



PHARMACEUTICAL EVALUATION OF BALADI MANDURA

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ABSTRACT:

Background: Baladi mandura is a unique herbo-mineral formulation elucidated in Rasakamadhenu under Amlapitta Rogadhikara for the management of Amlapitta and shoola. Bala, shatavari, yava, eranda, jeeraka, pippali, twak, ela, patra, nagakesara and Mandura are the ingredients. Aim: To standardize various steps involved in the preparation of Baladi Mandura. Materials and Methods: All the procedures involved during preparation of Baladi Mandura were carried out as per classical references. Result: The final product was presented in the form of granules and obtained quantity was 363 gms. Prepared Baladi Mandura was brown in colour with pleasant odour and sweet pungent taste. Conclusion: The steps carried out can be considered as standard for preparation of Baladi Mandura.

Index Terms: Mandura, Amlapitta, Rasakamadhenu.

INTRODUCTION:

The key objective of pharmaceutical study is to produce a safe, effective and quality drug. Efficacy and safety depend solely on the quality of drug. The fundamental part of Ayurveda lays in pharmaceutical processing. Right from the selection of raw drugs till the final product a drug has to undergo various samskaras like shodhana, marana etc. Each procedure brings gunantheradana (qualities) to the drug. Baladi Mandura is a herbo-mineral formulation described in Rasakamadhenu^[1] under Amlapitta Rogadhikara and Rasayogasagara^[2] under pakaradi rasa for the management of Amlapitta and shoola. Here Acharya explains this formulation cures Amlapitta and shoola. Bala, shatavari, yava, eranda, jeeraka, pippali, twak, ela, patra, nagakesara and Mandura are the ingredients. It is prepared by the Gudapaka method. In the present study a sincere effort has been put to highlight the significance of pharmaceutical procedures and to standardize the method of preparation of Baladi Mandura.

AIMS AND OBJECTIVES:

Pharmaceutical standardization of various steps involved in the preparation of Baladi Mandura.

MATERIALS AND METHODS:**Pharmaceutical source and place:**

Raw drugs for the preparation of Baladi Mandura were collected from SDM Pharmacy, Udupi and Preparation was carried out in Rasa Shastra and Bhaishajya Kalpana practical hall, SDM College of Ayurveda, Udupi.

Entire pharmaceutical procedure was carried in different steps:

1. Preparation of gomutra siddha Triphala kwatha.^[3]
2. Shodhana of mandura by gomutra siddha triphala kwatha ^[4]
3. Mandura marana with kumari swarasa^[5]
4. Kwatha preparation of Bala Shatavari yava and eranda
5. Powdering of jeeraka, pippali and trijataka
6. Preparation of Baladi Mandura^[6]

Procedure:

Initially shodhana of mandura was carried out with gomutra sidha triphala kwatha which was prepared by taking 3kgs of triphala added with 12 liters of water and reduced to 1/4th quantity. Ashudha mandura was heated and quenched in the above gomutra sidha triphala kwatha for 7 times. Later on, the process of mandura marana was carried out as per reference of rasamritha wherein the bhavana medium is kumari swarasa. The procedure of marana was repeated till appearance of bhasma sidhi lakshanas. Kwatha eranda were prepared by adding 8 parts of water and was reduced to 1/4th quantity. Yava manda was prepared by adding 14 parts of water to above said quantity. Obtained Kashaya and manda was mixed together and kept ready. All other dravyas from pippali to mandura were powdered, sieved and measured. These prakshepaka dravyas were mixed together and kept aside.

Prepared kwatha mixture was taken in a copper vessel and mentioned quantity of guda was added to it and heated till it melts. After complete dissolution of Guda, it is filtered using clean cloth to remove physical impurities if any. Filtrate is transferred to the vessel and kept over mild fire for paka. The process of heating was continued till it attain 2-3 thread consistency. The Paka lakshanas were assessed and pan was taken out of stove. Soon after, the prakshepakas were added and mixed continuously with help of spatula till it attain a granular consistency and was measured and stored in an airtight container.

