



PHARMACEUTICAL STANDARDIZATION OF *JATIPHALADYA VATI*

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ABSTRACT

Standardization is the process of developing and agreeing upon technical standards. A standard is a document that establishes uniform engineering or technical specifications, criteria, methods, processes or practices. Many drugs are described in *Ayurvedic* classical texts for the treatment of various disorders. *Jatiphaladya Vati* is one such *Kharaliya Rasayana* mentioned in *Rasendra Saara Samgraha*, indicated in *Arshas* (Haemorrhoids). *Jatiphala* (*Myristica fragrans* Houtt.), *Lavanga* (*Syzygium aromaticum*), *Pippali* (*Piper longum*), *Saindhava lavana* (Rock salt), *Shunthi* (*Zingiber officinale* Roxb), *Dhattura beeja* (*Datura metel* Linn.), *Hingula* (Cinnabar) and *Tankana* (Borax) are the main ingredients. *Shodhana* (Purification), *Churna nirmana* (Preparation of powder), *Bhavana* (Soaking with liquid and triturating till drying) and *Mardana* (Trituration) are the important steps involved in preparation of *Jatiphaladya Vati*. *Shodhana* of *Hingula*, *Tankana* and *Dhattura beeja* was carried out by classical method to remove the impurities. Churna of all above ingredients were prepared by subjecting it to grinding in *Khalwa yantra* and filtering through cloth. All ingredients were mixed properly to make homogenous mixture; later on it was triturated with *Nimbu swarasa* to obtain 250 mg tablets (brick red in colour) in tablet compression machine. The present study has been planned to standardize the method of preparation of an important Herbo-mineral formulation i.e. *Jatiphaladya Vati*.

KEYWORDS: Standardization, *Jatiphaladya Vati*, *Kharaliya Rasayana*, *Arshas*.

INTRODUCTION

The drug manufacturing processes of *Ayurveda* are included in discipline of *Bhaishajya Kalpana* and *Rasa Shastra*. *Mardana* (Trituration), *Dhalana* (Moulding), *Swedana* (Swooning), *Nirjalikarana* (Evaporation of water), *Bharjana* (Frying), *Nirvapa* (Heating and quenching), *Bhavana* (Soaking with liquid and triturating till drying), *Prakshalana* (Washing), *Pruthakkikarana* (Separation) and *Galana* (Filtration) etc. are the important procedures involved in drug manufacturing. All these procedures play a significant and vital role in the pharmaceutical processing of drug materials. Mineral materials as such are claimed to be non suitable for internal administration by *Ayurvedic Rasa* texts. By adopting specialized pharmaceutical procedures like *Shodhana* (Purification), *Marana* (incineration), *Jarana* (Digestion), *Murchchhana* (Imbibing definite therapeutic properties) etc. they are converted into nontoxic, safe and potent therapeutic medicine. 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.

AIMS AND OBJECTIVE:

- Pharmaceutical standardization of various steps involved in the preparation of *Jatiphaladya Vati*.

IMPORTANCE OF PRESENT STUDY:

- Due to changing life style and food habits there is increased incidence of *Arshas*. Therefore, it is necessary to find a solution for it through *Ayurveda*.

- As the appropriate parameters for standardization of *Jatiphaladya Vati* are not yet established, an attempt has been through the study to standardize the method of preparation of *Jatiphaladya Vati* was taken from *Rasendra Saara Samgraha* [1].

MATERIAL AND METHODS

Procedure was done in Department of *Rasa Shastra* and *Bhaishajya Kalpana*, S.V. Ayurvedic College, TTD, Tirupati. Tablets of *Jatiphaladya Vati* were made in S. S. Ayurvedic Pharmacy TTD, Tirupati.

Total Pharmaceutical study was carried out in five stages,

Stage I	<i>Shodhana</i> of <i>Hingula</i> <i>Shodhana</i> of <i>Tankana</i> <i>Shodhana</i> of <i>Dhattura beeja</i>
Stage II	Preparation of <i>Jatiphala churna</i> Preparation of <i>Lavanga churna</i> Preparation of <i>Pippali churna</i> Preparation of <i>Saindhava lavana churna</i> Preparation of <i>Shunthi churna</i> Preparation of <i>Shuddha Dhattura beeja churna</i>
Stage III	Mixing of <i>churnas</i> of all the ingredients and making a homogenous mixture- (<i>Jatiphala churna</i> , <i>Lavanga churna</i> , <i>Pippali churna</i> , <i>Saindhava lavana churna</i> , <i>Shunthi churna</i> , <i>Shuddha Dhattura beeja churna</i> , <i>Shuddha Hingula churna</i> , <i>Shuddha Tankana</i>)

	churna)
Stage IV	Bhavana of homogenous mixture with Nimbu swarasa
Stage V	Preparation of Jatiphaladya Vati

