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PHARMACEUTICO-ANALYTICAL EVALUATION OF *BHAVITA BRIHATYADI CHURNA*- A MODIFIED FORMULATION

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ABSTRACT

Brihatyadi kwatha is one of the fomulations indicated in urinary tract disorders. Its preparation involves drugs of *laghupanchamula gana*. But these *Kashaya* preparations have a shorter shelf life which is a major setback. Therefore there was necessity to develop formulations with more shelf life and maximum therapeutic efficacy. So a modified dosage form was planned using same drugs of *Brihatyadi kwatha* which was named *Bhavita Brihatyadi Churna*. It was prepared by giving 21 *bhavanas* of *Brihatyadi kwatha* to the same powdered drugs. The study revealed analytical parameters such as Loss on drying, Total Ash, Acid Insoluble Ash, Water soluble Ash, Alcohol soluble extractive value, Water soluble extractive value along with its chromatographic fingerprint. This helps to standardize a new formulation which can be taken up for further studies.

KEYWORDS: *Bhavita Brihatyadi Churna*, *Bhavana*, Pharmaceutico-analytical study.

INTRODUCTION

Samskara is the process of *gunantaradhana* as defined by *Acharya Charaka*.[1] It refers to the imparting of new *gunas* in addition to the *gunas* already present in the drugs by means of *Samskara*. Various *Samsakaras* with examples have been explained by *Acharya Charaka* and *Bhavana* is one among them. In *Charaka Samhita* it is told that *Bhavana* with the drugs of

same properties will help in increasing the potency of the drug.[2] Thus a modified dosage form was designed called *Bhavita Brihatyadi Churna* where *Bhavana* of *Brihatyadi kwatha* was given for 21 times to the *Churna* of the same drugs. This concept was taken from a similar reference told in the context of *Amalakayasa Brahmarasayana*[3] in *Charaka Samhita* where 21 times *Bhavana* of *Amalaki swarasa* is given to *Amalaki Churna*. *Bhavita Brihatyadi Churna* was opted for the study keeping in mind the need for formulations with less dosage, more shelf life and therapeutic efficacy.

OBJECTIVES

- To prepare modified dosage form *Bhavita Brihatyadi Churna*
- To study its analytical parameters.[4]

MATERIAL AND METHODS

Raw drugs required for preparation were collected from S.D.M. Ayurvedic Pharmacy, Udupi. Preparation of samples of *Bhavita Brihatyadi Churna* was carried out in Practical Laboratory of Department of P.G. Studies in Rasashastra and Bhaishajya Kalpana, S.D.M. College of Ayurveda, Udupi.

Table 1: Ingredients of *Bhavita Brihatyadi Churna.*

Sl no	Ingredient	Part used	Quantity
1	*Brihati*	Root	13g
2	*Kantakari*	Whole plant	13g
3	*Prishniparni*	Whole plant	13g
4	*Shaalaparni*	Whole plant	13g
5	*Gokshura*	Fruit	104g

Method of preparation

- The collected raw drugs as per the quantity mentioned in Table 1were dried properly and powdered using pulveriser separately.
- Then *Churna* of each ingredient was filtered through clean cotton cloth to obtain fine powder.
- Then they were all mixed together to form homogenous mixture.
- *Brihatyadi kwatha* was prepared using same drugs according to general method of preparation explained in *Sharangadhara Samhita*.[5] It was used as *Bhavana dravya*.
- To the homogenous mixture of drugs prepared before, *Bhavana* of *Brihatyadi kwatha* was given until it became dry.

- Each day fresh *kwatha* was prepared for *Bhavana*.
- The procedure of *Bhavana* was repeated for 21 times and assessed for *subhavita lakshana*.
- Then the *Churna* was dried properly under sunlight and stored in airtight container.

Fig 1: Churna filtration through cloth.

Fig 2: Powdered drugs.

Fig 3: Bhavana with Brihatyadi Kwatha.

Fig 4: Brihatyadi Kwatha.

Fig 5: Bhavita Brihatyadi Churna.

OBSERVATION AND RESULTS

- **PHARMACEUTICAL STUDY**

The colour changed from light brown to dark brown after *Bhavana*. The mixture was soft to touch. As the *Bhavana* done progressed, the smell became pleasant.

