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PHARMACEUTICAL AND ANALYTICAL STUDY OF *KAPHAKETU RASA*

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ABSTRACT

Background: *Kaphaketu Rasa* is one of the *Kharliya Rasayana* which is used to treat various ailments since thousands of years ago. It is necessary to standardize the formulation containing poisonous and metallic or mineral substances as ingredients in it. **Aim and objective:** To prepare *Kaphaketu Rasa* as mentioned in classical text named as *Bhaishajya Ratnavali* in *Jwara Chikitsa Prakarana* and to do its analytical study. **Material and Methods:** First of all Raw drugs are collected from the local market and its authentication can be done as per *Grahya Lakshana* mentioned in classical texts. Then purification of ingredients – *Tankana*, *Vatsnabha*, *Shankha* was done followed by *Marana* of *Shankha*. After that *Churnikaran* was made of *Shudha Vatsnabha* and *Pippali*. Then homogeneous mixing and trituration was done with *Ardraka Swarasa* of all the contents. This was followed by physio-chemical Analysis of finished products which include TLC, loss on drying at 110°C, total ash, water soluble ash, uniformity of weight, tablet disintegration test, test for calcium. **Result and Conclusion:** Efficiency of *Kaphaketu Rasa* was specified with its physico-chemical analysis. In preparation of *Kaphaketu Rasa* trituration of *Ardraka swarasa* was done for 3 hours in

each *Bhavana*. At the end of *Bhavana*, the product shows all the features of *Subhavit Lakshana*. The final product yields 8.5% weight gain**.**

KEYWORDS: *Rasa Shastra***,** *Kharliya Rasayana***,** *Kaphaketu Rasa, Shankha, Tankana, Vatsnabha, Pippali.*

INTRODUCTION

Rasa Shastra is the branch of science which deals with herbomineral preparation known as *Rasa Aushadhi*. These *Rasa Aushadhi* have unique importance because of its qualities like lesser dose, prolonged shelf life, easy assimilable, easy to administrate. There are various type of *Rasa Aushadhis* named under *Kupipakwa*, *Parpatti Kalpana*, *Pottali Kalpana* and *Kharliya Rasayana*.In these, *Kharliya Rasayana* are the most common and easy to prepare formulation which is widely used to treat various diseases. Among these *Kaphaketu Rasa* is one such formulation which is widely used for *Kasa*, *Peenasa*, *Pratishaya*, *Jwara* etc.

In this formulation, ingredients are *Shudha Vatsanabha*, *Shudha Tankana*, *Shankha Bhasma*, *Pippali* and all these ingredients are triturated with *Ardraka Swarasa* for 3 times to make homogeneous mixture and also to increase its efficacy. All these ingredients mainly act on *Agni*. By stimulating *Agni* (the digestive fire) it have the ability to cure sore throat, cold and cough.

One of the classical text named as *Bhaishajya Ratnavali* explained the preparatory method of *Kaphaketu Rasa*[1] in *Jwara Chikitsa Prakarana* for management of *Jwara* as well as for *Peenasa*, *Kasa*, Swasa, *Shiroroga* and *Galgraha.*

Table 1: Composition of *Kaphaketu Rasa.*[1]

Name of ingredients	Latin name	Quantity (in parts)	Quantity (in grams)
Shudha Tankana	Borax	1 part	80 gm
Pippali	*Pipper longum*	1 part	80 gm
Shankha Bhasma	Conch shell	1 part	80 gm
Shudha Vatsnabha	*Aconitum ferox*	1 part	80 gm
Ardraka	*Zingiber officinale*	Q.S	Q.S

AIM AND OBJECTIVE

To prepare *Kaphaketu Rasa* as mentioned in classical text named as *Bhaishajya Ratnavali* in *Jwara Chikitsa Prakarana* [1] and to do its analytical study.

MATERIAL AND METHODS

1. Procurement of Raw Material

Raw *Tankana*, *Vatsnabha*, *Shankha* were procured from Local market considered classical *Grahya Lakahanas.* Its analysis was done at the Government Drug Testing Laboratory, Patiala**.** Raw *Pippali* was procured standardized with certificate of analysis from Herbal Health ResearchConsortium Pvt. Ltd.

