ABSTRACT:

Rasa Shastra is a branch of Medicine, which deals with preparation of the drugs with metals and minerals having wide range of therapeutic efficacy, possessing innate qualities like quick action, less dose, tastelessness, prolonged shelf life and better palatability. Panchshara Rasa is one such Rasoushadhi mentioned in Bhaishajya Ratnavali, indicated in Shukrakshaya. Parada, Gandhaka and Shalmali moola are the main ingredients of Panchshara Rasa. Shodhana, Mardana, Bhavana and Parpati nirmana are the important steps involved in preparation of Panchshara Rasa. Panchshara Rasa is a blend of Kharaliya and Parpati Rasayana. Standardization of Ayurvedic drugs at various levels starting from the selection and collection of raw material to the final product is essential to produce a safe and efficacious drug. Therefore the present study has been planned to standardize the method of preparation of an important Herbo-mineral formulation i.e. Panchshara Rasa. The detailed pharmaceutical study of Panchshara Rasa will be discussed in the full paper.

Key words: Standardization, Panchshara Rasa, Rasoushadhi, Parpati.

INTRODUCTION:
The nature possesses immensely valuable and powerful medicines in the form of metals, minerals and plants. However, most of the drugs as such are not absorbable into the biological system, until and unless they undergo certain modifications. Some specialized techniques are adopted to make these drugs absorbable and therapeutically viable. The drug manufacturing processes of Ayurveda are included in discipline of Bhaishajya Kalpana and Rasa Shastra. Heating, boiling, quenching, dipping, trituration, distillation, washing, filtering etc. are the important procedures involved in drug manufacturing. During Shodhana, Jarana, Marana, Bhavana etc. classical processes the above mentioned procedures are adopted. All these procedures play a significant and vital role in the pharmaceutical processing of drug materials. Mineral materials as such are claimed to be toxic by Ayurvedic Rasa texts. By adopting specialized pharmaceutical procedures like Shodhana, Marana, Jarana, Murchchana etc. they are converted into nontoxic, safe and potent therapeutic forms. The herbal drugs and animal products used during these processes form a kind of Herbo-mineral complex. When processed with metals and minerals they make them not only useful therapeutically but also enhance the disease combating properties in them.

AIM AND OBJECTIVE:
- Pharmaceutical standardization of various steps involved in the preparation of Panchshara Rasa.

IMPORTANCE OF PRESENT STUDY
- Due to changing life style and food habits there is increased incidence of Shukrakshaya. Therefore, it is necessary to find a solution for it through Ayurveda.
- As the appropriate parameters for standardization of Panchshara Rasa
are not yet established, an attempt has been made through the study to standardize the method of preparation of Panchshara Rasa.

MATERIALS AND METHODS

Chief Reference: Bhaishajya Ratnavali /Vajikaranadhidhikara/Shloka: 281-282

Total pharmaceutical study was carried out in five stages.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Preparation/Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>II</td>
<td>Preparation of Shalmali moola swarasa (Sa.S.M.K. 1/4)</td>
</tr>
<tr>
<td></td>
<td>Bhavana of Gandhaka with Shalmali moola swarasa (B.R. Vajikaranadhidhikara Shloka: 281-282)</td>
</tr>
<tr>
<td>III</td>
<td>Preparation of Kajjali (B.R. Vajikaranadhidhikara Shloka: 281-282)</td>
</tr>
<tr>
<td>IV</td>
<td>Kajjali Paka (Preparation of Parpati) (B.R. Vajikaranadhidhikara Shloka: 281-282)</td>
</tr>
</tbody>
</table>

Panchshara Rasa Preparation:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Bhaishajya Ratnavali Vajikaranadhidhikara / 281-282</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>Suddha Parada – 500gm</td>
</tr>
<tr>
<td>Method/Principle</td>
<td>Mardana, Bhavana, Parpati nirmana</td>
</tr>
<tr>
<td>Apparatus</td>
<td>Khalwa Yantra, Darvi, Steel plate, Vessels.</td>
</tr>
</tbody>
</table>

