PHARMACEUTICAL STANDARDIZATION OF YOGAAMRUTO RASA

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ABSTRACT

Yogaamruto Rasa (YMR) is a Rasoushadhi mentioned in Rasa Kamdhenu indicated for all types of Kushta (obstinate skin diseases including leprosy). Parada (Mercury), Gandhaka (Sulphur), Tamra churna (Copper), Vatsanabha (Aconitum ferox), Vacha (Acorus calamus), Trikatu (homogenous mixture of Zingiber Officinale), Musta (Cyperus rotundus), and Vidanga (Embelia ribes) are the main ingredients of YMR. Shodhana (purification), Mardana (grinding), Murchchana (to induce therapeutic properties in Parada), Pishti nirmana (amalgam formation), aagni paaka (heating) are the important steps involved in preparation of YMR. Pharmaceutical processing involves the process of Shodhana (purification) of Parada, Tamra churna, Gandhaka, and Vatsanabha. Purified Parada and Tamra churna were subjected to Pishti nirmana (amalgam formation) by triturating it with Nimbu swarasa (lemon juice). Pishti obtained thus was subjected to agni paaka amidst two layers of Purified Gandhaka at mandagni (low flame) in Katu taila (mustard oil). Pishti obtained after paaka was made into fine powder and it was mixed with fine powders of other drugs in appropriate ratio as mentioned in drug reference. It was made into 250 mg. Tablets. Till date no standards are available for the above drug. Therefore the present study has been planned to standardize the method of preparation of an important Herbo-mineral formulation i.e. Yogaamruto Rasa.

Keywords: Yogaamruto Rasa, Rasoushadhi, Kamdhenu, Kushta, Gandhaka, Vatsanabha, Musta etc..

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 Rasa Shastra and Bhaishajya Kalpana. Heating, boiling, quenching, dipping, trituration, distillation, washing, filtering etc. are the important procedures involved in drug manufacturing. During Shodhana, Marana, Jarana, Murchchana, Bhavana etc. 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.

Above formulation is combination of pharmaceutical process rarely adopted by modern pharmacy. It involves Murchchana process that too by formation of Parada-Tamra Dhatu pishti (Mercury Copper amalgam) and subjecting it to paaka. amidst two layers of Shuddha Gandhaka by pouring katu taila over the layers and subjecting it to paaka until the pishti paaka was obtained. The whole practical was done by arranging above material in an Iron vessel. Reference for drug is taken from Rasa Kamdhenu Kustha chikitsa.1

MATERIALS AND METHODS
Total pharmaceutical study was carried out in seven stages:

❖ STAGE I
- Shodhana of Parada
- Shodhana of Tamra churna
- Shodhana of Gandhaka
- Shodhana of Vatsanabha

❖ STAGE II
- Preparation of Nimbus swarasa.
- Preparation of Tamra dhatu pishti with Shuddha Parada and Shuddha Tamra churna.

❖ STAGE III
- Tamra dhatu Pishti kept amidst two layers of shuddha Gandhaka in an Iron vessel and after adding katu taila paaka procedure was done.

❖ STAGE IV
- Removal of Katu taila Gandhaka layer after self-cooling and making fine churna of Tamra dhatu pishti obtained after paaka.

❖ STAGE V
- Preparation of Vacha churna
- Preparation of Trikatu churna
- Preparation of Musta churna
- Preparation of Vidanga churna

❖ STAGE VI
- Mixing of fine churnas of herbal drugs in Tamra dhatu pishti churna obtained after paaka as per the reference of drug and mixing thoroughly until homogeneous mixture is obtained.