2. Shodhana of ingredients of *Kaphaketu Rasa*

- ***Vatsnabha Shodhana***[2]

First of all *Ashuddha Vatsnabha* was cut into small pieces. Then these pieces of *Vatsnabha* were tied into cotton cloth to make a *Pottali*. Then this *Pottali* was kept in an earthen pot. After that sufficient quantity of *Gomutra* was poured in a pot so that *Pottali* will be properly sunk in the *Gomatra*. Keep this pot under sunlight for one day. Next day, discarding the old *Gomutra* and fresh *Gomutra* was added. Repeat this procedure 3 times and every time fresh *Gomutra* was added. After 3 days of process, *Vatsnabha* was removed from the *Pottali* and washed with warm water. To check the proper *Shodhana* was done and the softness of *Vatsnabha*, a needle was passed through the pieces. Then the outer skin of *Vatsnabha* was removed and *Shuddha Vatsnabha* was obtained and then dried under sunlight. Weigh the *Shuddha Vatsnabha* and powdered it and preserved it in an airtight container for further use.

- ***Shankha Shodhana***[3]

Shankha was taken and made into small pieces. The pieces of *Shankha* were tied in cloth and *Pottali* was prepared. The *Pottali* was immersed in *Dolayantra* with the help of an iron rod containing *Nimbukamla.* The *Dolayantra* was subjected for heating on a mild flame which was maintained throughout. Required amount of *Nimbukamla* was added frequently in *Dolayantra* to avoid burning of drugs. The procedure continued for one and half hours. Then *Pottali* was taken out from *Dolayantra* and the physical impurities were removed by scraping with a knife and brush and then washed with hot water. Then these pieces of *Shankha* were dried completely.

- ***Tankana Shodhana***[4]

First of all *Tankana* was powdered in *Khalvayantra*. Take a small quantity of powder in an iron vessel and heated on medium flame. It was stirred continuously until it became light and puffed and the whole water content in the *Tankana* was completely evaporated. Repeat this procedure for each part of *Tankana* powder. After *Shodhana* it was weighed and preserved in

an airtight container for further use.

3. *Shankha Marana*[5]

The dried *Shodhita Shankha* pieces were taken and put into the earthen pot and was closed by *Sharava*. *Sandhi Bandhana* was done with the cloth smeared with mud and dried well. After complete drying, it was kept in *Puta* and ignited. After *Swangasheeta* the *Sharava* was taken outside and smeared mud was removed carefully. Then the pieces of *Shankha* were powdered well and *Kumari Swarasa Bhavana* was given and C*hakrikas* were prepared and dried. These C*hakrikas* were subjected to *Gajaputa*. As it did not pass *Bhasma pareeksha*, it was once again subjected to *Gajaputa* for the second time, where it attained the *Samyak Bhasma lakshanas. Sharavasamputa Chakrikas* were powdered well and kept in an airtight container.

4. Preparation of *Pippali* and *Shudha Vatsnabha churana*[6]

Dried *Pippali* and *Shuddha Vatsnabha* were transferred into a mixer grinder and powdered separately, sieved them through fine cotton cloth, weighed and kept in an airtight container.

5. Mixing of ingredients[1]

All the ingredients are mixed together to form a homogeneous mixture and triturated with *Ardraka Swarasa* for 3 times. Each trituration was done for a period of three hours.

6. Analytical study[7]

Analytical study of *Kaphaketu Rasa* was done at the Government Drug Testing Laboratory, Patiala.

OBSERVATION AND RESULTS

1. Observation of *Vatsnabha Shodhana*

- The colour of *Ashuddha Vatsnabha* was dark brown but after drying colour of *Shodhita Vatsnabha* was black.
- The colour of *Gomutra* changes from yellowish brown to dark brown and consistency also becomes thicker on every next day.
- After the *Shodhana* process, the *Vatsnabha* became very soft and its outer skin was easily peeled off.

