


Research Article
PHARMACEUTICAL STANDARDIZATION OF AMRITAMANJARI
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ABSTRACT

Rasa Shastra is the pharmaceutical branch of Ayurveda. As like any other medical system, success of Ayurvedic treatment also depends upon quality of medicine prescribed to the patient. The integral part of *Rasa Shastra* lies in the successful pharmaceutical process. *Rasaushadis* are the potent Ayurvedic preparations mainly containing metals and minerals. These *Oushadis* possess wide range of therapeutic efficacy and are considered superior because of their qualities like small dose, quick action, palatability and longer shelf life. *Amritamanjari* is an important *Rasa oushadi* described in *Bhaishajya Ratnavali- Amavata Adhikarana* indicated in *Amavata*. *Amritamanjari* contains *Suddha Hingula* (Cinnabar), *Suddha Vatsanabha* (Aconitum ferox), *Suddha Tankana* (Borax), *Pippali* (*Piper longum*), *Maricha* (*Piper nigrum*) and *Jatikosa* (*Jatiphala- Myristica fragrans*). The pharmaceutical procedures adopted in this study are *Shodhana*, *Churnanirmana* and preparation of *Vati* of *Amritamanjari*. The specific pharmaceutical blend of these contents can result in a more effective formulation. Till now, no research work has been carried out to standardize this formulation. Therefore the present study has been planned to standardize the method of preparation of *Amritamanjari* according to the method explained in the classical literature.

KEYWORDS: *Amritamanjari*, *Shodhana*, *Chrunanirmana*, Standardization.

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*. Mineral materials as such are claimed to be toxic by Ayurvedic *Rasa* texts. By adopting specialized pharmaceutical procedures like *Shodhana*, *Marana*, *Jarana*, *Murcchana* etc, they are converted into nontoxic, safe and potent therapeutic forms.

Amritamanjari is one of the Herbo-mineral formulation mentioned in *Bhaishajya Ratnavali*,^[1] which contains equal parts of *Suddha Hingula* (Cinnabar), *Suddha Vatsanabha* (Aconitum ferox), *Suddha Tankana* (Borax), *Pippali* (*Piper longum*), *Maricha* (*Piper nigrum*) and *Jatikosa* (*Jatiphala- Myristica fragrans*). *Shodhana*, *Churnanirmana* and preparation of *Vati* of *Amritamanjari* are the main

pharmaceutical procedures adopted in the preparation of *Amritamanjari*. 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 in the present study an effort has been made to highlight the significance of these pharmaceutical procedures and to standardize the method of preparation of *Amritamanjari*.

AIMS AND OBJECTIVES

Pharmaceutical standardization of various steps involved in the preparation of *Amritamanjari*.

MATERIALS AND METHODS

Chief reference: Govindas, *Bhaishajya Ratnavali* vol-2, Choukambha, Varanasi, 2107 edition, 303p; 29th chapter *Amavata Adhikarana- Sloka No. 95-98*.

Entire preparation of *Amritamanjari* was carried out in Department of *Rasa Shastra* and *Bhaishajya Kalpana*, TTD's S.V.Ayurvedic College, Tirupati, Andhra Pradesh.

The entire pharmaceutical study was carried out in four stages

Stage-I

- *Hingula Shodhana*
- *Vatsanabha Shodhana*
- *Tankana Shodhana*

Stage-II

- Preparation of *Pippali Churna*
- Preparation of *Maricha Churna*
- Preparation of *Jatiphala Churna*

Stage-III

- Preparation of Homogenous mixture

Stage-IV

- *Mardana* of Homogenous mixture with *Jambeera Swarasa*.
- Preparation of *Vati* of *Amritamanjari*

Amritamanjari preparation

- **Materials:** *Shuddha Hingula* - 50g
Shuddha Vatsanbha - 50g
Shuddha Tankana - 50g
Pippali Churna - 50g
Maricha Churna - 50g
Jatiphala Churna - 50g
Jambeera Swarasa- Q.S
- **Method/ Principle:** *Shodhana, Churna Nirmana, Bhavana, Mardana*
- **Apparatus:** *Khalwayantra, Gas stove, Iron ladle, Steel vessel, Cloth, Spoon steel vessel, tray and steel cutter.*

