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PHARMACEUTICAL STANDARDIZATION OF AGNIKUMARA RAS

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ABSTRACT

Bhaishajya Kalpana is an integral part of *Ayurveda* which deals with the process of preparation of single and compound formulations. The preparation of drugs can be classified into two groups, primary and secondary. *Vati* is a popular secondary preparation in *Ayurvedic* pharmaceutics. It is a solid dosage form that is produced and marketed in the field of pharmaceutics. This is because of the advantages like it can be swallowed easily without any irritation, handy and fixation of dosage becomes easier. *Agnikumara Ras* is one such formulation mentioned in *Basavarajeeyam pradhama prakarana* indicated in *Peenasa, Jwara, ama* and *Pratishyaya. Agnikumara ras* contains *Shuddha Vatsanabha, Maricha, Mustha, Kushta* and *Vacha*. The pharmaceutical procedures adopted in this study are *Shodana, Churna nirmana, mardana* and preparation of *vati* of *Agnikumara ras.* Till now, no research work has been carried out to standardize the method of preparation *Agnikumara Ras*. Therefore, the present study has been planned to standardize the method of preparation of *Agnikumara ras* according to the method explained in the classics.

Keywords: *Agnikumara ras, Shodana, Churna nirmana*, pharmaceutical standardization.

INTRODUCTION

The pharmaceutical study is the study of drug manufacturing. *Rasa Shastra and Bhaishajya Kalpana* is the pharmaceutical branch of *Ayurveda*. It is a well-established branch serving humans with its unique heritage

of drugs derived from minerals, metals and animal origin processed with herbs. In treating an ailment, one of the important steps in preparation of the drug. Most of the drugs as such are not easily absorbable to the biological system, so to make them absorbable and to bring therapeutic effect, some modifications are required through the specialized techniques called the pharmaceutical process. By adopting specialized pharmaceutical procedures like *Shodana, Marana, Jarana, Murchana,* etc they are converted into non-toxic, safe and potent therapeutic forms.

Though several types of *kalpa* are being used presently, a *Vati* plays an important role in *Ayurvedic* pharmaceutics owing to many advantages like easy administration, palatability, convenient form for dispensing and transportation. Hence the present study is planned to prepare the selected drug following all the methods mentioned in classical texts.

Agnikumara ras is a preparation mentioned in *Basavarajeeyam Prathama prakarana* [1] and indicated in *pratishyaya, peenasa, jwara, ama***.** *Agnikumara Ras* contains *Vatsanabha* (Aconitum ferox wall), *Maricha* (Piper longum Linn), *Kushta* (Saussurea lappa C.B Clarke), *Vacha* (Acorus calamus Linn.) and *Mustha* (Cyperus rotundus Linn). *Shodana, Churna nirmana* and preparation of *Vati* are the main pharmaceutical procedures adopted in the preparation of *Agnikumara ras*. 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 *Agnikumara ras*.

Aim and Objectives

Pharmaceutical standardization of various steps involved in the preparation of *Agnikumara Ras*.

Materials and Methods

Chief reference: *Basavarajeeyam, Prathama prakarana- Sloka* No. 520-525

The entire preparation of *Agnikumrara Ras* was carried out in the Department of *Rasa Shastra* and *Bhaishjya Kalpana*, S.V Ayurveda College, TTD, Tirupati, Andhra Pradesh.

The entire pharmaceutical study was carried out in four stages:

Stage-I

- *Vatsanabha Shodana*

Stage II

- Preparation of *Vatsanabha Churna*
- Preparation of *Maricha Churna*
- Preparation of *Mustha Churna*
- Preparation of *Kushta Churna*
- Preparation of *Vacha Churna*

Stage III

- Preparation of Homogeneous mixture

Stage IV

- *Mardana* of Homogeneous mixture with *Ardraka Swarasa*
- Preparation of *Vati* of *Agnikumara Ras.*

***Agnikumara Ras* preparation**

- **Materials:**

Shuddha Vatsanbha – 100g
Mustha Churna – 25g
Maricha Churna – 25g
Vacha Churna – 25g
Kushta Churna – 25g
Ardraka Swarasa- Q.S

- Method/ Principle: *Shodhana, Churna Nirmana, Mardana*
- Apparatus: *Khalwayantra*, Steel vessel, Cloth, Spoon, tray and steel cutter.

Procedure: *Shodhana* of *Vatsanbha* was carried out by taking *Vatsanbha* roots and cut into small pieces i.e., *Chanakamatra* (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. The 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 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 a fine powder. *Churna Nirmana* of *Mustha, Maricha, Kushta* and *Vacha* was carried out by pounding in *Khalwayantra* and filtered through a cloth to get a fine powder. After that *Shuddha Vatsanabha Churna*, and *Churna* of other drugs are mixed until to form a homogenous mixture. A homogenous mixture was taken in *Khalwayantra* and *Ardraka Swarasa* was added and triturated. Trituration was done until it attains *Vati lakshana*. Paste of homogenous mixture was made into 125mg *Vati* by rolling the mixture between thumb and index finger. *Vati* was dried under shade and stored in a glass container.