Table 2: Result of *Vatsnabha Shodhana.*

Initial weight	Final Weight	Weight loss in grams	Weight loss in %
575gm	345 gm	230 gm	40%

2. Observation of *Shankha Shodhana*

- After a few minutes of heating the *Nimbukamla* started to overflow.
- The colour of *Nimbukamla* become deep yellow and dirty.
- The *Shankha* pieces become brighter in colour.
- During the process the typical smell of *Nimbukamla* was observed.

Table 3: Result of *Shankha Shodhana.*

Initial weight	Final weight	Weight loss in grams	Weight loss in %
475 gm	445 gm	30 gm	6%

3. Observation of *Tankana Shodhana*

- As soon as heating started, first it liquefied and then water evaporated with hissing sound and fumes were observed.
- On heating, *Tankana* was puffed and appeared like beads.
- After *Shodhana* it felt totally dry when rubbed between fingers.

Table 4: Result of *Tankana Shodhana.*

Initial weigh	Final weight	Weight loss in grams	Weight loss in %
475 gm	256 gm	219 gm	46%

4. Observation of *Shankha Marana*

- After the first *Puta, Shankha* pieces become white, soft and brittle. Lusture also disappeared completely from *Shankha* pieces.
- After the 1st *Gajaputa, Chakrikas* become pale white in colour.
- After the 2nd *Gajaputa, Shankha Bhasma* obtained of white colour, fine andvery soft.

Table 5: Result of *Shankha Marana.*

No. of *puta*	Initial weight	Final weight	Weight loss in grams	Weight loss in %
1st puta	420 gm	369 gm	51 gm	12%
2nd puta	369 gm	332 gm	37gm	10%
3rd puta	332 gm	302	30 gm	9 %

Table 6: Temperature variation during *Putapaka.*

No. of puta	Max. Temperature attain during *Putapaka*	Time after which peak temp. attained
Sadharana Puta	972	4 hours
1st *Gajputa*	894	3 hours
2nd *Gajputa*	765	3 hours

Table 7: Result of *Vatsnabha* and *Pippali churnikarana.*

Name of drug	Initial weight	Final weight	Weight loss in grams	Weight loss in %
Shuddha Vatsnabha	320 gm	281 gm	39 gm	12%
Pippali	350 gm	315 gm	23 gm	10%

Table 8: Result of homogeneous mixture of contents of *Kaphaketu Rasa.*

Name of drug	Weight of drug	Weight of homogeneous mixture
Shuddha Tankana	80 gm	320 gm
Pippali	80 gm	
Shankha Bhasma	80 gm	
Shudha Vatsnabha	80 gm	

Table 9: Result of *Kaphaketu Rasa.*

Total Quantity Of homogeneous mixture	Quantity obtained(After *bhavana* with *Ardraka Swarasa)*	No. of *vatis*	Weight gain in grams	Weight gain in %
320 gm	350	2800	30 gm	8.5%

Analytical study of *Kaphaketu Rasa vatis.*

Table 10: Showing Organoleptic characters.

Sr. No.	Tests	Results
1.	Appearance	Smooth
2.	Colour	Ash grey
3.	Odour	Faint odour
4.	Taste	Pungent

Table 11: Showing Physico-chemical study.

Analytical test	Result of test
Composition/ TLC	Ingredients found present
Total ash	29.2%
Loss on drying	1.96%
Water soluble ash	46.1%
Acid insoluble ash	2.35%
Uniformity of weight	3%
Tablet disintegration test	11 min
Test for calcium	Give characteristics test for calcium positive

