

## PHARMACEUTICAL STANDARIZATION 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), *Murchhana* (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 manu-

facturing 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*, *Murchhana*, *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*, *Murchhana* 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 *Murchhana* 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*.<sup>1</sup>

## 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 Parada*.<sup>2</sup> *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 water.<sup>3</sup> 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 container<sup>4</sup>. *Vatsanabha shodhana* was done keeping *Vatsanabha pieces* in an earthen vessel containing *Gomutra* exposed to bright sun light for 3 days. On 4<sup>th</sup> day it was washed with hot water, dried, and then subjected to *churna nirmana*<sup>5</sup>. *Pishti nirmana* involved the process of *Murchhana* 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* was 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 stored in an air tight container.

#### RESULTS:

**Table no. 1: Showing the procedure of *Tamra dhatu pishti nirmana***

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

1.	<i>Shuddha Parada</i> - 400 gm. <i>Shuddha Tamra churna</i> - 100 gm.	490 gm.	460 gm.
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Table no. 2: Showing the amount of ingredient required for *Tamra dhatu pishti paaka*

Sr. No.	Name of the drug	Weight of drug taken
1.	<i>Shuddha Gandhaka</i>	192 gm.
2.	<i>Katu taila</i>	192 ml

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

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

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*

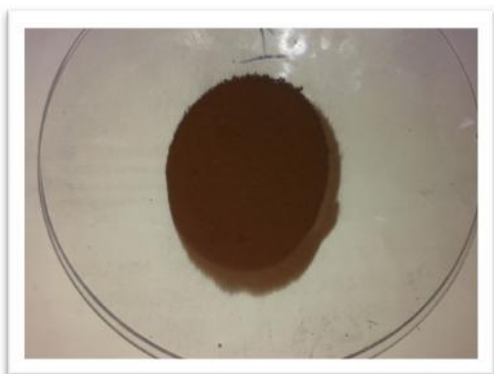
*churna*, and *Trikatu churna* were added in same quantity as that of *pishti* taken i.e. 400 gm each. *Musta churna* and *Vidanga churna* were taken 3 times to the amount of *pishti* i.e. 1200 gm. each.

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

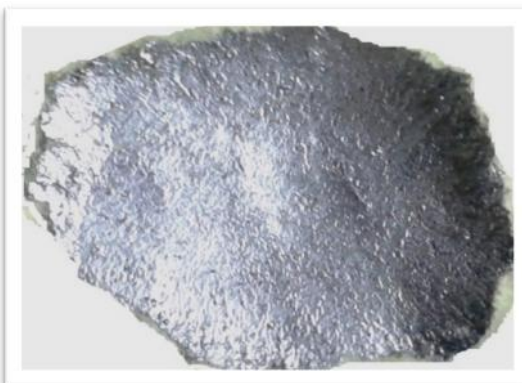
Weight of total contents taken	Weight of final drug obtained
4000 gm.	3950 gm.

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*, *Murchchana*, *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 Kshara*<sup>6</sup>). 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 rukakara*'<sup>7</sup> 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 tempera-

ture 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 *Shodhana*<sup>8</sup>. 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.<sup>9</sup>

**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 *lauha 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*

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 pishti* 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 pishti*, 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 sheethathva*. Next day when the dome like structure (when in completely dried state without any softness) was removed hard *pishti* 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 pishti churna and churnas of herbal drugs:**

Fine *churna* of *Tamra dhatu pishti* 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, Murchhana, Pishti nirmana. agni paaka*.

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