PROCEDURE: Shodhana of Parada was carried out by doing Mardana with equal quantity of Sudha churna for three days. After mardana it was filtered through double layered cloth. Lasuna kalka was added in equal quantity and Saindhava lavana was added in half the quantity of Parada. After completion of mardana washing of contents was done with hot water to obtain Shuddha Parada. Shodhana of Gandhaka was carried out by placing it in an iron ladle along with sufficient quantity of ghrita. It was heated up to melting and poured in a vessel of milk. The mouth of vessel was tied with cloth which was smeared with ghrita. Then it was washed with hot water and powdered. This procedure was repeated for seven times to obtain Shuddha Gandhaka. Shalmali moola was pounded to coarse powder and added with eight times of water. Then it was heated on moderate flame and reduced to one fourth to obtain swarasa. Shuddha Parada was taken in khalwa yantra and mardana with Shalmali moola swarasa was done for 21 days. Shuddha Gandhaka was taken in khalwa yantra and triturated with Shalmali moola swarasa for 21 days. After trituration, Mardita Parada and Bhavita Gandhaka were taken in khalwa yantra and mardana was done to obtain black, fine and lusterless powder i.e. Kajjali. Kajjali was taken in a ghee smeared darvi and melted in mandagni. The molted kajjali was poured on banana leaf and covered with another banana leaf and compressed by a steel plate to prepare Parpati. Parpati churna was subjected to bhavana for 21 days with Shalmali moola swarasa. The obtained final product was compressed to 125 mg tablets of Panchshara Rasa.
OBSERVATIONS:
- Parada appeared more bright after Shodhana.
- After Shodhana colour of Gandhaka turned bright yellow.
- The colour of Shalmali moola swarasa was reddish brown.
- During Mardana of Parada with Shalmali moola swarasa, initially Parada turned into small globules and later it was converted into silver colour paste form.
- After Bhavana of Gandhaka with Shalmali moola swarasa, Gandhaka turned dark brown in colour.
- During Kajjali preparation, mixture turned black after one day of Mardana. After complete loss of shine mixture turned very smooth.

RESULT: Table Showing the Result of preparation of Panchshara Rasa

<table>
<thead>
<tr>
<th>Weight of total contents taken</th>
<th>Quantity of drug obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 gm</td>
<td>1030 gm</td>
</tr>
</tbody>
</table>

DISCUSSION: The Pharmaceutical procedures adopted in this study are Shodhana, Mardana, Bhavana, and Agnipaka. Shodhana is done for Parada and Gandhaka. It is done to remove visible & invisible impurities, to reduce the toxicity and to enhance the therapeutic property. Mardana with Shalmali moola swarasa of Parada was done. Bhavana of Gandhaka with Shalmali moola swarasa was done. Kajjali was prepared with mardita Parada and bhavita Gandhaka. Parpati was prepared with Kajjali. Bhavana of Parpati churna with Shalmali moola swarasa was done. Tablets of Panchshara Rasa were prepared.

Parada shodhana: Substances having Ushna, Teekshna, Kshara, Amla and Lavana property are considered as purifiers (Sarva malaharah Kshara)\(^1\). Lime is an alkaline substance; it may be helpful in removing external and internal impurities of Mercury. Lasuna and Saindhava lavana have also Ushna, Teekshna and Vishada property which might be helpful in minimizing the toxic qualities of Mercury\(^2\). Hence, these might have been suggested for Shodhana. Garlic (Allium sativum) has been proved as a best antidote for heavy metal poisoning. Hence, processed Parada is augmented with antidote itself. Hence, one-step ahead in safety Lasuna was selected as a drug for nirmana of Parada.

Gandhaka shodhana: Shodhana of Gandhaka was carried out according to RRS3/22. This method was adopted basing on the properties of media to be used for Shodhana. Goghruta used for melting Gandhaka acts as vishaghna (removes impurities). Some impurities get mixed with it and are removed at the time of melting. Some impurities melt while heating and are dissolved in milk on pouring rendering Gandhaka free from blemishes. Calcium present in melt acts as reducing agent which helps in removal of impurities\(^3\). The impurities that are not malleable by heat like stones or impurities having higher melting point than sulphur are removed by filtering through cloth at the time of Dhalana. Godugdha and Goghruta are pitta shamaka, which reduce the Tikshna pitta vardhaka property of Gandhaka\(^4\).

