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Research Article

PHARMACEUTICAL STANDARDIZATION OF *SHATPALA GANDHAKA CHURNA*

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ABSTRACT

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. *Shatpala Gandhaka churna* is an important *Rasa oushadi* described in *Vaidya chintamani- Kushtha prakaranam* indicated for all types of *Kushtha, Grahani, Gulma, Mandagni. Shatpala Gandhaka Churna* contains *Shuddha Gandhaka, Shuddha Bhallataka, Shuddha Chitrakamula twak, Triphala, Vidanga, Trikatu, Trijataka, Chanaka,* and *Jeeraka.* The main pharmaceutical procedures adopted in this study are *Shodhana*, *Churna nirmana* and preparation of capsule of *Shatpala Gandhaka Churna.* 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 *Shatpala Gandhaka churna* according to the method explained in the classical literature.

KEYWORDS: *Shatpala Gandhaka churna, Shodhana,* 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.

Shatpala Gandhaka Churna is one of the Herbo-mineral formulation mentioned in *Vaidya Chintamani*[1] which contains 6 parts of *Shuddha Gandhaka* and 1 part each of *Shuddha Bhallataka, Shuddha Chitrakamula twak, Triphala, Vidanga, Trikatu, Trijataka, Chanaka,* and *Jeeraka. Shodhana*, *Churna nirmana* and preparation of capsule of *Shatpala Gandhaka Churna* are the main pharmaceutical procedures adopted in the preparation of *Shatpala Gandhaka Churna.* 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 *Shatpala Gandhaka Churna*.

AIMS AND OBJECTIVES

To standardize the method of *Shatpala Gandhaka Churna*.

MATERIALS AND METHODS

Collection of Raw material

Gandhaka was obtained from Vijayawada. *Triphala*, *Trikatu* were obtained from TTD's Sri Srinivasa Ayurvedic Pharmacy, Tirupati. *Vidanga*, *Bhallataka*, *Chitrakamula twak* were obtained from Chennai. *Trijataka*, *Chanaka*, *Jeeraka* were obtained from the local market, Tirupati.

Methods

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

Shatpala Gandhaka Churna

Reference: *Vaidya Chintamani- Kushtha Roga Prakaranam*

Materials

Shuddha Gandhaka -1200 g
Shuddha Bhallataka Churna – 200 g
Shuddha Chitrakamula twak – 200 g
Triphala Churna – 200 g
Vidanga Churna – 200 g

Trikatu Churna – 200 g
Trijataka Churna – 200 g
Chanaka churna – 200 g
Jeeraka churna – 200 g

Method/ Principle: *Shodhana* and *Churna Nirmana*

Apparatus: *Khalwa yantra*, gas stove, iron ladle, steel vessel, cloth, spoon, jute bag, thread, steel vessel, tray and steel cutter.

The entire pharmaceutical study was carried out in four stages

- **Stage I**
  a. *Shodhana* of *Gandhaka*
  b. *Shodhana* of *Bhallataka*
  c. *Churnodaka Nirmana*
  d. *Shodhana* of *Chitrakamoolatwak*
- **Stage II**
  a) Preparation of *Triphala churna*
  b) Preparation of *Vidanga churna*
  c) Preparation of *Trikatu churna*
  d) Preparation of *Trijataka churna*
  e) Preparation of *Chanaka churna*
  f) Preparation of *Jeeraka churna*
- **Stage IV**
  Mixing of all *Churna* to form homogenous mixture
- **Stage V**

Making capsules of *Shatpala Gandhaka churna*

1. *Gandhaka Shodhana*

Ingredients: *Ashuddha Gandhaka* – 1300g, milk– 10 litres, *Goghrita*– Quantity Sufficient.
Water – as required.

Procedure

- Milk was taken in a glass vessel. A cloth was tied to its mouth. *Go ghrita* was taken in ladle and melted. *Gandhaka* was finely powdered and added to the molten *Ghrita*. When the *Gandhaka* was melted completely, it was poured into milk through the cloth. *Gandhaka* was taken out from milk and washed with hot water. After washing it was kept for drying and the same process was repeated for six more times (total 7 times). Fresh milk was taken each time.

