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Research Article

Pharmaceutical Study of Rajarasayana

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A B S T R A C T

Now a days due to augmented demand of Ayurvedic preparations and amplified global response towards Ayurvedic system of medicine, the production of standard, effective, genuine, safe drugs in obligatory quantity and highest quality is a challenge for processing units of Ayurvedic drugs. So, the need of the hour is to do research in Ayurvedic drugs for the huge quantity production with high standard quality. Rajarasayana is one of the Avaleha kalpana said in Vangasena samhitha in the Nasarogadhikara, Dashamoola, chitraka, Guduchi, Amalaki, Guda (Jaggery) and other ingredients. This formulation is best rasayana for Peenasa.

Keywords: Avaleha Kalpana, Ayurvedic, Rajarasayana

Introduction

Generally metals and minerals as such are toxic to human body but the Rasashastriya pharmaceutical processes make them into such a form that they are highly effective without any untoward effect in therapeutic dose.

Avaleha are semisolid forms of medicaments, predominately used for internal administration. Avaleha, in broad sense contain Rasakriya, Phanita, Avaleha, Khanda, Modaka, Ghana, as all of them were having common pharmaceutical procedure with minor distinguish specifications in each. These medicaments are primed by evaporating the moisture moiety of aqueous solutions (Swarasa, Kwatha, Hima, Phanta) and by adding some other substances like sweet substance, adjuvants until semisolid to solid form is achieved.

Moreover improperly purified Chitraka has been quoted as poisonous because of hazardous effects it produces on the body. Hence, the aim of the pharmaceutical study was to purify chitraka and to prepare quality Rajarasayana by following instructions mentioned in the classics.

Objectives of the Study

Shodhana of Chitraka moola, Preparation of Haritaki,Chitraka moola & Dashamoola kwatha, Extraction of Amalaki & Guduchi swarasa, Preparation of Rajarasayana.

Materials and Methods

The materials and methods used based on Rasashastra and Bhaishajya kalpana literature and depending on the practical experience.

This includes major raw materials, other raw materials & Yantras.

Collection of Raw Materials

Raw drugs which were having similar Grahya lakshanas as mentioned in the classics were collected from the market.

Major Raw Materials

Shodhana of Raw Material: Shodhana of Chitrakamoola in Churnodaka.

Preparation of Churnodaka[1]

Drugs used - Shila choorna - 2000 g, Water - 20 liters; Apparatus - Mud pot.

Procedure

Choorna shila was taken in a mud pot. To this 20 liters of water was added stirred well and kept over night. Next day only the supernatant water was collected, filtered through filter paper and stored in green glass bottle.

Observations

Hissing sound was heard immediately after adding water/

Froath was developed/ pH of churnodaka 13.07/ Quantity of churnodaka obtained 15 liters.

Precautions

The pot was kept undisturbed.

Chitraka Shodhana with Churnodaka[2]

Apparatus: Steel vessels, Drugs used: chitraka moola 2 kg and churnodaka 15 liters.

Procedure

2 kg of Chitraka moola to it 15 liters of Churnodaka was added in a steel vessel and kept it for 24 hours. Next day, chitraka moola was taken out, washed with warm water and dried in shade.

Observations

Preparation of Chitraka Moola Kwatha, Haritaki and Dashamoola Kwatha

Preparation of Chitraka Moola Kwatha (plumbago zeylenica root), Haritaki (terminalia chebula fruit pulp) and Dashamoola Kwatha(group of 10 plant roots) Bilva (Indian Bael) - Aegle marmelos Agnimantha (Arani) - Premna serratifolia (Premna mucronata & Premna integrifolia) Gambhari (Beech wood/ Kasmari) - Gmelina arborea Shyonaka - Oroxylum indicum Patala - Stereospermum suaveolens Laghu Panchamoola: Brihati (Indian Nightshade) - Solanum indicum Shalaparni - Desmodium gangeticum

Kantakari - Solanum xanthocarpum Gokshura or Gokhru - Tribulus terrestris Prishnaparni - Uraria picta.

Preparation of Kwatha for Rajarasayana

Preparation of Haritaki Kwatha[3]

Apparatus: Steel vessel, ladle; Drugs used: Haritaki 750 g, Water 6 liters.

Procedure

Coarsely powdered Haritaki churna was taken and 6 liters of water is added and heated on mandagni till it reduce to 1/4th. Later it is filtered through clean cloth and stored.

Observations

Typical smell of Haritaki was observed/ Quantity obtained 1500 mL.