Jatiphaladya Vati preparation

Materials	Jatiphala 250 gm Lavanga 250 gm Pippali 250 gm Saindhava lavana 250 gm Shunthi 250 gm Shuddha Dhattura beeja 250 gm Shuddha Hingula 250 gm Shuddha Tankana 250 gm Nimbu swarasa Q.S.
Method/Principle	Shodhana, Churna nirmana, Bhavana, Mardana
Apparatus	Khalwa yantra, Cloth, Air tight glass container

PROCEDURE

Shodhana of Hingula was carried out by taking Ashuddha Hingula finely powdered in Khalwa yantra. Nimbu swarasa was added to it in Q.S. Trituration was carried out till it dried completely. Same procedure was repeated for 6 more times. After 7 Bhavanas, Hingula was washed with hot water until Amlata was completely removed and dried in Sun light^[2]. Shodhana of Tankana was carried out by taking Ashuddha Tankana in a clean and dry Khalwa yantra and pounded well to prepare fine powder. Ashuddha Tankana powder was heated in an earthen plate on Gas stove with medium fire. It started disintegrating with crackling sounds, losing moisture. It was heated further until the crackling sound was stopped. The product thus obtained was taken out and allowed to cool itself, then powdered and preserved in air tight glass container^[3]. Shodhana of Dhattura beeja was carried out

by taking Ashuddha Dhattura beeja placed in a cloth and made into Pottali. The Pottali was suspended in an earthen pot containing Godugdha in such a way that it should be freely hanging in the Godugdha (Dolayantra). It was subjected to Mandagni for 3 hours^[4]. Godugdha was added whenever the liquid level was reduced in the earthen pot. Later the Dhattura beeja were taken out and washed with hot water, dried and preserved. Churna nirmana of Jatiphala, Lavanga, Pippali, Saindhava lavana, Shunthi and Dhattura beeja were carried out by pounding in Khalwa yantra and filtered through a cloth to get fine powder^[5]. After that mixing of Shuddha Hingula, Shuddha Tankana, Saindhava lavana churna and churna of other herbal drugs until to form homogenous mixture^[6]. Homogenous mixture was taken in Khalwa yantra and Nimbu swarasa was added until whole Churna was dipped and triturated. Trituration was done until total drying of the mixture^[7]. Obtained final product i.e. Bhavita Homogenous mixture was compressed to 250 mg tablets of Jatiphaladya Vati.

OBSERVATION

- Ashuddha Hingula was Mercedes-red in colour, its consistency was rough, lustrous and solid. After 1st Bhavana with Nimbu swarasa, the consistency changed into soft, bright and semisolid. After 7th Bhavana with Nimbu swarasa, the consistency obtained was as soft, bright, very sticky and semisolid. Shuddha Hingula obtained was red in colour, soft, lustreless and fine in consistency.
- Tankana after frying became bloomed and turned in to white opaque substance.
- After Shodhana dull brown colour of Dhattura beeja changed in to shiny brown colour.
- After mixing of churna of all the ingredients a brick red coloured homogenous mixture was obtained.
- After Bhavana the final product was smooth, brick red in colour and entering into the fine lines of fingers.



Ashuddha Hingula



Adding of Nimbu swarasa in Ashuddha Hingula churna



Mardana with Nimbu swarasa



Shuddha Hingula Churna



Ashuddha Tankana



Heating of Ashuddha Tankana Churna on mild flame



Shuddha Tankana after Nirjalikarana



Shuddha Tankana Churna



Ashuddha Dhattura beeja



Pottali of Ashuddha Dhattura beeja



Dolayantra Swedana in Godugdha (Cow milk)



Shuddha Dhattura beeja



Shuddha Dhattura beeja churna



Jatiphala churna



Lavanga churna



Pippali churna



Saindhava lavana churna



Shunthi churna



Making of homogenous mixture by adding churna of all the ingredients



Bhavana of homogenous mixture with Nimbu swarasa



Churna of Final drug



Tablets of Jatiphaldya Vati

Precautions

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

RESULT: Table showing the result of preparation of *Jatiphaldya Vati*

Weight of total contents taken	Quantity of drug obtained
2000 gm	2080 gm

DISCUSSION

The pharmaceutical procedures adopted in this study are *Shodhana*, *Churna nirmana*, *Bhavana* and *Mardana*. *Shodhana* is done for *Hingula*, *Tankana* and *Dhattura beeja*. It is done to remove visible and invisible impurities, to reduce the toxicity and enhance the therapeutic property. *Churna nirmana* of *Jatiphala*, *Lavanga*, *Pippali*, *Saindhava lavana*, *Shunthi* and *Dhattura beeja*. Preparation of homogenous mixture was done by proper mixing of *Churna* of all the ingredients. *Bhavana* of homogenous mixture with *Nimbu swarasa* was done.

