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Pharmaceutical Standardization of Mayaphaladi Churna

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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 a wide range of therapeutic efficacy and are considered superior because of their qualities like small dose, quick action, palatability and longer shelf life. *Mayaphaladi Churna* is an important *Rasa oushadi* described in ***Rasa Tantra Sara Va Siddha Prayoga Sangraha***- Part 2, *Streerogadhikara* indicated for the management of the diseases *Swetapradara and Yonibramsha*. The ingredients present in the '*Mayaphaladi Churna'* are *Kukkutanda twak bhasma (Egg Shell Ash), Shuddha Sphatika (Alum), Mayaphala Churna (Quercus Infectoria Oliv.), Amalaki Churna (Emblica Officinalis Gearth), Ashwagandha Churna (Withania Somnifera Linn.) and Sita Churna (Sugar Candy)*. The main pharmaceutical procedures involved in the preparation of *Mayaphaladi Churna* are *Shodhana, Marana, Churna nirmana* and preparation of *Mayaphaladi Churna*. The specific pharmaceutical blend of these contents can result in a more effective formulation. Therefore the present study has been planned to standardize the method of preparation of *Mayaphaladi Churna* according to the method explained in the classical literatures.

Keywords: *Mayaphaladi Churna*, *Shodhana, Marana, Churna Nirmana,* Standardization.

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INTRODUCTION

Rasa Shastra is an independent and important branch of *Ayurveda* developed during the medieval period. It mainly deals with the knowledge related to Alchemy and pharmaceutical processes especially concerned with the drugs of metal and mineral origin. Metals and minerals are the integral part of Ayurvedic therapeutics and are in vogue since Vedic period. During *Samhita Kala,* their use was limited in therapeutics when compared to herbal preparations. But, after the development of *Rasa Shastra*, the frequency of use of metals and minerals in treating diseases has been increased. Before their use, they should be subjected to specialized pharmaceutical processes like *Shodhana*, *Marana*, *Amrutikarana* etc. Their use in therapeutics occupied highest place and is called as *Rasa Chikitsa*. *Kukkutanda twak* (egg shell) mentioned under *Sudha varga* group possess various therapeutic properties. It is indicated in the management of several diseases like *pandu (Anemia), Mutrakrichra (Urinary disorder), Swetapradara (Leucorrhoea), Hrudroga (Heart disease), Raktapradara (Menorrhagia)* etc[1].

Mayaphaladi Churna is one of the Herbo-mineral formulation described in *Rasa Tantra Sara Va Siddha Prayoga Sangraha,* which contains 1 part of *Kukkutanda twak bhasma (Egg Shell ash),* 1 part of *Shuddha Sphatika (Alum),* 5 parts of *Mayaphala Churna (Quercus infectoria)*, 2 parts of *Amalaki Churna (Emblica Officinalis)*, 2 parts of *Ashwagandha Churna (Withania Somnifera)* and 11 parts of *Sita Churna (Sugar Candy)*[2]. *Shodhana, Marana, Churna nirmana* and preparation of *Mayaphaladi Churna* are the main pharmaceutical procedures adopted in the preparation of *Mayaphaladi Churna.* 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 *Mayaphaladi Churna.*

MATERIALS AND METHODS

Collection of Raw material

Kukkutanda twak was obtained from local restaurant, Tirupati. *Sphatika, Mayaphala, Amalaki* and *Ashwagandha* were obtained from the local market, Chennai, Tamilnadu. *Sita* was obtained from local market, Tirupati.

Methods

Entire preparation of *Mayaphaladi Churna* was carried out in Department of *Rasa Shastra* and *Bhaishajya Kalpana*, TTD's S.V. *Ayurvedic* College and Sri Srinivasa *Ayurveda* Pharmacy, TTD, Tirupati.

Pharmaceutical study was carried out in four stages

Stage 1 *Shodhana* and *Marana* of *Kukkutanda twak*

Stage 2 *Shodhana* of *Sphatika*

Stage 3 *Mayaphala, Ashwagandha*, *Amalaki* and *Sita Churna Nirmana*

Stage 4 Preparation of homogenous mixture of *Mayaphaladi Churna*.

