IJBPAS, December, 2024, 13(12): 6247-6255

ISSN: 2277–4998

International Journal of Biology, Pharmacy and Allied Sciences (IJBPAS)

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

PHARMACEUTICAL AND PRELIMINARY EVALUATION OF ASTHISHRINKHALA VATI

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Received 24th Sept. 2023; Revised 25th Oct. 2023; Accepted 7th March 2024; Available online 1st Dec. 2024

https://doi.org/10.31032/IJBPAS/2024/13.12.8500

ABSTARCT

Introduction- According to Ayurveda Acharyas, a comprehensive drug analysis is required to get good treatment results. For widespread adoption, most of the traditional Ayurvedic formulations need to be followed based on modern times. Hence a step was taken, where Churna was transformed into vati for easier administration and improve palatability. The major topics of the current article are the manufacture and standardization of Asthishrinkhala vati based on organoleptic properties and physicochemical parameters.

Material and methods- The Asthishrinkhala (*Cissus quadrangularis*) selected for study are Vatahara and Vedanasthapana, and are useful as Sandaneeya, Saraka, Vrushyam Krimigna, and Shothahara. This article aims to understand making procedure and result of the physiochemical parameters of Asthishrinkhala vati.

Results – All the parameters studied are within the limits and hence validate the safe and effective use of vati.

Conclusion- Asthishrinkhala vati, a single herbal drug, can last up to three years if stored properly. The study confirmed the authenticity of the ingredients and physicochemical parameters, confirming their quality.

Keywords: Asthishrinkhala vati, janusandhigatavata, Vatahara, Vedanasthapana, sandaneeya

1. INTRODUCTION

Vati kalpana is one among the important component and secondary preparation in Ayurveda pharmaceutics. This is solid dosage form and largely produced in pharmaceutical world of both Ayurveda and modern. Various types of Kalpana are currently used in Ayurvedic practice and Vati Kalpana plays an important role in Ayurvedic pharmacy. In present era, herbal formulation is widely used and promoted around world for the treatment of many diseases. Considering these points, the Standardization of herbal formulations is important for the evaluating drug quality since it mainly depends on the acceptance and safety of drugs. In Ayurvedic Pharmacy some Acharyas have added or modified the different formulations or preparations from time to time to know the best medicine and prepare different medicine according to their knowledge without violating the basic principles, with such a motive an attempt was made for preparation of Asthishrinkhala vati from Asthishrinkhala Churna with aim of increasing potency, easy administration, quick action and to suit patients without compromising the underlying basic principles. There is no mention of Asthishrinkhala (*Cissus quadrangularis*) in Brihatrayee, as per Chakradutta **[1]**, Shodhala **[2]**, Bhavprakash **[3]** it is indicated in disorders like Asthi bhagna and vata vyadhis and said to possess Madhur Kashaya rasa, Laghu, ruksha, sara guna, Ushna virya and Katu vipaka and is said to be Vatahara **[3]**. For better utilization of Ayurvedic pharmaceutics, one need to take time to evaluate the medicine through modern qualitative and quantitative parameters. In this study, Asthishrinkhala vati was prepared following the standard operating procedures in teaching pharmacy of SDM ayurveda hospital, Hassan. This Drug is commonly used in clinical practice for the treatment of asthibhagna, asthikshaya and sandigatavata. Since the therapeutic values and efficacy of the formulation depend on the several aspects, the present study has taken up for pharmaceutical analysis. Current article is presented with aim and objectives to develop analytical profile of Asthishrinkhala vati by assessing it`s various parameters like Organoleptic parameters (color, odor, taste) and physio- chemical parameters (pH, Loss on

drying, friability, hardness, uniformity of weight, disintegration, alcohol-soluble extractive and water-soluble extractive).

Fig 1: 1 kg of coarse powder of Asthishrinkhala powder taken for Kashaya preparation (Bhavana)

Fig 2: Kashaya preparation- pouring 1kg coarse powder into 16litre water

Fig 3: Kashaya reduced to 1/4th

Fig 4: Filtering of Asthishrinkhala kashaya

Fig 5: 3kg of Fine powder of Asthishrinkhala sieving

Fig 6: 3kg of Fine powder of Asthishrinkhala weighed after sieving

Fig 7: Kashaya and asthishrinkhala powder poured into Grinding machine

Fig 8: To remove remaining moisture, drug mass was kept in Hot air oven

Fig 9: Pulverization of Asthishrinkhala drug mass into granules

Fig 10: Tablet punching

2. MATERIAL AND METHODS

2.1. Collection of raw drugs:

Raw drugs were procured from Anamaya drug store Udupi, Karnataka. And drug authentification was done in DG Department of SDM Ayurvedic Medical College and Hospital, Hassan.

