>
<td>AamlakiChurna, LauhaBhasma, YashtimadhuChurna</td>
<td>Gudachikwath</td>
<td>Pitta Roga&amp;Shula</td>
<td>BhaishajyaRatnawali, RasaKamdhenu, BrihatYogaTaranginiRasayanSangrah</td>
</tr>
</tbody>
</table>
Table 4 Formulations with Same Ingredients but Different Bhavana Drava

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Formulations</th>
<th>Ingredients</th>
<th>Bhavana Drava</th>
<th>Rogadhikar</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>RatnaSamuchya</td>
</tr>
</tbody>
</table>

Accharyas have different views regarding volume of liquid to be used for Bhavana. Rasa Tarangini has mentioned that the quantity of liquid should be taken as much as that the powdered drug became completely wet, whereas according to Sharangadharamita, material should get completely immersed in liquid media. Practically it is observed that it depends upon the process of Bhavana. When it is Soaking method then Rasa Tarangini process is better to apply but when Lavigation method is implemented then...
Sharangadhara method is better for easy trituration.

There is also much confusion regarding time or number of Bhavana. Different classics defined number of Bhavana either in time, days or number like one or two day for Hridayarnava Rasa, Arogyavar dhinivati. Three number of Bhavana in Agnisandipan Rasa. Twenty times in Ajirna kantaka Rasa. But there are also some drug have not mention times or number, eg. Navajwarankush Rasa, Mritunjaya Rasa, Tarunjwarari Rasa. Vaidyaka Paribhasa Pradipa has clearly mentioned the procedure for seven times for these Anukta number of Bhavana whereas seven days as per Bhaishajya Ratnavali.

When kwath dravya is used as liquid media in Bhavana process it should be equal to the quantity of the Bhavit Dravya. This Kwatha will be prepared adding eight times water and reducing up to 1/8th. When more than one Bhavana Dravyas are used in a particular preparation, there are mentioned the particular sequence of Bhavna Dravya, it may be to maintain sequence of chain chemical reactions facilitating the production to desire multiple therapeutic applications, which may be much more effective than the original drug e.g. Gandhaka Rasayan.

According to modern pharmaceutics, process of Bhavana can be correlated with wet grinding technique. In the preparation of colloidal dispersions, suspensions, emulsions and ointments, wet grinding has become an integral part of processing.

CONCLUSION

The impact of Bhavana in pharmaceutics is to bring physical and chemical changes, to incorporate some trace elements in the final product and to increase the therapeutic potential of drugs. In modern science, the process of Bhavana can be correlated with wet grinding technique.
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