Observations:

- During *Shodhana* of *Vatsanbha*, the colour of *Gomutra* changed into dark brown. *Shuddha Vatsanabha* became brittle and pale.
- After mixing of *Churna* of all the ingredients a brown coloured homogenous mixture was obtained.
- After *Mardana* the final product was smooth, light brown. The paste was unsticky when rolled between thumb and index finger. Light, brown-coloured small pills were prepared.

Images

1-*Ashuddha Vatsanabha*
2-*Ashuddha Vatsanabha* soaked in *Gomutra*
3-*Shuddha Vatsanabha* after drying
4-*Shoditha Vatsanabha Churna*
5-*Maricha*
6-*Maricha Churna*

7-*Mustha*
8-*Mustha Churna*
9-*Kushta*
10-*Kushta Churna*
11-*Vacha*
12-*Vacha Churna*
13-Homogeneous mixture
14-Adding *Ardraka Swarasa* to a homogeneous mixture
15-*Mardana* of homogeneous mixture with *Ardraka Swarasa*
16-*Vati* of *Agnikumara Ras*

Precautions:

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

Results:

Table 1: Showing the change in weight of various methods in the preparation of *Agnikumara ras*

Name of the practical	Initial weight(g)	Final weight(g)	Gain/loss in weight (g)
1. *Vatsanabha Shodana*	100g	80g	20g
2. *Maricha Churna*	25g	20g	5g
3. *Mustha Churna*	25g	20g	5g
4. *Kushta Churna*	25g	20g	5g
5. *Vacha Churna*	25g	20g	5g

Table 2: Showing the result of mixing of component drugs of *Agnikumara ras*

Initial weight	Final weight	Loss in weight	Loss in percentage
160g	150g	10g	6.25%

Table 3: Showing the results of preparation of *Vati* of *Agnikumara ras*

Weight of *Agnikumara Ras*	No. of *Vati* (each of 125mg)	Loss
150g	1180	3g

DISCUSSION

The use of metals and some poisonous herbal drugs in medicine is often associated with toxicity, but *Ayurveda* made them into biocompatible form by certain detoxification processes like *Shodana, Marana, Bhavana* etc. which remove the toxic potential from minerals and imparts them with therapeutic efficacy of a high-grade.

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.[2] According to *Rasa Tarangini*, *Shodhana* of *Vatsanabha* was done by submerging *Vatsanabha* pieces in *Gomutra* and exposing them to Sunlight for 3 days.[3] *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, diacetyl-pseudo aconitine, aconine etc.[4] After *Shodhana* process, the total alkaloids content decreases,[5] but the concentration of a less toxic substance such as aconine, hypoaconine and benzylhypoaconine increases[6,7] possibly due to conversion of toxic aconitine into aconine or hydrolysis of alkaloids to their respective amino alcohols after *Shodhana*.[8,9] *Gomutra* converts aconite to a compound with cardiac stimulant property, whereas raw aconite shows a cardiac depressant property.[10-13] *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*.[14] 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 the kidney, but administration of aconite treated in cow's urine reduces the toxic effect of aconite significantly.[15]

***Churna nirmana* of herbal drugs:**

Maricha, *Mustha*, *Vacha* and *Kushta* were made into a fine powder, according to the reference mentioned in *Sharangadhara Samhita Madhyama Khanda*.[16]

Preparation of a homogenous mixture of all component drugs:

Vatsanabha was 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 *Agnikumara Ras*. [17]

Mardana of Homogenous mixture with *Ardraka Swarasa*

The homogenous mixture was taken in *Khalwayantra* and *Ardraka swarasa* was added and triturated until it attains *Vatilakshanas*.[18] By the *Mardana* process, the mixture gets properly mixed, and the material becomes soft, smooth and unsticky. *Mardana* facilitates particle size reduction and homogenization leading to modification of properties (*Gunantatradhana*) of the product.

Preparation of *Agnikumara Ras Vati*:

According to *Basavarajeeyam* dosage of *Agnikumra* Ras is 1 *Ratti* (125mg).[19] *Mardita* Homogenous mixture of 125mg was taken and rolled between thumb and index finger.

CONCLUSION

Pharmaceutical standardization of various formulations 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 *Agnikumara ras*. *Shodhana* plays a vital role by removing the toxic nature and improving the therapeutic efficacy, thereby rendering a safe and effective formulation. There is a quote mentioned as "*mardanam guna vardanam*" which means the more *mardana*(grinding) is done the more *guna*(property) will imbibe in the drug. The process of grinding reduces the particle size that in turn will increase the surface area of the drug.

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