❖ STAGE VII
- Making 250 mg tablets of YMR

Procedure:
Parada samanya shodhana was carried out by triturating it with equal quantities of Sudha churna (Lime) for 3 days, and then Parada was filtered through double folded cotton cloth. Later Parada was triturated by adding equal quantity of Lasuna Kalka (garlic paste), and half the quantity of Saindhava lavana (Rock salt). Finally contents were washed with hot water to obtain Shodhita Parada2. Gandhaka shodhana was done by puta method, an earthen pot was filled with Cow’s milk, and its opening was tied with a double layered cloth, over this coarse powder of Gandhaka was spread and was sealed with an earthen lid. Over the lid eight cow cakes were ignited and melted Gandhaka in form of small pellets was collected in a pot having cow milk later subjected to washing by hot water3. Purified gandhaka obtained was 192 gm. according to the need of the practical.
Tamra churna shodhana was done by opting dola yantra swedana method using Gomutra (cow’s urine) as media. Tamra churna was kept over a six layered cotton cloth which was made into pottali. It was dipped into Gomutra and heated over hot plate for three hours. After completion of the process pottali was taken out of Gomutra, opened and Tamra which was in form of bolus was kept in drier for drying. Later dried Shuddha Tamra churna was collected and kept in air tight container4. Vatsanabha shodhana was done keeping Vatsanabha pieces in an earthen vessel containing Gomutra exposed to bright sun light for 3 days. On 4th day it was washed with hot water, dried, and then subjected to churna nirmana5. Pishti nirmana involved the process of Murchchana which was carried out by doing rigorous mardana of shuddha Parada and shuddha Tamra churna with Nimbu swarasa till the accepted properties of Pishti were obtained. Tamra dhatu pishti obtained so made into a thin disc like structure of dimensions 7 cm, and thickness .2 cm. It was arranged amidst two layers of shuddha Gandhaka in an Iron vessel; Katu taila was poured over Shuddha Gandhaka layers and kept undisturbed until taila was completely absorbed in Gandhaka. After that it was subjected to agni paaka at low flame (alpa agni) until a dome like structure over the pishti was formed and gradually which got completely dried. Lauha Patra taken out of the gas stove and kept for self-cooling, after self-cooling Katu taila Gandhaka layer formed like a dome over and around the pishti was removed and pishti was lifted up carefully as a whole from the bed of Lauha patra and taken in khalwa yantra for grinding. After making fine churna of pishti the remaining herbal drug churnas were added in appropriate amount as mentioned in reference of the drug. After obtaining homogenous mixture it was subjected to tablet making. Yogaamruto rasa tablets of 250 m.g were obtained.

**OBSERVATIONS:**

- Parada appeared brighter after Shodhana.
- Colour of Gandhaka became bright yellow after shodhana.
- Colour of Shodhita Tamra churna got darker as compared to ashuddha Tamra churna.
- Parada and Tamra churna started to mix with each other after one hour of rigorous mardana indicating the formation of pishti. Change in consistency of Parada was observed as the mardana progressed i.e. free flow of Parada started to decrease. After 3 hours of uninterrupted mardana by simultaneously adding Nimbu swarasa as required Tamra dhatu pishti was formed.
- During the paaka procedure Gandhaka and katu taila together got mixed and formed a black colour dome like structure over the pishti.
- Pishti obtained after paaka was completely black in colour indicating its samyaka paaka.
- All the ingredients were mixed in proper amount as mentioned in reference of drug to obtain homogenous mixture which was brown in colour.
- 250 mg. Tablets of YMR were prepared in TTD’s Sri Srinivasa pharmacy, Tirupati and storeded in an air tight container.

**RESULTS:**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Total amount of raw material taken</th>
<th>Weight of Tamra dhatu pishti obtained</th>
<th>Weight of Tamra dhatu pishti after agni paaka</th>
</tr>
</thead>
</table>

Table no. 1: Showing the procedure of Tamra dhatu pishti nirmana
Table no. 2: Showing the amount of ingredient required for Tamra dhatu pishti paaka

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the drug</th>
<th>Weight of drug taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Katu taila</td>
<td>192 ml</td>
</tr>
</tbody>
</table>

Table no. 3: Showing mixing of all ingredients to obtain homogenous mixture of YMR

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Name of the drug</th>
<th>Amount taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tamra dhatu pishti obtained after agni paaka</td>
<td>400 gm.</td>
</tr>
<tr>
<td>2.</td>
<td>Shuddha Vatsanabha churna</td>
<td>400 gm.</td>
</tr>
<tr>
<td>3.</td>
<td>Vacha churna</td>
<td>400 gm.</td>
</tr>
<tr>
<td>4.</td>
<td>Trikatu churna</td>
<td>400 gm.</td>
</tr>
<tr>
<td>5.</td>
<td>Musta churna</td>
<td>1200 gm.</td>
</tr>
<tr>
<td></td>
<td>Vidanga churna</td>
<td>1200 gm.</td>
</tr>
</tbody>
</table>

Total amount of Pishti obtained after agni paaka was 460 gm. out of it only 400 gm. was used for drug preparation remaining amount was kept for further use and sample showing purpose. As per the reference of the drug Vatsanabha churna, Vacha churna, and Trikatu churna were added in same quantity as that of pishti taken i.e. 400 gm each. Musta churna and Vidanga churna were taken 3 times to the amount of pishti i.e. 1200 gm. each.

Table no. 4: Showing the total amount of drug obtained

<table>
<thead>
<tr>
<th>Weight of total contents taken</th>
<th>Weight of final drug obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td>4000 gm.</td>
<td>3950 gm.</td>
</tr>
</tbody>
</table>

Image no. 1- Shuddha Parada    Image no. 2- Shuddha Gandhaka
Image no. 3 - Shuddha Tamra churna

Image no. 4 - Tamra dhatu pishti

Image no. 5 - Tamra dhatu pishti paaka in katu taila amidst two layers of Shuddha Gandhaka.

Image no. 6 - Formation of Katu Taila Gandhaka dome over pishti.