Kukkutanda twak Shodhana

Ingredients: *Ashuddha Kukkutanda twak*-380g, *Saindhava lavana*-30g, *Navasadara*-30g, Water-1liter

Procedure: *Kukkutanda twak* was taken in a stainless steel vessel and subjected to *Shodhana* by soaking in the solution of *Saindhava lavana* and *Navasadara* for three days. On fourth day inner membraneous layer of the egg shell was removed carefuliy, washed with hot water and dried under sunlight[3].

Observation: After completion of procedure the colour of egg shells became white.

Kukkutanda Twak Marana

Ingredients: *Shoditha Kukkutanda twak* -350g,

Changeri Swarasa- Q.S (Quantity Sufficient)

Procedure: *Shuddha Kukkutanda twak* was taken in *Khalva yantra* and sufficient quantity of *Changeri Swarasa* was added to it and triturated well. *Chakrika* of uniform size and shape were prepared and kept in an earthen saucer and were allowed to dry. Then it was subjected to *Sandhi bhandhana* and *Sharava samputa* was kept for drying. Then it was subjected to *Gajaputa*. After self-cooling the *Sharava Samputa* was taken out and opened. The material was collected and ground. Again this procedure was repeated for one more time[4].

Observations: White coloured *Kukkutanda twak bhasma* was obtained after second *Puta*. Maximum temperature attained during the *Puta* was 1003°C. Reduction in the weight of *Kukkutanda twak* has been noticed in the whole process.

Sphatika Shodhana

Ingredients: *Ashuddha Sphatika*- 250g

Procedure: *Sphatika* was taken in *Khalwa yantra* made into coarse powder and placed in a *sharava*. Then it was subjected to *Nirjalikarana* (de-watering) by giving mild heat. Then it was taken in a *Khalwa yantra* and made into fine powder[5].

Observations: On heating weight of *Sphatika* was reduced. White coloured *Sphatika* was obtained.

Mayaphala Churna

Ingredients: *Mayaphala*-800g

Procedure: Dried *Mayaphala* were thoroughly checked for external impurities. Later they were taken in *khalwa yantra* and pounded. The pounded material was sieved through a clean cloth to obtain very fine powder[6].

Observations: Light yellow coloured *Mayaphala churna* was obtained.

Ashwagandha Churna

Ingredients: - *Ashwagandha Root*- 400g

Procedure: Dried root of *Ashwagandha* were taken in *khalwa yantra* and pounded. The pounded material was sieved through a clean cloth to obtain very fine powder[7].

Observations: Cream coloured *Ashwagandha churna* was obtained.

Amalaki Churna

Ingredients: - *Dried Amalaki*- 400g

Procedure: Dried *Amalaki* were taken in *khalwa yantra* and pounded. The pounded material was sieved through a clean cloth to obtain very fine powder[8].

Observations: Brown coloured *Amalaki churna* was obtained.

Sita Churna

Ingredients: - *Sita*- 1400g

Procedure: Sita was taken in *khalwa yantra* and pounded. The pounded material was sieved through a clean cloth to obtain very fine powder[9].

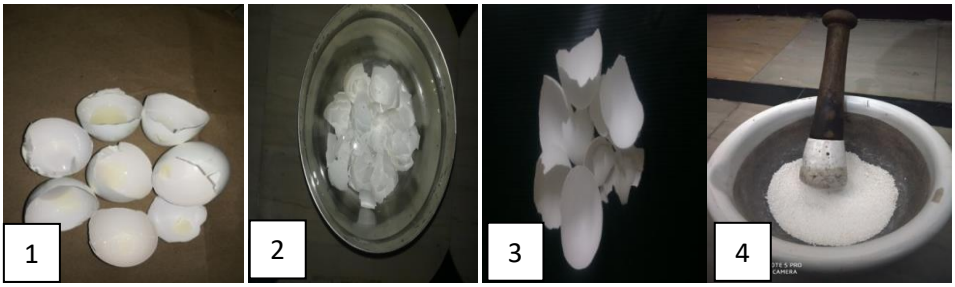
Observations: White coloured *Sita churna* was obtained.