Procedure

Shodhana of *Hingula* was carried out by taking *Asuddha Hingula* in *Khalwayantra* and pounded to make fine powder. Sufficient quantity of *Ardraka Swarasa* was added to it. Trituration was carried out till it dried completely. Same procedure was repeated for six more times. *Shodhana Vatsanbha* was carried out by taking *Asuddha Vatsanbha* roots and cut into small pieces i.e., *Chaanakamatra* (size of Bengal gram). The pieces of *Vatsanabha* were taken in an earthen vessel. *Gomutra* was poured into it, so that the pieces of *Vatsanabha* get completely immersed in *Gomutra*. The vessel was kept in sunlight. Next day morning pieces of *Vatsanabha* were taken out and were placed in another earthen vessel. Fresh *Gomutra* was added to these pieces. The procedure was repeated for three

times. The *Vatsanabha* pieces were taken out and washed properly with hot water and dried. Dried *Vatsanabha* pieces were taken in a *Khalwayantra* and pounded to make fine powder. *Shodhana* of *Tankana* was carried out by taking *Ashuddha Tankana* in a clean and dry *Khalwayantra* and pounded into powder. It was taken in an earthen plate and heated on *Mandangi*. Heat was continued until the water content in the *Tankana* was completely evaporated. Then it is powdered and stored in an air tight glass container. *Churna Nirmana* of *Pippali, Maricha, Jatiphala* were carried out by pounding in *Khalwayantra* and filtered through a cloth to get fine powder. After that *Shuddha Hingula, Shuddha Vatsanabha, Shuddha Tankana* and *Churna* of other herbal drugs are mixed until to form homogenous mixture. Homogenous mixture was taken in *Khalwayantra* and *Jambeera Swarasa* was added and triturated. Triturated was done until it attains *Vatilakshana*. Paste of Homogenous mixture was made into 125mg *Vati* by rolling the mixture between thumb and index finger. *Vati* were dried under shade and stored in glass container.

OBSERVATIONS:

- *Asuddha Hingula* was brilliant red color; its consistency was rough, lustrous and solid. After 1st *Bhavana* with *Ardraka Swarasa*, consistency changed into soft, bright and semisolid. After 7th *Bhavana* with *Ardraka Swarasa*, the consistency obtained was soft, bright, very sticky and semisolid. *Shuddha Hingula* was red in colour, soft, lusterless and fine in consistency.
- During *Shodhana* of *Vatsanbha*, color of *Gomutra* changed into dark brown. *Shuddha Vatsanabha* became brittle and pale.
- During *Shodhana* of *Tankana*, crackling sounds were observed. *Tankana* after *Shodhana* bloomed and turned in to white opaque substance.
- After mixing of *Churna* of all the ingredients a brick red coloured homogenous mixture was obtained.
- After *Mardana* the final product was smooth, brick red in color. Paste was unsticky when rolled between thumb and index finger. Dark red colored small pills were prepared.

Images Showing the Preparation of Amritamanjari



1-Asuddha Hingula

2-Adding of Ardrakaswarasa in Asuddha Hingula Churna

3-Mardana with Ardraka Swarasa

- 4- Sোধିତା Hingula
- 5- Asuddha Vatsanabha
- 6- Asuddha Vatsanabha soaked in Gomutra
- 7- Shuddha Vatsanabha after drying
- 8- Sোধିତା Vatsanabha Churna
- 9- Asuddha Tankana
- 10- Heating Asuddha Tankana Churna on mild flame
- 11- Suddha Tankana after Nirjalikarana
- 12- Suddha Tankana Churna
- 13- Pippali
- 14- Pippali Churna
- 15- Maricha
- 16- Maricha Churna
- 17- Jatiphala
- 18- Jatiphala Churna
- 19- Homogenous Mixture
- 20- Adding of *Jambeera Swarasa* in Homogenous Mixture
- 21- Mardana of Homogenous Mixture with *Jambeera Swarasa*
- 22- Amritamanjari Vati

Precautions

- Trituration should be carried out slow and steady to prevent spillage of the material.
- Pills are to be preserved in absolute sterile and moisture free glass containers.

RESULTS:

Table 1: Showing the change in weight of various practices in the preparation of Amritamanjari

Name of the practical	Initial weight(g)	Final weight(g)	Gain/Loss in weight (g)
<i>Hingula Shodhana</i>	60	65	Gain 5g
<i>Vatsanbha Shodhana</i>	100	80	Loss 20g
<i>Tankana Shodhana</i>	200	120	Loss 80g
<i>Pippali Churna Nirmana</i>	100	80	Loss 20g
<i>Maricha Churna Niramna</i>	100	80	Loss 20g
<i>Jatiphala Churna Nirmana</i>	100	80	Loss 20g

Table 2: Showing the result of mixing of component drugs of Amritamanjari

Initial Weight	Final Weight	Loss in Weight	Loss in percentage
300 g	290 g	10 g	3.3%

Table 3: Showing the result of Preparation of Vati of Amritamanjari

Weight of Amritamanjari	No. of Total Vati (Each 125 mg)	Loss
270g	2130	3g

DISCUSSION

Most of the materials of *Rasa Shastra* are obtained from mineral sources containing various impurities which are responsible for causing toxic effects to body tissues. Therefore as a rule the *Rasa dravyas* are purified first by a specialized processing technique known as *Shodhana* before subjecting them for the main processing. It is done to remove visible and invisible impurities, to reduce the toxicity and to enhance the therapeutic property.

