IJBPAS, January, 2021, 10(1): 237-244

ISSN: 2277–4998

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

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

NAMBURI PHASED SPOT TEST (NPST) OF KAPARDAKA BHASMA PREPARED BY TWO DIFFERENT METHODS

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Received 2nd April 2020; Revised 21st April 2020; Accepted 14thJuly 2020; Available online 1st Jan. 2021

https://doi.org/10.31032/IJBPAS/2021/10.1.5333

ABSTRACT

Introduction

Kapardaka (*Cypraea moneta* linn.) is a mineral drug mentioned under sadharana rasa, as well as sudhavarga/ shukla varga dravya. It is identified as "marine shell" cowry or as cowrie in English. It is indicated in conditions like agnimandya, grahani roga, kshaya roga, karnasrava, netraroga and in all types of udara shoola.The Namburi Phased Spot Test (NPST), a test based on chemical reaction, is a technique for quality assessment of Sindura and bhasma.

Materials and Methods

Shodhana of kapardaka is performed by Swedana in dolayantra with takra for three hours for both samples. Marana wasperformed by two different methods for two samples of kapardaka. First sample was prepared by direct agni method and second method was prepared by puta method. Both the bhasma samples were subjected for NPST.

Observation and Results

The prepared samples were analyzed by classical bhasma pareeksha, pH and NPST. Both the sample passed the bhasma parreksha and pH of sample 2 was slightly alkaline than sample 1. The obtained results of NPST were compared to standard value as per CCRAS guidelines.

Discussion

For marana, direct agni method was easy as compared to the second method done by puta method based on the cost and time. pH is slightly more alkaline in agni method in comparison to puta method, this could be due to the bhavana dravya and trituration time in puta method. Kapardaka bhasma is enriched in calcium content which is alkaline in nature. It turns yellow haridra paper to pink.

CONCLUSION

Preliminary analytical study conducted showed the same parameters for pH, bhasma pareeksha and NPST. The bhasma prepared by direct agni method can be taken for further analytical and clinical research works.

Keywords: NPST, Marana, Kapardaka bhasma

INTRODUCTION

Rasashastra is defined as a branch of Ayurveda pharmaceutics that deals with drugs with varied origin like metals, minerals, marine drugs, gem stones, various pharmaceutical process viz. shodhana, marana, jarana, murchana and gives detailed description regarding the uses and therapeutic efficacy of the rasadravya **[1]**. Bhasma are the unique Ayurvedic metallic/mineral formulations which have high therapeutic value and these are used alone as a single medicament or administered along with other medicines of Ayurveda to impart the desired result. Kapardaka (*Cypraea moneta* linn.) is the fourth mineral drug under sadharana rasa and also under sudhavargeeya dravyas **[2]**. It is identified as "marine shell" cowry or as cowrie in English. Cowrie is the common name given for a group of small to large sea shells, marine gastropod mollusks in the family Cypradae. Kapardaka bhasma is an important constituent of many Ayurvedic formulations. It is mainly indicated in conditions like agnimandya (low digestive fire), grahani roga (sprue), kshaya roga, karnasrava (discharge from ear), netraroga (eye disorders) and also in all types of udara shoola (abdominal pain) **[3]**.

In Ayurveda system of medicine, quality of drugs is directly related to the collection process, timing and procedure adopted during drug preparation. In order to minimize variability and to strengthen the quality of Ayurvedic products, standardization of bhasma is essential **[4]**. The Namburi Phased Spot Test based on a chemical reaction, is a technique for quality assessment of sindura and bhasma. NPST is the study of a spot with series of changes in color pattern, at three

successive phases spreading over three different time intervals **[5]**.

AIM AND OBJECTIVES

- To prepare kapardaka bhasma by two different methods
- To analyze kapardaka bhasma by NPST

MATERIALS AND METHODS:

The work was done in two phases

1. Pharmaceutical study
2. Analytical study and NPST

Preparation of kapardaka bhasma

A. Shodhana

Kapardaka was tied in a cloth in the form of pottali. It was suspended in dolayantra containing amla dravya i.e., takra as liquid media and subjected to swedana for one yama (3 hours). Later, the drug in the cloth was washed with warm water, dried and stored as "suddha kapardaka" **[6]**.

B. Marana (Method 1)

The shodhita kapardaka were placed over the flame directly and heated on moderate fire. After it turned brittle and puffed, it was collected and ground to form a fine powder **[7]**.