2.2. Method of preparation:

Step 1: 1 Part (1kg) Asthishrinkhala coarse powder was taken ,16parts of water was added, boiled and reduced to 1/4th.

Step 2: Then 1part (3kg) Asthishrinkhala powder taken to which sufficient quantity of Kashaya was added and bhavana was given till contents attain Subhavitha lakshana. Then contents were dried in sunlight and hot air oven followed by pulverization and made into granules, later pressed in tablet punching machine in the size of 500 mg each.

3. ANALYSIS

The organoleptic characters and physio-chemical parameters of Asthishrinkhala vati include colour, taste, odour, pH, loss on drying, friability, hardness, disintegration time, alcohol–soluble extractive and water-soluble extractive

3.1. Organoleptic characters:

The organoleptic characteristics like colour, odour and taste were tested by using sensory organs **(Table 1)**.

3.2. Physio–chemical analysis:

i. Determination of pH [4]:

a. Preparation of buffer solutions:

Standard buffer solution: Dissolved one tablet of pH 4, 7 and 9.2 in 100 ml of distilled water separately.

b. Determination of pH: 1 gm of the sample was obtained after pounding Asthishrinkhala vati, dissolved in 10 ml of distilled water, stirred properly, and then filtered. The test was done by using the filtrate. The pH metre was turned on and allowed to warm up for 30 minutes. The pH was initially adjusted to 4.02 at 30 °C at room temperature using the knob after adding the pH 4 solution. The pH metre was turned to 7 by turning the knob after adding the pH 7 solution. Then a pH 9.2 solution was introduced, and without turning the knob, the pH was measured. Following the introduction of the sample solution, the reading was noted. The test was repeated four times, and an average reading was taken. The pH metre recorded a pH of 11.2 for Asthishrinkhala vati.

3.3. Loss on drying [5]:

It was tested by oven method: After the china dish was weighed and tarred, 10 g of tablet powder was placed in it. Which is kept in a hot air oven for five hours at a temperature of 105°C. The weight was recorded after cooling for 30 minutes in a desiccator. Again, the sample was kept in a hot air oven for 1 hour at the same temperature. This procedure was repeated until the weight variance was not greater than 0.25 %. When the sample drug has been drying and cooling for 30 minutes, the weight is regarded as constant, and the difference shouldn't be more than 0.001g. For Asthisrunkhalavati, this procedure was repeated four times. Loss on drying for Asthishrinkhala vati was 52.8%

3.4. Friability [6]:

The purpose of this test is to evaluate the physical strength of the tablets. Ten tablets should be used if the weight of the tablet is greater than 0.65g. Remove any extra particles from the tablets with caution. The weight of 10 tablets was noted and placed in the drum for 100 rotations in 4 minutes. Then the tablets are removed, and any loose dust is cleaned off. The weight is measured once more, and the formula for determining friability is applied:

$$\frac{\text{Initial weight} - \text{Final weight}}{\text{Initial weight}} \times 100$$

Weight loss should not be more than 2% **[3]**. Friability of Asthishrinkhala vati was 0.92%.

3.5.Hardness [7]:

A Monsanto hardness tester was used to determine the tablet's hardness. This test measures the tablet's resistance to breakage, abrasion, and chipping while being stored or transported. One tablet was placed within the movable jaw of the tester and fixed there to measure the hardness of the asthisrunkhala

vati. When the crack appeared, the screw knob was twisted after the reading scale value had been set to zero. At that point, the reading was 3.5 kg. Since force is measured in kilograms, 4 kg is regarded as the minimal value for manufacturing. Hardness of Asthishrinkhala vati was 3.5 kg.

3.6. Disintegration [8]:

When tablets, vati, or pills are placed in a liquid medium and subjected to specified experimental circumstances, this parameter is used to assess if the tablets, vati, or pills disintegrate within the specified period. 750 ml of distilled water is placed in the tank of a 1000 ml Beaker used in the disintegration equipment. The instrument's timer and temperature were both set to 90 minutes and 37 °C, respectively. One vati was put into each tube of the device. The length of time it takes for vati to completely dissolve and flow through the mesh was noted. Tablets and capsules must dissolve within 15 to 30 minutes to pass this test. Six 500 mg vati were placed in the disintegrator. Asthishrinkhala vati took 22 minutes 54 sec to pass through the mesh.