Hingulashodhana

Hingula Shodhana was done according to the method that was mentioned in *Rasa Tarngini*^[2] which includes *Bhavana* of *Hingula* in *Ardraka Swarasa* for 7times. The weight of *Hingula* increased after *Shodhana* due to addition of starchy material of *Ardrakaswarasa*. It was observed that the *Asuddha Hingula* changed slightly to brick red and fine powder form after *Shodhana*. *Shodhita Hingula* showed

features like i.e., *Nischandrika*, *Rekhapurna* and *Varitara* which indicate the reduction in particle size due to trituration process.

Vatsanabha Shodhana

Vatsanabha without *Shodhana* if administered may cause *Murcha* (syncope), *Hrut Gatirodana* (cardiac arrest) which may lead to *Mrutyu* (death), so purification of *Vatsanabha* is necessary before administration.^[3] According to *Rasa Tarangini*, *Shodhana* of *Vatsanabha* was done by submerging *Vatsanabha* pieces in *Gomutra* and exposing to Sun light for 3 days.^[4] *Asuddha Vatsanabha* contains 0.4-0.8% diterpene alkaloids and the concentration of aconite is between 0.3-2.0%. The major alkaloids are aconitine, pseudoaconitine, diacetylpseudoaconitine, aconine etc.^[5] After *Shodhana* process, the total alkaloids content decreases,^[6] but the concentration of less toxic substance such as aconine, hypoaconine and benzylhypoaconine increases^[7,8] possibly due to conversion of toxic aconitine into aconine or hydrolysis of alkaloids to their respective amino alcohols after *Shodhana*.^[9,10] *Gomutra* converts aconite to a compound with cardiac stimulant property, where as raw aconite shows cardiac depressant property.^[11-14] *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 benzoyleaconine respectively only in traditional Ayurvedic *Shodhana*.^[15] After *Shodhana Gomutra* became dark in colour, as the toxic substances from *Vatsanabha* were dissolved in it. A study had revealed that administration of raw aconite leads to impairment in kidney and liver functions and administration of aconite treated in cow's milk leads to toxicity in kidney, but administration of aconite treated in cow's urine reduces the toxic effect of aconite significantly.^[16]

Tankana Shodhana

Asuddha Tankana may cause complications like *Chardi* (vomiting) and *Bhranti* (delusions), so purification of *Tankana* is necessary before administration.^[17] According to *Rasa Tarangini*, the author mentioned that *Nirjalikarana* is to be done to purify *Tankana*. *Asuddh Tankana* ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) was taken in an earthen plate and subjected to heat until the water content was completely evaporated.^[18] After *Shodhana* $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ converted into $\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$ because while heating the water molecules are evaporated. Purified *Tankana* contains more Boron (13.48%) compared to raw *Tankana* (10.08%).^[19]

Churnanirmanao of herbal drugs

Maricha, *Pippali* and *Jatikosa* (*Jatiphala*) were made into fine powder, according to the reference

mentioned in *Sharangadhara Samhita Madhyama Khanda*.^[20]

Preparation of homogenous mixture of all component drugs

Hingula, *Vatsanabha* and *Tankana* obtained after *Shodhana* and the fine powders of herbal drugs were mixed in the ratio as mentioned in the reference *Sloka* to obtain the homogenous mixture of *Amritamanjari*.^[21]

Mardana of Homogenous mixture with Jambheera Swarasa

Homogenous mixture was taken in *Khalwayantra* and *Jambheera swarasa* was added and triturated until it attains *Vatilakshanas*.^[22] By *Mardana* process, mixture gets properly mixed and material becomes soft, smooth and unsticky. *Mardana* facilitates particle size reduction and homogenization leading to modification of properties (*Gunantatradhana*) of the end product

Preparation of Amritamanjari Vati

According to *Bhaishajya Ratnavali* dosage of *Amritamanjari* is 1 *ratti* (125mg).^[23] *Mardita* Homogenous mixture of 125mg was taken and rolled between thumb and index finger.

CONCLUSION

Pharmaceutical standardization of *Rasa oushadis* is an important requisite for the establishment of their efficacy and consistent biological activity. The pharmaceutical procedures involved in this study are *Shodhana*, *Churna Nirmana*, *Mardana* and preparation of *Vati* of *Amritamanjari*. *Shodhana* plays a vital role by removing the toxic nature and improving the therapeutic efficacy, there by rendering a safe and effective formulation.

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