C. Marana (Method 2)

The suddha kapardaka were enclosed in sarava samputa (two earthen saucers sealed at the joint). The samputa was sealed appropriately and dried, later it was subjected for gajaputa with dry cowdung cakes. After puta the kapardaka was taken out from sarava and triturated into fine powder then bhavana was given with ghritakumari swarasa (juice of Aloe vera) till subhavita lakshana (paste turns fine that the finger prints get imprinted on it) was appreciated, chakrika (pellet) was prepared and enclosed in sarava for next gajaputa. Then again chakrika was taken out from sarava, triturated and stored as bhasma **[8]**.

The prepared kapardaka bhasma by both methods was subjected to various classical bhasma pariksha (tests for calcified ash) **[9]**.

Evaluation of NPST

0.25 g of both sample kapardaka bhasma was taken in a test tube and heated on spirit lamp till the tip of the lower end of the test tube becomes red hot. The heating was stopped when charred smell was felt. Later the test tube was allowed to cool. 0.5 ml of distilled water was added to those heated samples, shaken well and allowed to settle. The samples became clear within 5 minutes. After complete settling, two drops of supernatant solution was carefully placed over the haridra paper with the help of dropper. The change of color and the pattern of spot at three different phases of three different time intervals i.e., 5 minutes, 20 minutes and 24 hours were recorded **[10]**.

OBSERVATION AND RESULTS

Table 1: The prepared kapardaka bhasma before marana and after marana

Kapardaka bhasma	Before Marana	After Marana
Sample 1	14 gram	10 gram
Sample 2	35 gram	25 gram

Table 2: Analysis of both sample of Kapardaka bhasma

Parameter/ Test	Kapardaka bhasma	
	Sample 1	Sample 2
Color	Whitish	Whitish
Touch	Soft and fine	Soft and fine
Taste	Tasteless	Tasteless
Odor	Not specific	Not specific
Varitara	Present	Present
Rekhapurnatva	Present	Present
Unama	Present	Present
Nischandra	Absent	Absent
pH	7.97	9.88

Table 3: NPST observation of both samples

Criteria		Kapardaka bhasma	
		Sample 1	Sample 2
Changes on heating	Liberation of fumes	Nil	Nil
	Charring	Nil	Nil
	Odor	Not specific	Not specific
Changes on wetting	Exothermic reaction	Not present	Not present
	Endothermic reaction	Not present	Not present
	Color of the solution	Light white	Light white
	Adsorption	Simple	Simple
	Settling time	10 minute	10 minute
Spot, color pattern and fading time at different phases	At first phase (0- 5 minutes)	Formation of pink solid spot with central spot	Formation of pink solid spot with central spot
	At second phase (20 minutes)	Formation of deep pink spot with central circular pink spot	Formation of deep pink spot with central circular pink spot
	At third phase (20- 48 hours)	Fades away pink spot	Fades away pink spot

Figure 1 Shodhita Kapardaka

Figure 2: Marana direct agni method

Figure: 3 Marana by Puta method

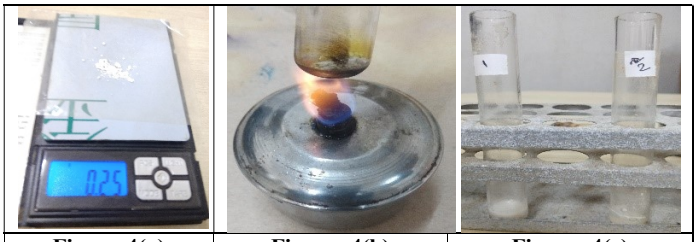

Figure:4(a) Weighing of sample	Figure: 4(b) Heating of sample	Figure: 4(c) Settling of solutions

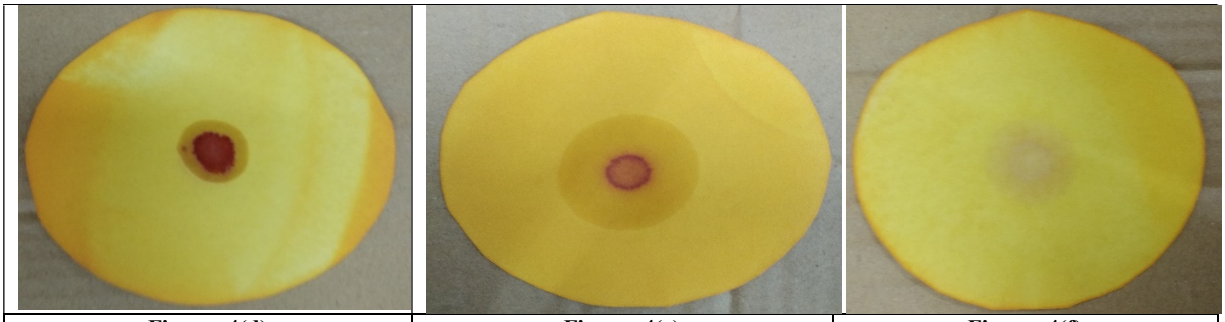

Figure: 4(d) Sample 1 at First phase	Figure: 4(e) Sample 1 at Second phase	Figure: 4(f) Sample 1 at Third phase

