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PHARMACEUTICAL STANDARDIZATION OF SWITRARI YOGA

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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. *Rasa oushadis* 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. *Switrari Yoga* is an important *Rasaoushadi* described in *Rasa Tantra Sara Va Siddha Prayoga Sangraha Part 2 Kustha Prakarana* which contains *Shuddha Gandhaka*, *Shuddha Bhallataka* (*Semicarpus anacardium*), *Harithaki*, *Vibhitaki*, *Amalaki*, *Bhringaraja*, *Nimba beeja*. The pharmaceutical procedures adopted in this study are *Shodhana*, *Churna Nirmana* and preparation of capsule of *Switrari Yoga*. 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 *Switrari Yoga* according to the method explained in the classical literature.

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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.

Switrari Yoga is one of the Herbo-mineral formulation mentioned in *Rasa Tantra Sara Va Siddha Prayoga Sangraha*,^[1] which contains equal parts of *Shuddha Gandhaka*, *Shuddha Bhallataka* (*Semicarpus anacardium*), *Harithaki*, *Vibhithaki*, *Amalaki*, *Bhringaraja*, *Nimba beeja*. *Shodhana*, *Churna nirmana* and preparation of capsule of *Switrari Yoga* are the main pharmaceutical procedures adopted in the preparation of *Switrari Yoga*. 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 *Switrari Yoga*.

AIMS AND OBJECTIVES:

Pharmaceutical standardization of various steps involved in the preparation of *Switrari Yoga*.

MATERIALS AND METHODS:

Chief reference: *Rasa Tantra Sara Va Siddha Prayoga Sangraha* part 2 *Kushta Prakarana* page No.228 . Entire preparation of *Switrari Yoga* was carried out in the Department of *Rasa Shastra* and *Bhaishajya Kalpana*, TTD's S.V. Ayurvedic College, Tirupati, Andhra Pradesh.

Total pharmaceutical study was carried out in 5 stages,

Stage 1

- *Shodhana* of *Gandhaka*
- *Shodhana* of *Bhallataka*

Stage 2

- Preparation of *Haritaki churna*
- Preparation of *Vibhitaki churna*
- Preparation of *Amalaki churna*
- Preparation of *Bhringaraja churna*
- Preparation of *Nimba beeja churna*

Stage 3

- Preparation of Homogenous mixture of *Switrari Yoga*.

Stage 4

- Preparation of *Bhringaraja Swarasa*.
- *Bhavana* With *Bhringaraja Swarasa*.

Stage 5

- Preparation of *Switrari Yoga* capsules.

Switrari Yoga preparation:

Materials	:	<i>Shuddha Gandhaka</i>	-100 g
		<i>Shuddha Bhallataka</i>	-100 g
		<i>Harithaki churna</i>	-100 g
		<i>Vibhithaki Churna</i>	- 100 g
		<i>Amalaki Churna</i>	- 100 g
		<i>Bhringaraja Churna</i>	- 100 g
		<i>Nimba beeja Churna</i>	- 100g
		<i>Bhringaraja Swarasa</i>	-Q.S

Method/ Principle: *Shodhana*, *Churna Nirmana*, *Bhavana*.

Apparatus : *Khalwa yantra*, Gas stove, Iron laddle, Steel vessel, Cloth, Spoon, Steel cutter, tray.

PROCEDURE

Ashuddha Gandhaka was pounded in a *Khalva yantra* to form coarse powder. The inner side of the pot is coated with Cow's ghee and Cow's milk was poured in the wide mouthed earthen pot. The mouth of pot was covered with double layered cotton cloth and *Gandhaka* was spread evenly over it. Earthen lid was placed over the pot and sealed with fuller's earth. The pot was buried up to the neck level in a pit with single layer of 8 Cow dung cakes arranged above it. After ignition of Cow dung cakes, *Gandhaka* melted and dropped into milk through the cloth. After self-cooling, the apparatus was removed out of the pit and opened. Purified *Gandhaka* was collected at bottom of the pot in form of small pellets. Pellets of *Gandhaka* were taken and washed in hot water and kept for drying. *Bhallataka* ripen seeds were taken and put in to water. Only those which sink were selected and used for the purification and rest was discarded. The upper cap like structure was removed with the help of a steel cutter. Rest of the *Bhallataka* seeds obtained after cutting the cap were taken in a cloth, *pottali* is tied and hung in *Dola yantra* containing freshly collected tender coconut water as liquid media. The process of *Swedana* is carried out by placing *Dola yantra* over mild fire for 3 hours. Later the seeds are taken out and washed thoroughly with hot water and dried under sunlight. After complete drying the seeds were made into fine powder. *Churna Nirmana* of *Harithaki*, *Vibhithaki*, *Amalaki*, *Bhringaraja*, *Nimba beeja* were carried out by pounding in *khalwa yantra* and sieved through a cloth to get fine powder. After that mixing of *Shuddha Gandhaka*, *Shuddha Bhallataka* and *Churna* of other herbal drugs until to form homogenous mixture. Homogenous mixture was taken in *khalwa yantra* and *Bhringaraja Swarasa* was added and triturated well. Trituration was carried out for a period of 3 days. Then it was dried completely and made into powder and filled in 125mg capsule manually. Then these capsules are stored in airtight glass container.