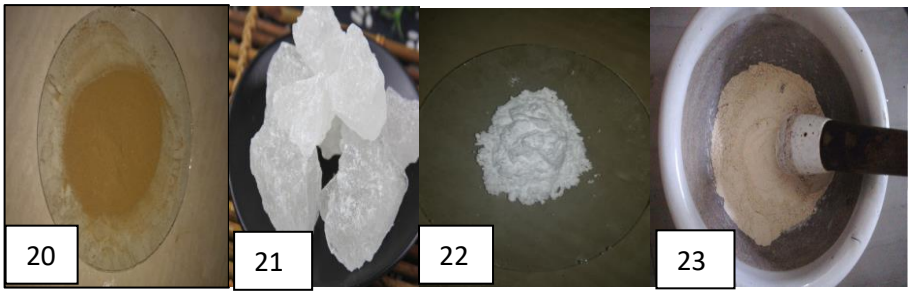
Mixing all the components of *Mayaphaladi Churna*

Ingredients: *Kukkutanda Twak Bhasma-135g , Shuddha Sphatika- 135g , Mayaphala Churna-780g , Ashwagandha Churna-390g , Amalaki Churna*- 390g and *Sita Churna*-1380g .

Procedure: All the ingredients were added one by one in a *Khalwa yantra* and mixed well till a homogeneous mixture was obtained[10]

IMAGES SHOWING THE PREPARATION OF MAYAPHALADI CHURNA





1. Ashuddha Kukkutanda twak
2. Kukkutanda twak soaking in solution of Saindhava lavana and Navasadara
3. Removed inner membraneous layer of Kukkutanda twak and dried under sunlight
4. Shuddha Kukkutanda twak Churna
5. Changeri Swarasa
6. Shuddha Kukkutanda twak Churna Bhavana with Changeri Swarasa
7. Chakrika Nirmana
8. Sharava Samputa
9. Gajaputa
10. Kukkutanda Twak Bhasma
11. Ashuddha Sphatika
12. Heating of Sphatika
13. Nirjalikarana(De-watering)
14. Shuddha Sphatika
15. Mayaphala
16. Mayaphala Churna
17. Ashwagandha
18. Ashwagandha Churna
19. Amalaki
20. Amalaki Churna
21. Sita
22. Sita Churna
23. Homogeneous mixture of Mayaphaladi Churna

RESULTS:

Table No 1: Showing the result of *Kukkutanda twak Shodhana*

Initial weight	Final weight	Loss in weight	Loss in percentage
380 g	350 g	30g	7.89%

Table No 2: Showing the result of *Kukkutanda twak marana*

Initial weight	Final weight	Loss in weight	Loss in percentage
350 g	135 g	215g	70%