Table 1: Ingredients and quantity of Baladi Mandura

Ingredients	Quantity
Balamoola	24gm
Shatavari moola	24gm
Yava	24gm
Eranda	24gm
Pippali	12gm
Jeeraka	12gm
Twak	1.5gm
Ela	1.5gm
Nagakesara	1.5gm

Mandura	300gm
Guda	24gm

OBSERVATIONS:

- Dark brownish black color kwatha was obtained. Peculiar teekshna gandha of Gomutra was appreciable throughout the process of kwatha preparation.
- Mandura shodhana: Hissing sound was appreciable when red hot mandura is dipped in triphala kwatha. Colour of mandura changed from greyish black to black. After each nirvapa, mandura particles was sticky, hence was washed with hot water before each nirvapa. Reduction of compactness and particles size was evident after each nirvapa.
- Mandura marana: Colour of mandura changed from black to chocolate brown after first puta. Rekhapurnata was obtained after 9th puta. Lustre was absent from 15th puta Apunarbhava attained in 16th puta Slekshnata of bhasma was obtained after 14th puta. Varitaratwa, apunarbhava and nirutha was obtained in 17th puta.
- Baladi Mandura: All gudapaka lakshanas such as tantumatva (2-3 thread consistency), darvipralepa (sticks to the spoon) and apsumajjana (settle down when poured into a bowl containing stagnant water without spreading) were observed. Final product was presented in granular form with chocolate brown colour and peculiar aromatic smell.



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Figures showing steps involved in preparation of Baladi Mandura: (1) Raw mandura sample (2) Gomutrasidha triphala kwatha (3) Heating mandura to red hot (4) quenching mandura in gomutra sidha triphala kwatha (5) After 5th Nirvapa (6) After shodhana of Mandura(7) Extraction of kumari swarasa (8) Bhavana of shodhita mandura with Kumari swarasa (9) Drying Of Chakrikas (10) Incinerating chakrikas after Sandhi bandana (11) Mandura Bhasma (12) Preparation of Kashaya (13) Gudapaka (14) Adding Prakshepaka dravyas (15) final product- Baladi Mandura

RESULTS:

Final product was presented in form of granules. Organoleptic characteristics and final weight are given in table below

Table 2: table showing organoleptic characters of Baladi Mandura

Colour	Raktachandana, chocolate brown colour
Taste	Sweet, pungent
Odour	Aromatic, pleasant
Texture	Tough, granular
Final weight	363 gms

DISCUSSION:

Mandura shodhana: The importance of the collection of grahya Mandura for therapeutic purposes are highlighted in the classics. Generally, nirvapa(quenching) is the method used for shodhana of dhatus wherein the drug is heated to red-hot and immediately dipped in a cold liquid medium which helps in particle size reduction and removing the external impurities. Here, as per reference of Baladi Mandura, shodhana was carried out in Gomutra-Siddha Triphala kwatha. Preparation of Gomutra-Siddha Triphala kwatha was carried out as per the reference of Rasaratna samuchaya. 7 nirvapa were carried out and fresh kashaya was used each time to remove impurities. During heating, tightly packed Mandura particles start becoming

weak. Immediate quenching helps the liquid media to penetrate inside the Mandura particles thereby breaking ionic bonds resulting in the reduction of hardness and increase in brittleness of Mandura. Initially, it took 30 minutes for the entire Mandura to get rot hot and gradually time was reduced due to the breakage of ionic bonds of Mandura. After the seventh nirvapa, there was a marked size reduction in Mandura and could easily powder in ulukhala yantra. The Kashaya was changed after each nirvapa so that impurities are separated and properties of Kashaya are imbibed to the Mandura, which makes it pharmaceutically and therapeutically fit. This kashaya removes both acidic and alkaline impurities of Mandura.