OBSERVATIONS

- After *Shodhana*, colour of *Gandhaka* turned to bright yellow. *Gandhaka* was collected as fine pellets.
- *Bhallataka* seeds were converted into soft pieces. Change in the colour of *Narikela jala* was observed from transparent to blackish colour due to mixing of *Bhallataka taila*. Change in the consistency of *Narikela jala* was also observed.
- After mixing of *Churna* of all the ingredients a blackish green coloured homogenous mixture was obtained.
- After *Bhavana* the final product was smooth, blackish green in colour

IMAGES SHOWING THE PREPARATION SWITRARI YOGA





1. *Ashuddha Gandhaka*
2. Pot filled with milk placed in a pit
3. *Gandhaka* is placed over cloth Tied to the pot
4. Pot is sealed with *sharava*
5. Ignited cow dung cakes over the *sharava*
6. *Shoditha Gandhaka*
7. *Ashuddha Bhallataka* seeds
8. Cutting of *Bhallataka* caps
9. *Dola yantra* containing *Narikela jala*
10. *Swedana* in *Narikela jala* in *dola yantra*
11. *Shuddha Bhallataka*
12. *Haritaki beeja*
13. *Haritaki Churna*
14. *Vibhitaki beeja*
15. *Vibhitaki Churna*
16. *Amalaki beeja*
17. *Amalaki Churna*
18. *Shuska Bhringaraja Panchangas*
19. *Bhringaraja Churna*
20. *Nimba beeja*
21. *Nimba beeja Churna*
22. Homogenous mixture of *Switrari Yoga*
23. *Bhavana* of homogenous mixture with *Bhringaraja Swarasa*
24. *Switrari Yoga* Capsules.

Precautions

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

RESULTS

Table No. 1: Showing the change in weight of various practices in the preparation of *Switrari Yoga*:

Name of the practical	Initial weight (g)	Final weight (g)	Gain/Loss in weight (g)
<i>Gandhaka Shodhana</i>	500 g	444 g	Loss 56g
<i>Bhallataka Shodhana</i>	1000 g	550 g	Loss 45g
<i>Harithaki Churna</i>	500 g	470 g	Loss 30g
<i>Vibhithaki churna</i>	500 g	470g	Loss 30g
<i>Amalaki Churna</i>	500g	480g	Loss 20g
<i>Bhringaraja Churna</i>	200 g	180 g	Loss 20 g
<i>Nimba beeja Churna</i>	260 g	250 g	Loss 10 g

Table No.2: Showing the result of mixing of component drugs of *Switrari Yoga*:

Initial Weight	Final Weight	Loss in Weight	Loss in percentage
700 g	690 g	10 g	1.5 %

Table No.3: Showing the result of Preparation of capsule of *Switrari Yoga*:

Weight of <i>Switrari Yoga</i>	No. of Total Capsules (Each 125 mg)	Loss
700g	5400	2 g

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.

Gandhaka Shodhana

- *Gandhaka Shodhana* was according to the reference *Rasendra Sara Sangraha* ⁽²⁾ that includes melting and dropping of *Gandhaka* spread over a cotton cloth tied to a vessel filled with milk covered with *Sarava* and this pot was placed in a pit up to the neck level.
- *Agni* was provided by 8 cow dung cakes arranged on the ground over the *Sarava*.
- Sulphur turns into liquid at 115.21°C. However, at that temperature, arsenic sulphides (Orpiment M.P 310°C, Realgar M.P 360°C) which are one of the chief impurities of Sulphur stay back in cloth and liquid Sulphur flows freely through fine pores.
- *Agni* by cow dung cakes ensures uniform spreading of temperature and prevents Sulphur to get in contact with external oxygen, which otherwise cause oxidation and considerable weight loss.
- Now a day, most of the Sulphur we get is extracted as bi-product of petroleum refining. This type of product may contain some amount of petroleum remnants, which float over milk during purification and gets eliminated.
- *Gandhaka* is highly *Pitta vardhaka*. Milk is *Vata Pitta shamaka Dravya*. Therefore, it can reduce 'teevra pitta vrudhikara' effect of *Gandhaka*.
- Milk is *Vishahara* and *Rasayana*. It can remove *Visha doshas* of *Gandhaka* and enhance *Rasayana* property to *Gandhaka*.
- Finally cleaning with hot water removes greasy remnants of milk.