Graph No 1: Showing the heating patter of Gaja Puta

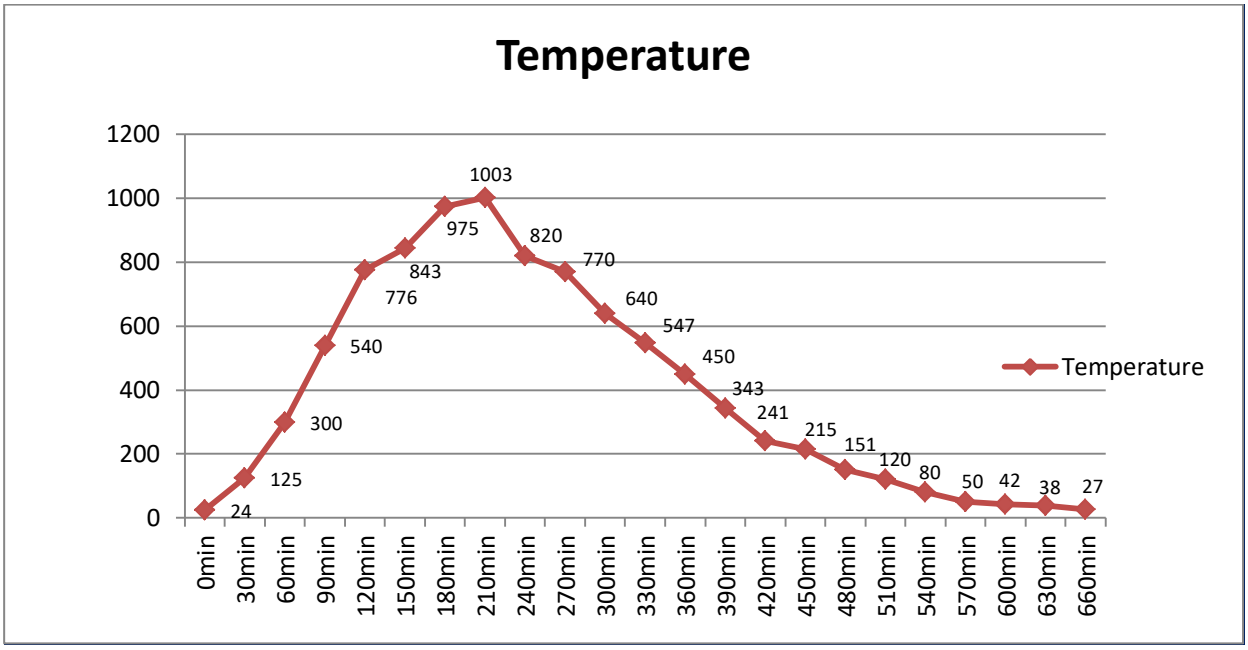


Table No 3: *Showing the heating pattern of Gaja puta*

Time	Temperature
0 min	24°C
30min	125°C
60min	300°C
90min	540°C
120min	776°C
150min	843°C
180min	975°C
210min	1003°C
240min	820°C
270min	770°C
300min	640°C
330min	547°C
360min	450°C
390min	343°C
420min	241°C
450min	215°C
480min	151°C
510min	120°C
540min	80°C
570min	50°C
600min	42°C
630min	38°C
660min	27°C

Table No 4: Showing the result of *Sphatika Shodhana*

Initial weight	Final weight	Loss in weight	Loss in percentage
250 g	135 g	115g	46%

Table No 5: Showing the result of *Mayaphala Churna Nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
800 g	780 g	20g	2.5%

Table No 6: Showing the result of *Ashwagandha Churna Nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
400 g	390 g	10g	2.5%

Table No 7: Showing the result of *Amalaki Churna Nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
400 g	390g	10g	2.5%

Table No 8: Showing the result of *Sita Churna Nirmana*

Initial weight	Final weight	Loss in weight	Loss in percentage
1400 g	1380 g	20g	1.42%

Table No 9: Showing the result of mixing of component drugs of *Mayaphaladi Churna*

Initial weight	Final weight	Loss in weight	Loss in percentage
3210 g	3205 g	5g	0.15%

DISCUSSION

The Pharmaceutical procedures adopted in this study are *Shodhana, Bhavana, Marana, churna nirmana*.

Shodhana is done for *Kukkutanda twak* and *Sphatika.*

Marana was done for *Kukkutanda twak.*

Sphatika Shodhana

Shodhana of *Sphatika* was carried out according to the reference of *Ayurveda Prakasha* 2/258. During *Sphatika Shodhana, Nirjalikarana* was done. In this procedure, the water content present in *Sphatika* was evaporated by giving continuous heat and weight of *Sphatika* was reduced upto 46 percent. After purification *Sphatika* was obtained in White colour.

Kukkutanda twak Shodhana

In present study, *Kukkutanda twak Shodhana* was carried out according to the reference of *Rasa Tantra Sara Va Siddha Prayoga Sangraha,* part 1, by applying soaking principle in the solution of *Saindhava lavana* and *Navasadara* for three days. During *Shodhana* procedure, it was observed that the colour of solution was changed from translucent to opaque and hazy white. The remnant portions of egg yolk and egg albumin were found floating on the surface of water and foul smell was observed during *Shodhana* process.