3.7.Alcohol-soluble extractive [9]:

5 g of Asthisrunkhala vati that had been roughly pounded was weighed into a glass stopper flask. 100 ml of ethanol was added to the flask. After the flask was correctly sealed, the solution was periodically shaken for six hours. Then it was left undisturbed for 18 hours. It was promptly filtered, taking care to avoid solvent loss. Pipetting out 25 ml of the filtrate into a pre-weighed 100 ml beaker was done. It was evaporated until dry in a water bath. The weight was recorded, and calculations were made after cooling the Chinese dish in a desiccator. Alcohol-soluble extractive of Asthishrinkhala vati was 0.8%.

3.8.Water-soluble extractive [10]:

Alcohol -soluble extractive's same procedure was followed for this parameter. Only media was changed i.e., instead of 100ml ethanol, 100 ml of distilled water was used. Water-soluble extractive of Asthishrinkhala vati was 6.2%.

Table 1: Organoleptic and physio-chemical Results

S. No.	PARAMETER	RESULTS
1.	Colour	Greyish- brown
2.	Taste	Madhura, Kashaya
3.	Odour	Characteristic
4.	pH	11.2
5.	Loss on Drying	52.8%
6.	Friability	0.92%
7.	Hardness	3.5 kg
9.	Disintegration	22 min 54 sec
10.	Alcohol–soluble extractive	0.8%
11.	Water–soluble extractive	6.2%

4. DISCUSSION

In the present study the formulation consists of single ingredient named Asthishrinkhala which was proved to be genuine by assessing the pharmacognostical parameters. The therapeutic effect depends on the quality of the drug administered. The Asthishrinkhala vati was analyzed for their organoleptic properties and physico-chemical parameters. Among the organoleptic properties, the colour is Greyish-brown which reflects the material present in the drugs at acquiring the colour following levigating and the form of the drug. The odour is characteristic, whereas the taste of Asthishrinkhala vati was sweet and astringent. Among the physico-chemical parameters, the pH of Asthishrinkhala vati showed basic in nature**.** The loss on drying determines the amount of volatile matter or water drying off from the drug and for substances appearing to contain water as the only volatile constituent, this procedure is appropriately used. Loss on drying for Asthishrinkhala vati was found to be 52.8% which means moisture might have been retained while storing the tablet because this parameter was tested after 1 year of its manufacturing. Similarly, the friability test determines the resistance of the tablet to chipping, abrasion, or breakage under conditions of storage, transportation, and handling before usage. This is very useful in determining the physical strength of tablet and Asthishrinkhala vati showed 0.92% of physical strength. The hardness test is applicable to compressed vati and is intended to determine the physical strength of the vati. The minimum value should be 4 kg/cm2 and the hardness of Asthishrinkhala vati was found to be 3.5kg. Disintegration is that state in which no residue of that unit under test remains in the apparatus or if a residue remains, it consists of fragments of disintegrated parts of the tablets, vatis, gutika, and pills components parts such as insoluble coatings. The Disintegration Time of Asthishrinkhala vati in liquid medium took 22 minutes and 54 seconds to pass through the mesh. The alcohol soluble extractive value is the indicator amount of alcohol required to completely extract a given volume of an herb and the asthishrinkhala vati showed 0.8%. The water-soluble extract values indicate the presence of the active elements that are soluble in water and the asthishrinkhala vati showed 6.2%.

5. CONCLUSION:

Asthishrinkhala vati is made up of a single herbal drug, so it can be used for up to three years, if kept in a cool place and air-tight container. Analysis showed a detailed examination of a drug and provided standards for judging its quality. Preliminary organoleptic characteristics of the Asthishrinkhala vati showed that the ingredients used were genuine and were found in the finished product too. Preliminary physicochemical parameters also are within the standard range. Thus, the study proves the quality of the final product.

6. ACKNOWLEDGMENT- Authors are highly acknowledged to SDM Ayurveda teaching pharmacy for all the needful support and guidance.

7. CONFLICTS OF INTEREST- Nil

8. SOURCE OF FINANCE & SUPPORT – Nil

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