1. *Ashudha Vatsnabha*

2. *Ashudha Vatsnabha* dipped in *Gomutra*

3. Shodhita *Vatsanabha*

4. *Vatsnabha Churana*

5. Ashudha *Shankha*

6. *Nimbu Swarasa*

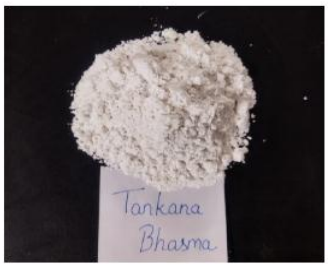
7. Shodhana in *Dolayantra*

8. *Shudha Shankha*

9. Ashudha *Tankana*

10. Starting stage of *Tankana Shodhana*

11. Final stage of *Tankana Shodhana*



12. *Tankana Bhasma*

13. *Shudha Shankha*

14. Preparation for *Sadharana Puta*

15. After *Swangsheeta*

16. *Shankha* pieces after *Sadharana* Puta

17. Powdering of Shankha

18. Kumari *Swarasa*

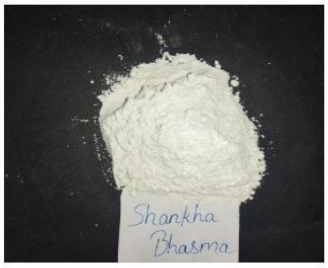
19. Addition of *Kumari Swarasa* to *Shankha* powder

20. Bhavana given with *Kumari Swarasa*

21. Chakrikarana

22. Putapaka

23. After *Swangsheeta*



24. *Shankha Bhasma*

25. Raw *Pippali*

26. *Pippali Churana*

27. *Ardraka Swarasa*

28. *Bhavana* of *Ardraka Swarasa* to mixture of contents of *Kaphaketu Rasa*

29. *Vati* preparation of *Kaphaketu Rasa*

DISCUSSION

The pharmaceutical procedures adopted in this study are *Shodhana, Marana, Bhavana* and *Churnikaran.* Here *Shodhana* process is done for *Tanakana, Vatsnabha* and *Shankha. Shodhana* process converts drug into suitable form and eliminates toxicity from drug for further use. *The Marana* process here is used for *Shankha. The Putapaka* method is used for the *Marana* of *shankha*. By this process *Shankha* becomes more easily absorbable and assimilable.

By doing *Shodhana* of *Shankha* in *Nimbukamla* make it brittle and soft for further process. Its outer layer becomes rough and outer impurities become soft which can easily be removed. *Vatsnabha Shodhana* was done by *Nimajjana* method with *Gomutra.* After the *Shodhana* process, *Vatsnabha* becomes soft and free from toxins. It is believed that toxins named aconitine and pseudaconitine get converted into less poisonous substances called as Benzelaconine and vetoryl aconite. *Tankana Shodhana* was done by a process called *Nirjalikaran.* This process was done by frying *Tankana* powder in an iron vessel on medium flame, till it became puffy and beaded like. *Shankha Marana* was done by *Putapaka* method in *Gajaputa.* In this temperature the heat gradually rises and falls which makes material more *Agnisthayi* (heat stable).[8] In 1st puta, *Shankha* pieces become more brittle. After *puta, Shankha* pieces were taken out from *Sharava* and powdered in *Ullukhala yantra.* Here *Bhavana* was given with *kumari Swarasa.* Though, in classical texts, no *Bhavana Dravya* for trituration had been mentioned but in *Rasashastra*, for the *Bhasma* preparation, it had been accepted where no *Bhavana Dravya* is being mentioned, *Ghritkumari* (aloe vera) *Swarasa* could be taken as a *Bhavana* Dravya.[9][10] *Churnikaran* process here done by reference of *Sarangadhara Samhita Madhyama Khanda.* Mixing of all ingredients was done to form a homogeneous mixture and three *Bhavana* was given which increased its efficacy and efficiency.

CONCLUSION

Pharmaceutical standardization of Ayurvedic formulations is necessary to establish the safety andefficacy. It also help in yielding best quality final product.

Shodhana process helps in removing toxic and other physical and chemical impurities. *The Bhavana* process helps in reducing particle size as a result of which its surface area is increased. This facilitates absorption of drugs in the body. Due to the Marana process, *Bhasma* get converted into a more easily absorbable and assimilable form which does not

cause any toxic effect on organs. At last *Bhavana* of *Ardraka swarasa* was given which increased the productyield by 8.5% and also the efficacy of *Kaphaketu Rasa.*

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