Mardana of *Bhavita* homogenous mixture until dried. Tablets of *Jatiphaladya Vati* were prepared.

Hingula Shodhana: As mentioned in Classical texts, intake of *Ashuddha Hingula* causes *Andhata* (Blindness), *Ksheenata* (Emaciation), *Klama* (Fatigue), *Bhrama* (Giddiness), *Moha* (Delusion) and *Prameha* (Urinary tract disorder)^[8]. *Amla rasa* and *Laghu Guna* are the properties of the *Nimbu swarasa* which reduce these toxic effects of *Hingula*^[9]. Hence, these might have been suggested for *Shodhana*.

Tankana Shodhan: The *Ashuddha Tankana* may cause complications like *Chhardi* (vomiting) and *Bhranti* (delusions)^[10]. *Nirjalikarana* is to be done to purify *Tankana*^[11]. In this process the fine powder of *Tankana* was heated in an earthen pot on the fire. During heating it produced crackling sounds. After continuous heating it became bloomed and turned into lighter white opaque substance. It was due to the evaporation of water molecules.

Dhattura beeja Shodhana: *Dhattura beeja* was boiled in *Godugdha* for three hours. The method applied here was *Swedana*. Principles of *Swedana* methods are the extraction process where the solvent enters the cells resulting in the swelling of tissues making easy escape of the soluble constituent. The rate of extraction depends mainly on the temperature and concentration gradient across the cell membrane. Raising of temperature increases the concentration gradient across the cell membrane thereby increases mass transfer of active principles from solid material to the solvent. After *Swedana* change in the colour of the *Dhattura beeja* was observed. They turned from dull brown colour to shiny brown colour. As a result of *Dhattura Shodhana* in *Godugdha* media, the percentage of Hyoscyamine and Scopolamine was decreased in *Dhattura* after *Shodhana*. In *Ashuddha Datura metel* Lin. the percentage of Hyoscyamine and Scopolamine are 3.71% and 3.2% respectively. In *Shuddha Datura metel* Lin, the percentage of Hyoscyamine and Scopolamine are 1.01% and 0.0% respectively^[12].

Preparation of Churnas: *Jatiphala churna*, *Lavanga churna*, *Pippali churna*, *Saindhava lavana churna*, *Shunthi churna*, *Dhattura beeja churna* are prepared. Fine powders of these drugs are making to be easy to absorb in the body.

Preparation of Homogenous Mixture: First *Shuddha Tankana* is taken in a *Khalwa yantra* and *Shuddha Hingula* is added to it and mixed thoroughly. Then *churna* of *Jatiphala*, *Lavanga*, *Pippali*, *Shunthi* and *Shuddha Dhattura beeja* are added and mixed properly. Lastly *Saindhava lavana churna* is added and mixed to make a homogenous mixture. The shelf life of the herbal active chemical molecules will be maintained for longer period due to the effect of *Hingula*.

Bhavana of Homogenous Mixture with Nimbu swarasa: Homogenous mixture was taken in *Khalwa yantra* and *Nimbu swarasa* was added until whole *Churna* was dipped and triturated. 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 trituration facilitates particle size reduction and homogenization leading to modification of properties (*Gunantatradhana*) of the end product^[13]. After the *Bhavana* of Homogenous Mixture with *Nimbu swarasa* there was increase in weight of 80 gms and it was due to addition of organic matter of *Bhavana dravya* (*Nimbu swarasa*). The final product smooth, brick red in colour and entering into the fine lines of fingers.

Tablet making: 250 mg tablets of *Jatiphaladya Vati* were prepared in the automatic tablet making machine by dry compression method. Tablets are compressed under high pressure. The risk of microbial growth is very much less and possibility is limited to external surface. Quality of medicine would be almost accurate in tablet compression.

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 was adopted from *Rasendra Saara Samgraha, Arshachikitsa*.
- *Shodhana, Churna nirmana, Bhavana* and *Mardana* are the important pharmaceutical procedures involved in the preparation of *Jatiphaladya Vati*.

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