Observations

- On complete melting, *Gandhaka* changed into ghee like liquid.
- After *Shodhana, Gandhaka* colour was changed from dull yellow to thick, bright yellow colour with increased luster.

2. *Bhallataka Shodhana*

Ingredients: *Asuddha Bhallataka*-500g

Procedure

- *Bhallataka* ripe seeds were taken and put in to water. Only those which sink were selected and used for the purification and the rest were discarded. The upper cap like structure was removed with the help of steel cutter. The nuts were kept in a jute bag containing brick powder. Then jute bag was tied and rubbed until the irritant oil was absorbed by the brick powder. Then the seeds were washed thoroughly with hot water. Then it was dried in sunlight. After drying it was made into fine powder.

Observations

- *Bhallataka* seeds were converted into small pieces.
- The jute bag taken was slightly wet with *Bhallataka taila.*
- Change in color of brick powder due to the absorption of *Bhallataka taila*.

3. *Churnodaka Nirmana*

Ingredients: *Sudha churna*-1g, Water - 240ml

Procedure

- 1g of *Sudha churna* was taken in a vessel and added with 240ml of water, mixed thoroughly and left for 12 hours. Later, the supernatant water was taken out and filtered through filter paper and *Churnodaka* was obtained.

Obesrvations

- *Churnodaka* - colourless liquid (similar to water) was collected.

4. *Chitrakamoola twak Shodhana*

Ingredients: *Chitrakamoola twak*-300g, *Churnodaka*-As required

Procedure

- *Chitrakamoola twak* was cleaned to remove external impurities if any. *Chitrakamoola twak* was taken in *Khalwa yantra* and pounded. It was soaked in *Churnodaka* for one day and dried in sunlight.

Observations

- Colour of the *Churnodaka* turned to orange colour.

5. *Triphala Churna Nirmana*

Ingredients: *Amalaki*-100g, *Haritaki*-100g, *Vibhitaki*-100g

Procedure

- *Amalaki, Haritaki, Vibhitaki* were taken in equal quantities. Then these three drugs were taken separately in *Khalwa yantra* and made into powder and filtered through a cloth to get fine powder and mixed together.

Observations

- *Triphala churna* obtained was very fine.

6. *Vidanga churna Nirmana*

Ingredients: Vidanga-500g

Procedure

- *Vidanga* was checked for any external impurities, worms and insects and cleaned. Then it was subjected for powdering in Hammer crusher.

Powder obtained from hammer crusher was shifted to swifter machine for getting very fine powder of *Vidanga. Vidanga* powder obtained was kept in air tight jar.

Observation

- Very fine powder of *Vidanga* was obtained.

7. *Trikatu churna Nirmana*

Ingredients: *Shunti*-100g, *Pippali*-100g, *Maricha*-100g.

Procedure

- Dried *Shunti, Maricha* and *Pippali* were collected. Then these drugs were grinded in a pulverizer and made into powder separately. Then these three powders were sieved through swifter sieve separately and mixed together.

Observations

- *Trikatu churna* obtained was very fine.

8. *Trijataka Churna Nirmana*

Ingredients: *Twak*- 200g, *Ela*- 200 g, *Patra*- 200g.

Procedure

- *Twak*, *Ela* and *Patra churna* were taken in equal quantities in a *Khalwa yantra* and mixed well to form a homogenous mixture.

Observations

- *Trijataka churna* was obtained.

9. *Chanaka Churna Nirmana*

Ingredients: *Chanaka*–300 g

Procedure

- Dried *Chanaka* was checked for any external impurities, worms and insects and cleaned. It was taken in *Khalwa yantra* and pounded. Pounded material was sieved through a cloth to obtain very fine powder.

Observations

- *Chanaka churna* obtained was light yellowish in colour.

10. *Jeeraka churna Nirmana*

Ingredients: *Jeeraka*- 300g

Procedure

- *Jeeraka* was cleaned to remove external impurities if any. It was pounded in *Khalva yantra* and filtered through a cloth to obtain fine powder.

Observations

- *Jeeraka churna* obtained was very fine.