After *Shodhana,* it was noticed that *Kukkutanda twak* pieces became white and smooth. The inner membraneous layer of egg shell would also be easily removed. The average weight loss observed 30 percent. It may be due to removal of inner membraneous layer. Some small particles of eggshell get lost during washing with hot water.

Marana of Kukkutanda twak

In present study *Marana* of *Kukkutanda twak* was carried out as per the reference of *Rasa Tantra Sara Va Siddha Prayoga Sangraha, Part 1*.

Kukkutanda twak marana includes four steps: *Bhavana, Chakrika nirmana, Sharava samputikarana* and *putapaka.*

Step I- *Bhavana*

- *Bhavana* was carried out till all the *subhavitha lakshanas* were obtained. *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. Wet trituration facilitates particle size reduction and homogenization leading to modification of properties (*Gunantatradhana*) of the end product. Thus *Bhavana* helps in increasing the therapeutic efficacy by converting the *bhavyadravyas* into smaller particles[11].

Selection of *Bhavana dravya:*

- In present study *Kukkutanda twak* was subjected to *Bhavana* with *Changeri Swarasa*.The reason to select *Changeri Swarasa* as a *bhavana dravya* is that it has properties like *Amla* and *Kashaya rasa, Laghu ruksha guna, Vatakaphahara*, *Deepana, Grahi*[12]. To obtain these

qualities in *Kukkutanda twak bhasma, Changeri swarasa bhavana* is considered as best choice.

STEP II- *Chakrika Nirmana*

- In this phase *Bhavita dravya* was made into uniform sized *chakrikas.* Generally the *chakrikas* are small, round and flat. This helps to achieve homogenous heat pattern to whole of the mass with increased surface area.
- The *chakrikas* were milky white in colour.

STEP III- *Saravasamputikarana*

- Earthern *Sharavas* were used for incineration because of their inert nature, easy availability and uniform distribution of heat to the substance.

STEP IV- *Putapaka*

- In this phase, the *Sharava samputa* was subjected for *putapaka.*
- According to classics, *Gajaputa* is advised for *Kukkutanda twak Marana.* This heating pattern is specified depending upon the hardness of the *dravya.*
- In *puta* system of heating, there is gradual rise and fall of temperature which helps in making the material more *agnisthayi* (heat stable).It cannot regain its form back after complete procedure.
- *Puta* is the heating system which indicates the quantum of heat required by *Rasadi dravyas* for their conversion into suitable form (*Bhasma*).
- The maximum temperature attained during the *puta* was 1003^{0}c. After that gradual fall in temperature was noted.
- Finally white coloured *bhasma* was obtained.
- This indicates that the process of *marana* and media have direct influence and are responsible for *fineness* of the *bhasma.*

Churna nirmana* of *herbal drugs

Mayaphala, Ashwagandha, Amalaki and *Sita* were made into fine powders according to the reference of *Sharangadhara Samhitha.*

Preparation of homogenous mixture of all component drugs

In a *Khalwayantra Kukkutanda twak bhasma, Sphatika Bhasma*, and other herbal drug *churna* were mixed in the ratio as mentioned in reference.

CONCLUSION

Mayaphaladi Churna is one of the *Kharaliya Rasayana* in which *Kukkutanda twak Bhasma, Sphatika Bhasma, Mayaphala Churna, Ashwagandha Churna, Amalaki Churna* and *Sita Churna* are the main ingredients. The combination of all these drugs synergistically acts together to pacify the Swetapradara and *Yonibhramsha*. All the ingredients of *Mayaphaladi Churna* are having *Vatakaphahara* properties.

Pharmaceutical standardization is the first step towards standardization of any drug. So it should be done with utmost accuracy. This leads to reproducibility of drug and production of safe and efficacious drug.

CONFLICT OF INTEREST

No conflict of interest.

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