Precautions

Mandagni was maintained for throughout the procedure/ Stirring was done to avoid adherence of the drug.

Preparation of Dashamoola Kwatha[4]

Drugs: Dashamoola churna 750 g, Water 6 litres; Equipments: Khalva yantra, weighing machine, Cloth, Stove, Steel vessel and Laddle.

Procedure

The clean and good quality ingredients were taken and put in the khalva separately. Coarsely powdered powders of individual drugs were made. The obtained products were weighed exactly 75 g each. In a clean steel vessel churna of Dashamoola, 6 liters of water is added and heated on mandagni till it reduce to 1/4th. Later it is filtered through the cloth and stored.

Observations

During the procedure powdering peculiar smell of the ingredients were felt/ Initially floating of drugs were observed/ Peculiar smell of Dashamoola was observed/ Time taken for the preparation 5.30 hours.

Precautions

The ingredients were put in the khalva separately.

Preparation of Chitraka Moola Kwatha[5]

Apparatus: Steel, vessel, laddle, stove, cloth; Drugs used: chitraka moola churna 1250 g, Water 10 liters.

Procedure

The clean and good quality of chitraka moola was taken and put in the khalvaand made in to coarse powder. In a clean steel vessel 1250 g of Chitraka moola churna, 10 liters of water is added and heated on mandagni till it reduce to 1/4th. Later it is filtered through the cloth and stored.

Table 1.Observations of Chitraka Moola before and after Shodhana

Observation	Before Shodhana	After Shodhana (wet)	After drying
Weight	2000 g	3800 g	1500 g
Texture	Hard	Soft	Hard
Odor	Fragrant	Fragrant with odor of churna	Fragrant with odor of churna

Table 2.Properties of Churnodaka before and after Shodhana of Raktha Chitrakamoola

Observation	Churnodaka before shodhana	Churnodaka after shodhana
Quantity	15 liters	9.5 liters
Color	Transparent	Marooned brown
p^{H}	13.07	10.17

Observations

During the procedure powdering peculiar smell of the ingredient was felt/ Initially floating of drug was observed/ Peculiar smell of chitraka was observed/ Time taken for the preparation 6 hours.

Precautions

Mandagni was maintained for throughout the procedure/ Stirring was done to avoid adherence of the drug.

Extraction of Amalaki Swarasa & Guduchi Swarasa

Extraction of Amalaki swarasa[6]

Apparatus: Khalva, cloth, Weighing machine; Drugs used: Amalaki 7 kg, Swarasa obtained 2.5.

Procedure

Fresh fruits of Amalaki collected, crushed and filtered through clean cloth.

Observations

It was easy to prepare the kalka of Amalaki fruits/ Characteristic odour of Amalaki fruit was observed

Extraction of Guduchi swarasa[7]

Drugs Used: Guduchi patra 6 kg and Swarasa obtained 2.5 liters.

Procedure: Fresh leaves of Guduchi were collected, cleaned,crushed and filtered through clean cloth.

Observations

Preparation of Rajarasayana[8]

Table 3.The Ingredients of Rajarasayana

Name of the ingredient	Proportion
Dashamoola kwatha	1.5 liters
Haritaki kwatha	1.5 liters
Chitraka moola kwatha	2.5 liters
Guduchi swarasa	2.5 liters
Amalaki swarasa	2.5 liters
Guda	2.5 kg
Madhu	192 g
Twak	24 g
Patra	24 g
Ela	24 g
Shunthi	24 g
Maricha	24 g
Pippali	24 g
Yava kshara	12 g

Equipment

Steel vessel, weighing machine, measuring jar, stove, cylinder.

Procedure

Kwatha dravyas, Guduchi, Amalaki swarasa of above mentioned quantity are taken into a steel vessel and kept over mandagni. Guda weighing 2.5 kg is added and stirred well until it get dissolved completely. Later the whole mixture is filtered for removing impurities if any. The filterate collected is subjected to mandagni for about 8hrs.on second again it is subjected to heat till siddhi lakshana appears.

Observations

Smell of Guda was observed. It took around 30 mins to complete dissolving of Guda.

Table 4.The Observation during Avaleha Paka

Day	Time	Observation
Day 1	11 am	Fire ignited
	11.45 am	Guda completely dissolved
	12 noon	After filtering, drava dravya is kept on fire
	4 pm	Boiling started.
	7 pm	Fire stopped.
Day 2	10 am	Foam was appearing
	10.30 am	Darvi pralepa (sticking to laddle)
	11.15 am	Piece of paka material put on a plate it spreads.
	11.30 am	A Piece of paka material is put into a bowl of stable water, it settles at the bottom without spreading.
	11.35 am	2-3 thread consistency obtained, heat is stopped, and vessel is taken out from the stove.
	11.45 am	Prakshepaka dravyas are added
	12 noon	Honey is added.