Table 2: Observations during preparation of *Churna.*

Name of the drug	Quantity of coarse powder	Quantity of fine powder obtained by cloth filtration	% Loss
Brihati	30 g	13 g	56.6 %
Kantakari	30 g	13 g	56.6 %
Prishniparni	40 g	13 g	67.5 %
Shaalaparni	50 g	13 g	74 %
Gokshura	200 g	104 g	48 %

Table 3: Observations of *bhavana.*

Bhavana number	Quantity of *Brihatyadi Kwatha*	Time taken
1st	220ml	1 ½ hour
2nd	100ml	1 hour
3rd	220 ml	1 hour
4th	50 ml	1 hour
5th	140 ml	1 hour 15 minutes
6th	60 ml	50 minutes
7th	75 ml	50 minutes
8th	130 ml	1 hour
9th	60 ml	1 hour
10th	60 ml	1 ½ hour
11th	130 ml	1 hour
12th	50 ml	1 hour
13th	60 ml	1 hour
14th	50 ml	1 hour
15th	50 ml	1 hour
16th	50 ml	1 hour
17th	50 ml	1 hour
18th	120 ml	50 minutes
19th	60 ml	50 minutes
20th	60 ml	50 minutes
21st	60 ml	1 ½ hour

Table 4: Quantity taken and obtained

Total quantity of *Churna* taken	150 g
End product obtained	150 g

- **ANALYTICAL STUDY**

Table 5: Organoleptic characters.

Parameter	Observation
Colour	Dark Brown
Taste	*Tikta*
Smell	Characteristic
Consistency	Powder

Table 6: Results of standardization parameters of *Bhavita Brihatyadi Churna.*

Parameter	Results n = 3 %w/w
Loss on drying	16.35 ± 0.01
Total Ash	17.79 ± 0.020
Acid Insoluble Ash	3.37 ± 0.005
Water soluble Ash	5.16 ± 0.01
Alcohol soluble extractive value	9.59 ± 0.0
Water soluble extractive value	29.06 ± 0.01

Results of HPTLC

Table 7: Rf values of sample of *Bhavitha Brihatyadi Churna.*

Short UV	Long UV	Post derivatisation
-	-	0.04 (D. purple)
-	0.09 (F. blue)	-
-	0.18 (F. blue)	-
-	-	0.22 (D. purple)
-	0.30 (F. blue)	-
-	-	0.36 (D. purple)
-	-	0.44 (D. purple)
-	0.48 (F aqua. blue)	-

DISCUSSION

Pharmaceutical study

Preparation of fine Powder of the drugs

In the definition of *Churna* it is told the drugs must be grinded and filtered through cloth to obtain fine powder. Same method was followed here. The loss seen during filtration through cloth is tabulated in Table - 2. We can see that the loss was maximum in *Shaalaparni* and then *Prishniparni* due to their fibrous nature and minimum in *Gokshura* as it was less fibrous.

Procedure of *Bhavana*

Trituration of the above drugs was done with *Brihatyadi kwatha* until they became dry which was considered as 1 *Bhavana*. *Bhavana* in this way was repeated for 21 times. Since our aim was to increase the potency of the drug, assessment of *subhavita lakshana*[6] was only done at the end of 21 *bhavanas*. Fresh *Kwatha* was prepared every day for the purpose of *Bhavana*. Each day the mixture was properly dried under sunlight.

Observations during preparation

The colour of the drugs changed from light to dark brown when the number of *bhavanas* done progressed as explained in Table 5. The smell turned pleasant and due to continuous trituration, the hard material became soft in consistency. Initially large amount of *Brihatyadi*

Kashaya i.e. 220 ml was required for *Bhavana* as the drugs were completely dry (Table 3). Around 3 *bhavanas* was done each day and for the first *Bhavana* each day, the quantity of *Kashaya* required was more which decreased during third *Bhavana* done for that day. At the end of each day the *Churna* was properly dried in sunlight. The final product obtained (Table 4) was same in quantity as the initial quantity taken. The reason for this may be that *Bhavana* increases the weight of the *Churna* but since the *Churna* had to be dried everyday there was some loss during collection from grinder.

Analytical study: (Table 6)

Loss on drying represents the moisture content as well as volatile matter present in the sample. The chances of deterioration are more when loss on drying is more. In the *Bhavita Brihatyadi Churna* it was 16.35 ± 0.01 which indicate that moisture content is less. The ash value of the sample was 17.79 ± 0.020 which is helpful in determining the quality and purity of the drug by knowing the inorganic material in the drug. Acid insoluble ash measures the amount of silica present, especially sand and siliceous matter. In the sample of *Churna* it was 3.37 ± 0.005. The water soluble ash value found with respect to the *Churna* was 5.16 ± 0.01. It determines the water soluble percentage of the sample. Water soluble extractive value was 29.06 ± 0.01 which was more than its alcohol soluble extractive value which was 9.59 ± 0.0 suggesting that absorption is more in the aqueous media.

HPTLC (Table 7) revealed no spots at 254 nm, 4 spots at 364 nm and 4 spots post derivatisation indicating the presence of different constituents. This will help as fingerprint of this particular formulation.

CONCLUSION

Bhavana increases the potency and therapeutic efficacy of the drugs. It was observed that as the number of *bhavana* progressed, the amount of the *kwatha* required for it reduced. It also sheds light on the influence of *bhavana dravya* used in the formulation on its efficacy which is revealed through analytical parameters. This study will serve as the fundamental step for this new formulation while taking it up for further studies.

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