11. Preparation of Homogenous mixture

Ingredients

Shuddha Gandhaka -1200 g
Shuddha Bhallataka Churna – 200 g
Suddha Chitrakamula twak – 200 g
Triphala Churna – 200 g
Vidanga Churna – 200 g
Trikatu Churna – 200 g
Trijataka Churna – 200 g
Chanaka churna – 200 g
Jeeraka churna – 200 g

Procedure

- Fine *churna* obtained after practical No. 1, 2, 4, 5, 6,7,8,9,10 were added one by one in *Khalwa yantra* and mixed well. Mixing was carried out till a homogenous mixture was obtained. It was collected and preserved in an air tight glass container.

Observations

- Very fine homogenous mixture was obtained.

12. Preparation of capsules of *Shatpala Gandhaka Churna*

Ingredients: Homogenous mixture of *Shatpala Gandhaka Churna*- 2790 g

Procedure

- Capsules of uniform size were taken. 500 mg of *Shatpala Gandhaka Churna* was filled in each capsule and weighed. Capsules were preserved in absolute sterile and moisture free glass containers.

Observations

- On average, one among every 100 capsules was damaged.

Images Showing the Preparation of *Shatpala Gandhaka Churna*

1. *Gandhaka* before *shodhana*
2. Melting *Gandhaka*
3. Pouring molten *Gandhaka* into milk
4. *Shoditha Gandhaka*
5. Cutting cap like structure of *Bhallataka* seeds
6. *Bhallataka* seeds mixed with *Istika Churna*
7. *Bhallataka* seeds after rubbing vigorously in a jute bag
8. *Shoditha Bhallataka churna*
9. *Chitraka moola twak*
10. *Churnodaka*
11. Soaking *Chitraka moola twak* in *churnodaka*
12. *Churnodaka* turned in to orange color
13. *Chitraka moola* dried in sunlight
14. *Shoditha chitraka moola twak churna*
15. *Harithaki*
16. *Vibhitaki*
17. *Amalaki*
18. *Triphala churna*
19. *Vidanga*
20. *Vidanga churna*
21. *Chanaka*
22. *Chanaka churna*
23. *Jeerka*
24. *Jeeraka churna*
25. *Sunthi*
26. *Pippali*
27. *Maricha*
28. *Trikatu churna*
29. *Twak*
30. *Ela*
31. *Patra*
32. *Trijataka churna*
33. Mixing of *Gandhaka* and herbal drugs
34. Homogenous mixture of *Shatpala Gandhaka churna*
35. Capsules of *Shatphala Gandhaka Churna*

Results

Table 1: Showing the result of *Gandhaka Shodhana*

S.no	Initial weight	Final weight	Loss in weight	Loss in percentage
1.	1300 g	1270 g	30g	2.3%

Table 2: Showing the Result of *Bhallataka Shodhana*

Initial Weight	Final Weight	Loss in Weight	Loss in percentage
500 g	260 g	240 g	48%

Table 3: Showing the Result of *Churnodaka Nirmana*

Ingredients	Quantity taken	Quantity of *churnodaka* obtained
Sudha Churna	1g	230ml
Water	240ml	

Table 4: Showing the Result of *Chitrakamoola twak Shodhana*

*Wei*ght of *Chitrakamoola twak*	Weight after *Shodhana*	Loss in weight	Loss in percentage
300g	298g	2g	0.66%

Table 5: Showing the Result of *Triphala Churna Nirmana*

Weight Of drug taken	Final wt.	Loss in wt	Loss in percentage
Amalaki-100g *Haritaki*-100g *Vibitaki*-100g	*Triphala churna*-280g	20g	6.6%

Table 6: Showing the result of *Vidanga churna nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
500 g	490g	10g	2%

Table 7: Showing the result of *Trikatu churna nirmana*

Initial Weight	Final Weight	Loss in Weight	Loss in percentage
Shunti- 100g *Pippali*- 100g *Maricha*- 100g	*Trikatu churna* – 270g	30g	10%

Table 8: Showing the Result of *Trijataka Churna nirmana*

Initial weight	Final Weight	Loss in Weight	Loss in percentage
Twak churna- 200g *Ela churna*- 200g *Patra churna*- 200g	*Trijataka churna*– 595g	5g	0.83%