Mandura Marana: Kumari swarasa was selected as Bhavana dravyas for Marana as per Rasamritha reference. This reference was chosen as per availability of the drug, a smaller number of puta, and therapeutic applicability. Kumari is sheeta, bedhini, and useful in treating yakritroga, pleeharoga, udararoga, and many other diseases. Hence kumari swarasa acts as a catalyst and there will be an addition of trace elements to Mandura. Initial putas took larger quantity of drava dravyas for soaking of mandura and longer time for attainment of subhavitha lakshanas. Gradually it was reduced in consecutive putas. Constant pressure was maintained throughout the process of grinding. After the process of levigation, uniform-sized chakrikas were made for arranging properly in sharava and for proper drying. This process increases the surface area, which allows maximum and uniform heat transmission during marana. Difficulty in grinding and chakrika making was noticed in initial putas and progressively soft texture was attained for Mandura by repeating putas.⁷ Gajaputa is mentioned for Marana of Mandura as per the reference. Due to the unavailability of vanopalas (cow dung cakes), puta was planned to carry out in an electric muffle furnace. Fixing of temperature pattern was a difficult part, a tapering temperature pattern was followed from 750°C to 400°C after analyzing previous works. 17 putas were given to get proper Mandura bhasma siddhi lakshanas. Significant changes were observed in Mandura after each puta. Colour, odour, texture, shininess, and all bhasma pareekshas were checked after each puta. The color of bhasma is the first indication of the proper paka of any bhasma. Raktha Chandana varna of Mandura bhasma was obtained in 1st puta. Rekhapurnata is indicative of the fineness of bhasmas. Here it was obtained after 9th puta. Sleekshnata indicates the smoothness and fineness of bhasma, it was obtained after the 14th puta. Luster or shininess indicates the presence of free metal. Lustre was absent in Mandura bhasma after the 15th puta. Apunarbhava indicates the inability of bhasma to revert into metal. It indicates that bhasma is free of free radicles and fit for therapeutic uses. This was obtained after the 16th puta. Varitaratwa and Unama can be considered as a confirmatory test which indicates the lightness and fineness of bhasma and this was obtained in the 17th puta.

Baladi mandura preparation: Baladi Mandura was prepared as per the reference of Rasakamadhenu. It was prepared by following the general method of gudapaka and presented in the form of granules. Kashaya of Bala Shatavari eranda was prepared by following the general method of preparation of kwatha. Yava manda was prepared separately as the starchy content of yava may prevent the extraction of phytochemicals of Bala and other drugs into kashaya. Yava manda and kashaya were mixed and jaggery was dissolved into it. Later on, it was filtered to remove impurities of jaggery. This mixture was kept on fire for attaining paka, till it gets 2-3 thread consistency. Paka lakshanas such as darvipralepa (sticking to spoon) *tantumtva* and *apsumajjana* were checked. All prakshapaka dravyas were mixed thoroughly for uniform distribution of drug while adding to gudapaka. Prakshapaka dravyas were added immediately and mixed homogenously. Organoleptic characters were observed and stored in air-tight glass containers to prevent moisture.

CONCLUSION:

Pharmaceutical standardization helps in developing standard manufacturing procedure without disturbing the efficacy and safety profile of drug. The pharmaceutical procedure involved here was shodhana, nirvapa, marana and gudapaka. Procedure of shodhana removes toxic nature of mandura and reduction of compactness. Marana procedure helps in size reduction and making bhasma more bioavailable. Gudapaka method of preparation of baladi mandura acts as proper binding agent and granular form provides better shelf life and easier administration of medicine.

REFERENCES:

1. Sharma S, Sharma Gulraj. Rasakamadhenu Compiled by Chudamani Misra, Amlapitta Rogadhikara, Verse No.41-44. Varanasi: Chaukambha Orientalia 2017. p.214.
2. Pandit.H. Rasayogasagara Vol-2, Pakaradi Rasa. Varanasi: Chaukambha Krishnadas Academy; 2004.p107.
3. Vagbhatta, Mishra S. Rasaratna samuchaya. Varanasi: Chaukhambha Orientalia; 2011.p. 170.
4. Vagbhatta, Mishra S. Rasaratna samuchaya. Varanasi: Chaukhambha Orientalia; 2011.p. 170.
5. Acharya Y.T. Joshi D. Rao. P. Rasamritham. Chaukambha Samskrith Samsthan. Varanasi. 2007. p.95.
6. Sharma S, Sharma Gulraj. Rasakamadhenu Compiled by Chudamani Misra, Amlapitta Rogadhikara, Verse No.41-44. Varanasi: Chaukambha Orientalia 2017. p.214.