Bhallataka Sodhana:

- Since *Bhallataka* is very hot in nature, its mere skin contact may cause boils. To reduce its hot potency and toxicity, it is subjected to purification procedure.
- *Bhallataka Sodhana* was done according to the reference *Rasa Tarangini* ⁽³⁾. *Asuddha Bhallataka* seeds are kept in *Dola yantra* method of *Swedana* in *Narikela jala*.
- In *Ayurvedic* literature, the synonyms *Shopha hetu*, *Spota hetu*, *Agnika* are given to the drug based on its blister causing nature. The oil in the fruit is responsible for the irritation. The fruit contains tarry oil which causes contact dermatitis. Medically it is named as Urushiol Induced Contact Dermatitis because the chemical Urushiol is responsible for dermatitis. This vesicant nature is removed by *Dola yantra* method of *Sodhana* in *Narikela jala*. The oil in the fruit is responsible for the irritation. The *Bhallataka* fruit contains 90% Anacardic acid and 10% of Cardol. Other chemical constituents are Bhilwanol (Naidu et al., 1925), semecarpol and anacardol. Recent studies reported that Bhiwanols are known as Urushiols. Anacardic acids are closely related to Urushiol. Another study reported that the corrosive juice from the pericarp of the fruit is found to contain catechol, fixed oil and anacardol ($C_{18}H_{15}O_3COOH$) to which the corrosive properties of the juice are due to two phenolic acids $C_6H_{15}O_3COOH$ and $C_{14}H_{13}O_3COOH$ ³⁵.
- *Narikela jala* has *Madhura rasa*, *laghu guna* and have *Sheetala*, *Hridya*, *Deepana*, *Shukrala*, *bastishuddhakara* properties. It relieves pitta, *pipasa* (thirst) and *Daha* (burning sensation).
- As *Bhallataka* is very hot in potency, to reduce the *Tikshna guna* of *Bhallataka* *Dola yantra* method of *Shodhana* in *Narikela jala* was adopted for the purification of *Bhallataka* seeds in the present study. *Narikela jala* has *sheetala guna*, it relieves burning sensation of the body which are the caused by the contact of *Bhallataka* oil.

Churna Nirmana of Herbal drugs:

Shuddha Gandhaka, *Shuddha Bhallataka*, *Haritaki*, *Vibhitaki*, *Amalaki*, *Bhringaraja*, *Nimba beeja* were made into fine powder, according to the reference mentioned in *Sharangadhara Samhita Madhyama Khanda* ⁽⁴⁾.

Preparation of homogenous mixture of all component drugs:

Gandhaka and *Bhallataka* obtained after *Sodhana*, and the remaining drugs were taken in the equal proportion and made into a homogenous mixture of *Swittrari Yoga*

Bhavana of Homogenous mixture with Bhringaraja Swarasa:

Homogenous mixture was taken in *Khalwa yantra* and *Bhringaraja swarasa* for 3 days was added according to the reference ⁽⁵⁾ and triturated until it attains soft mass. By *Bhavana* process, mixture gets properly mixed and material becomes soft, smooth and unsticky. *Bhavana* facilitates particle size reduction and homogenization leading to modification of properties (*Gunantatradhana*) of the end product.

Preparation of Switrari Yoga Capsules:

In the present study, Capsule form was selected for the prescription of *Switrari Yoga* to the patients keeping in view of the unpleasant odor and taste of the drugs that can be enclosed in a tasteless shell.

- Capsules of uniform size were taken 125 mg of *Switrari Yoga Churna* ⁽⁶⁾ was filled in each capsule and weighed. Capsules were preserved in absolute sterile and moisture free glass containers.
- *Switrari Yoga* was given in the form of capsules to the patients in the prescribed dose.

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*, *Bhavana* and Preparation of *Capsules of Switrari Yoga*. *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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