Table 9: Showing the Result of *Chanaka Churna Nirmana*

Weight of *Chanaka* taken	Weight of *Chanaka churna obtained*	Loss in weight	Loss in percentage
300g	295g	5g	1.66%

Table 10: Showing the result of preparation of *Jeeraka Churna*

Initial Weight	Final Weight	Loss in weight	Loss in percentage
300g	280g	20g	6.6%

Table 11: Showing the result of mixing of component drugs of *Shatpala Gandaka Churna*

Initial Weight	Final Weight	Loss in Weight	Loss in percentage
2800g	2790g	10g	0.35%

Table 12: Showing the result of Preparation of capsules of *Shatpala Gandhaka Churna*

Weight of *Shatpala Gandhaka Churna*	No. of Total Capsules (Each 500 mg)	No. of spoiled capsules
2790g	5570 Capsules	55

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 done according to the method that was mentioned in *Rasa Ratna Samucchaya,*[2] which includes melting of *Gandhaka* in ghee and pouring into a vessel filled with milk through fine cloth. *Gandhaka* is highly *Pitta vardhaka.*[3] Both ghee and milk are *Vata Pitta shamaka dravyas*[4] and among them ghee is the drug of choice among fats in reducing *Pitta.* Therefore, these can reduce *'teevra pitta vruddhikara'* effect of *Gandhaka.* Milk and Ghee are *Vishahara* and *Rasayana.* These can remove *Visha doshas* of *Gandhaka* and impregnate *Rasayana* property to *Gandhaka.* Final cleaning with hot water removes greasy remnants of milk and ghee.

Churnodaka Nirmana

Churnodaka Nirmana was done according to the method that was mentioned in *Rasatarangini.*[5] 1g of *Sudha churna* was taken in a vessel and added with 240ml of water, mixed thoroughly and left for 12 hours. Later, the supernatant water was taken out and filtered through filter paper and *Churnodaka* was obtained.

Chitrakamula twak Shodhana

Chitrakamula twak Shodhana, was done according to the method that was mentioned in *Rasatarangini.*[6] *Chitrakamoola twak* was cleaned to remove external impurities if any. *Chitrakamoola twak* was taken in *Khalwa yantra* and pounded. It was soaked in *Churnodaka* for one day and dried in sunlight. Colour of the *Churnodaka* turned to orange colour. *Shodhana* reduces the *Teekshnatva* of *Chitrakmoola*.

Bhallataka Shodhana

Bhallataka Shodhana was done according to the reference *Rasa tarangini.*[7] *Bhallataka* seeds are rubbed with *Istika churna* in a jute bag. In Ayurvedic literature, the synonym *Shopha hetu, Spota hetu, Agnika* are given to this drug based on its blister causing nature.[8] The oil in the fruit is responsible for the irritation.[9] 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 the dermatitis. This vesicant nature is removed while doing *Shodhana* with *Istika churna*. 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 bhilawanol,[10] semecarpol[11] and anacordol.[12] Recent studies reported that bhilawanols 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 ($C_{18}H_{13}O_3$.COOH) to which the corrosive properties of the juice are due to two phenolic acids $C_{16}H_{15}O_3$.COOH and $C_{14}H_{13}O_3$.COOH[13]. Brick powder is having adsorbent property so corrosive oil present in the fruit is absorbed by the brick powder.

Churna nirmana of herbal drugs

Shuddha Bhallataka, Shuddha Chitraka mulatwak, Triphala, Vidanga, Trikatu, Trijataka, Chanaka, Jeeraka were made into fine powder, according to the *Churna kalpana* reference mentioned in *Sharangadhara Samhita Madhyama Khanda.*[14]

Preparation of homogenous mixture of all component drugs

Gandhaka 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 *Shatpala Gandhaka Churna.*

Preparation of *Shatpala Gandhaka Churna* Capsules

Capsules of uniform size were taken. 500 mg of *Shatpala Gandhaka Churna* was filled in each capsule and weighed. Capsules were preserved in absolute sterile and moisture free glass containers. Capsule form was selected keeping in view of ingredients like *Twak*, *Ela* and *Patra*, which contain volatile oils, which may lose their potency on making tablets. Hence, *Shatpala Gandhaka Churna* 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* and preparation of capsules of *Shatpala Gandhaka Churna*. *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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