Precautions:
- Mardana should be carried out at a slow and steady pace to avoid spilling.
- Kajjali paka should be done on mandagni. Pressing should be done immediately after pouring melted Kajjali over the banana leaf.
- Tablets are to be preserved in absolute sterile and moisture free glass containers.
**Shalmali moola swarasa preparation:**

The juice extracted from a fresh green drug by pounding it and squeezing through cloth, is called swarasa (pure juice, native juice, extract). In case of dry drugs, extracting the swarasa by boiling is mentioned. The coarse powder of the *Shalmali moola* is taken, added with eight times of water and boiled till it reduces to a quarter.5

**Mardana of Parada:** According to Charaka samhita the ingredients of a recipe should be impregnated with the juice or decoction of other ingredients having identical potency.6 By doing so the potency of the recipe will be amplified. When properly impregnated, even a small quantity of the drug becomes exceedingly effective. Parada is having Virshya properties and Shalmali moola is having Shukravardhaka properties. Therefore Shalmali moola swarasa was selected as a mardana dravya of Parada and mardana of Shuddha Parada was done with Shalmali moola swarasa for 21 days.

**Bhavana of Gandhaka:** Gandhaka is having ushna virya and Shukravardhaka properties7; Shalaml moola is having sheeta virya and Shukravardhaka properties.8 Shalmali moola swarasa was selected as a bhavana dravya of Gandhaka as it reduces the ushnata of Gandhaka and enhances the Srukranaka property of Gandhaka. Therefore Shuddha Gandhaka was subjected to bhavana with Shalmali moola swarasa for 21 days.

**Preparation of Kajjali:** Kajjali was checked for loss of shine at various stages of preparation and mardana was done up to it turned lusterless. After mardana for 3 hours the mixture turned black. After 15 hours Kajjali was checked for shine under the sun and small globules of mercury could be clearly observed. It took 42 hours for complete loss of shine and other characters of Kajjali to develop.

**Preparation of Parpati:** Parpati Kalpana is one among Parada murchchita rasoushadhi. The chief procedure in the preparation of Panchshara rasa is to prepare Parpati with Kajjali (prepared from mardita Parada and bhavita Gandhaka). Madhyama paka Parpati is the best to be used therapeutically.

**Bhavana of Parpati churna:** Bhavana of Parpati churna is not mentioned in the original reference of Bhaishajya Ratnavali. But according to Hari prapanna Sharma, the author of Rasa yoga sagara in the preparation of Panchshara Rasa triturations of Parpati churna with Shalmali moola swarasa is mentioned.9 Therefore Parpati churna was subjected to bhavana with Shalmali moola swarasa. After the bhavana of Parpati churna with Shalmali moola swarasa there was increase in weight of 50 gm and it was due to addition of organic matter of bhavana dravya (Shalmali moola swarasa). The particle size also gets reduced by this procedure. Bhavana with herbal liquids helps to bring minute particles of material in contact with each other as well as with liquid media. During wet grinding process, mixture gets properly mixed and material becomes soft, smooth and sticky, which facilitates better binding of material (especially in Kharaliya Rasayana). Wet triturations facilitates particle size reduction and homogenization leading to modification of properties (Gunantatradhana) of the end product.10

**CONCLUSION:**

- Pharmaceutical Standardization is the first step towards Standardization of any formulation. So it should be done with utmost accuracy. This leads to reproducibility of drug and production of safe and efficacious drug.
- The reference for present study was adopted from Bhaishajya Ratnavali Vajikaran adhikara.
- Shodhana, Mardana, Bhavana and Parpati nimana are the important pharmaceutical procedures involved in the preparation of Panchshara Rasa.
- Madhyama paka Parpati is ideal for therapeutic use.
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