Figure 1.Bilwa

Figure 2.Agnimantha

Figure 3.Shonyaka

Figure 4.Gambhari

Figure 5.Patala

Figure 6.Brihati

Figure 7.Kantakari

Figure 8.Gokshura

Figure 9.Shalaparni

Figure 10.Prishnaparni

Figure 11.DM kwatha Choorna

Figure 12.Dashamoola Kwatha Preparation

Figure 13.Chitrakamoola

Figure 14.Preparation of Chitrakamoola Kwatha

Figure 15.Haritaki

Figure 16.Haritaki Kwatha

Figure 17.Amalaki Swarasa

Figure 18.Guduchi Swarasa

Figure 19.Guda

Figure 20.Dravadravya Mixture

Figure 21.During Paaka

Figure 22.Tantuvat Lakshana

Figure 23.Patitenashiryatwam

Prakshepaka Dravyas

Figure 24.Twak

Figure 25.Patra

Figure 26.Ela

Figure 27.Shunti

Figure 28.Maricha

Figure 29.Pippali

Figure 30.Yava Kshara

Figure 31.Madhu

Figure 32.Rajarasayana Avaleha

Prakshepaka Dravyas

Precautions

Mandagni was maintained. Continuous stirring was done in order to avoid the sticking of dravyas at the base of the vessel. The vessel was taken out from the fire immediately after observing Samyak paka lakshanas.

Results

3000 g of raw chitraka moola was taken, after shodhana 2600 g was obtained i.e. 86.66%. For the preparation of Rajarasayana avaleha initial weight of ingredients were 10,500 mL after samyak avaleha siddha lakshana the yield obtained was 4800 g i.e 38.09%.

Discussion

Raktha Chitramula was soaked in churnodaka for one day to reduce the teekshnata and it helps to form calcium complex of plumbagin. The colour of churnodaka turns to pale red. Plumbagin is proved for its anti-inflammatory activity.

Raja Rasyana Avaleha

Jaggery is mixed to the Kwatha and boiled to evaporate the water content. Small quantity of the Paka wiped from the stirrer, taken in between the thumb and index finger and tested for the stickiness. If the Paka material appears sticky and while separating the finger - if two thread like observation is found, this suggests the sugar concentration to be between 65%-70%. This concentration of sugar acts as preservative. Into this, the Prakshepa dravayas were added after cooling. Here in, Abhinava Bhaishajya Kalpana Vijnana and AFI, the Prakshepa is to be added gradually after eliciting Paka Lakshana and in the absence of further heating.

This method would help to preserve the volatile constituents of the Prakshepa dravyas if any, and this method of adding Prakshepa was followed.

- Vaidya Yoga Ratnavali advises to add Prakshepa dravyas after eliciting Paka Lakshana and further heating on mild fire for a short period of time. This might have been planned to eliminate any persisting amount of moisture from the Prakshepa drugs thus minimizing the chances of spoiling. But since the volatile constituents in the Prakshepa dravyas might evaporate during the heating process, this was not followed
- Honey should be added only after the mixture gets cooled. This is because, high temperature impairs the appearance and flavour and further more Laevulose an ingredient of honey gets decomposed above 70°C
- Packing and storing of the final product in airtight container and in a hygienic place preventing the moisture and other contaminants from the atmosphere, in the presence of 65-70% concentration of sugar and honey both acting as preservatives besides their therapeutic action.

Conclusion

Rajarasayana is one of the Avaleha kalpana. The reference was selected from Vangasena samhitha for the preparation. The drug was prepared with Chitraka moola kashaya, Haritaki kashaya, Dashamoola kashaya, Guduchi swarasa, Amalaki swarasa, Guda, Twak, Patra, Ela, Shunti, Maricha, Pippali, Madhu and Yava kshara.

Shodhana of Chitraka moola is essential step before usage, which will modify the raw drugs into safe, bio-active, therapeutic form. Yield of Chitraka moola was 86.66% from Churnodaka sthapana method.

Raja Rasayana avaleha total quantity is 4.5 kg. It is prepared by Haritaki kashaya, Dashamoola kashaya 750 mL each, Chitraka moola kashaya 1250 mL, Guda 2500 g, Twak, Patra, Ela, Shunti, Maricha, Pippali 24 g each, Madhu 192 g and Yava kshara 12 g.

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