Image no. 7 - Pishti after agni paaka

Image no. 8 - Mixing of all ingredients

Image no. 7 - YMR homogenous mixture Obtained after mixing all ingredients

Image no. 8 - YMR tablets
DISCUSSION:
The pharmaceutical procedure involved in this study is Shodhana, Mardana, Mur-chchanata, Pishti nirmana, agni paaka. Shodhana is done for Parada, Gandhaka, Tamra, Vatsanabha to remove visible and invisible impurities, to reduce the toxicity and to enhance the therapeutic property. Mardana was carried out to prepare Tamra dhatu pishti by adding nimbu swarsa as required. Pishti nirmana involves the procedure of murchchana. Agni paaka was carried out by for Tamra dhatu pishti in katu taila amidst two layers of shuddha Gandhaka.

Parada shodhana: Substances having Ushna, Teekshna, Kshara, Amla and Lavana property are considered as purifiers (Sarva malaharah Kshara⁶). Lime is an alkaline substance; it may be helpful in removing external and internal impurities of Parada. Lasuna and Saindhava lavana have also Ushna, Teekshna and Vishada property which might be helpful in minimizing the toxic qualities of Mercury. Hence, these might have been suggested for Shodhana. Garlic 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 shodhana of Parada.

Gandhaka shodhana: Gandhaka is highly Pitta vardhaka. Milk is Vata Pitta shamaka dravya. Therefore, it can reduce ‘pitta rujakara’⁷ effect of Gandhaka. Milk is Vishahara (anti-toxic) and Rasayana. It can remove Visha doshas of Gandhaka and impregnate Rasayana property to Gandhaka.

Tamra shodhana: Tamra shodhana was done by dola yantra swedana in gomutra. Gomutra has mild basic pH (8 – 8.5) and corrosive nature. Similar description is given in ayurveda texts that it has lekhana property. A liquid with this nature at high temperaturc can effectively remove external impurities of Tamra churna. Since Tamra churna was chosen for this process which will allow maximum surface area of Tamra to come in contact with Gomutra leading to maximum purification.

Vatsanabha shodhana: Vatsanabha treated by cow’s urine on TLC studies have shown that pseudoaconitine and aconitine were converted into far less toxic substances veratroyl pseudoaconine and benzoylaconine respectively only in traditional Ayurvedic Shodhana⁸. The process of Shodhana with cow’s milk reduced Cardiotoxic properties.

Tamra dhatu pishti nirmana: Parada and Tamra churna mardana was done by adding nimbu swarasa. Pishti obtained so was can be moulded into desired shape.⁹

Tamra dhatu pishti paaka in katu taila amidst two layers of shuddha gandhaka: Pishti obtained thus was made into thin disc like structure of 7 cm diameter and .2 cm in thickness. Tamra dhatu pishti was kept thin to ensure that proper reactions takes place between all the ingredients present inside the patra i.e. Parada- Tamra Pishti, Sulphur and Katu taila.

96 gm. of shuddha Gandhaka was spread evenly in circular shape in the centre of the container, Tamra dhatu pishti was placed carefully over it without disturbing it and remaining 96 gm. of Gandhaka was spread so as it completely covers the pishti. 192 ml. of Katu taila was poured carefully with the help of a pipette over Gandhaka. After 5 minutes Katu taila was completely absorbed in Gandhaka.

After the absorption of Katu taila into Gandhaka the lahuha patra was kept over gas stove and gas was ignited at low flame (alpa aagni). After 5 minutes of heating Katu taila started boiling with small bubbles and made Gandhaka to melt. Sulphur fumes were coming out with Katu taila Gandhaka

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smell. Together Katu taila and Gandhaka become froth like in consistency, gradually increasing in shape and size and took dome like shape nearly measuring 16 cm in diameter and 5 cm in height at the centre of the patra. Inside the dome the Tamra dhatu pīshti becomes harder and outer surface of the dome looked shiny with dark brown colour.

This dome like structure helped to maintain essential temperature to carry out necessary reactions between Mercury, Copper of Tamra dhatu pīshti, Sulphur and Katu taila. Alpagni paaka was carried out until this dome like structure was completely dried and fumes stopped coming out. At this stage heating was stopped and left for swanga sheethatha. Next day when the dome like structure (when in completely dried state without any softness) was removed hard pīshti of black colour was seen beneath it. It was lifted up carefully and no free mercury globules were found indicating the paaka was attained successfully.

Mixing of pīshti churna and churnas of herbal drugs:
Fine churna of Tamra dhatu pīshti obtained after agni paka and all herbal drug churnas were mixed in the ratio as mentioned in reference sloka to obtain Yogaamruto rasa in powder form.

Preparation of Yogaamruto rasa tablets:
Yogaamruto rasa powder was subjected to pill processing in pill making machine and pills of 250 m.g were obtained by compression method.

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 the present study was taken from Rasa Kamdhenu Kustha Chikitsa.
• The pharmaceutical procedure involved in this study is Shodhana, Mardana, Murchchana, Pīshti nirmana, agni paaka.

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