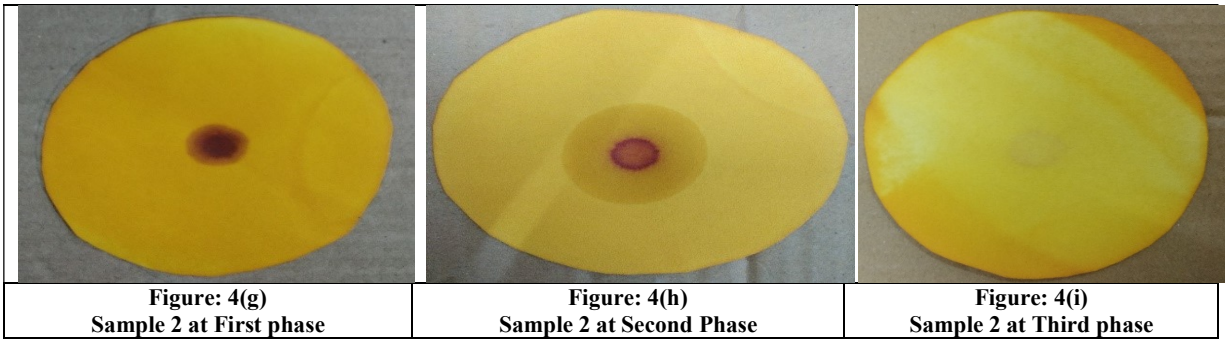

Figure: 4(g) Sample 2 at First phase	Figure: 4(h) Sample 2 at Second Phase	Figure: 4(i) Sample 2 at Third phase

Figure: 4(a) to (i) NPST evaluation

DISCUSSION

A classical method of shodhana of kapardaka was carried out by dolayantra method, takra is used as liquid media because of easy availability and it is cost effective. Marana was done by two different methods. In the first method, shodhita kapardaka was placed on direct flame, it puffed up after five

minutes, and this could be due to oxidation and direct contact to heat. It was an easy procedure because it took less effort, time, cost and requirements. The second method was prepared by puta method; two puta was needed to get the bhasma and it took minimum two days for a single puta process to complete. This procedure had many requirements; it required more time and cost whereas the first method of marana just needed a few minutes to complete the process of bhasmikarana. Hence for marana direct agni method was easy as compared to puta method based on duration, cost and time. Both the samples of kapardaka bhasma passed the classical bhasma pariksha, indicating both the methods is ideal for bhasma preparation. pH is slightly more alkaline in puta method compared to agni method; this may be due to bhavana dravya ghrita kumari and trituration carried out for puta method. The pH can be reduced by giving more puta. As after first puta pH was more alkaline so bhavana was done by ghrita kumari as the same after second puta pH is decreased may be due to pH of ghrita kumara having 5.

Turmeric is an example of a natural pH indicator which means that it can be used to determine a substance's pH. The turmeric indicator changes colour between roughly a pH of 7.4 and 8.6.If turmeric is exposed to neutral or acidic substances, it will retain its yellow coloration. However, if turmeric is exposed to more alkaline substances it becomes a dark pink/red. Higher the alkalinity shows darker red color. Kapardaka bhasma is enriched in calcium content which is alkaline in nature. It turns yellow haridra paper to pink. The prepared sample has shown same result as of standard. This test (NPST) was beneficial in identification of Kapardaka bhasma prepared by two different methods.

CONCLUSION

Pharmaceutical preparation of Kaparda bhasma by direct agni method though explained in literature of rasashastra is seldom followed. The pharmaceutical process of kaparda bhasma by direct heat method was easy to perform and required less time and cost compared to the puta method that is generally carried out. Preliminary analytical study conducted showed the same values for the analytical parameters for pH, bhasma pareeksha and NPST.

NPST is a simple test that can be carried out with minimum set up and requirements. CCRAS has also accepted the monograph of NPST, and so the quality of bhasma can be checked before being used therapeutically. In

the present study, Bhasma gave results in accordance to NPST standards. Tests of the ayurvedic parameters of prepared by two different methods bhasma like rekhapu-rnatwa (fine powder), varitaratwa (light such that it floats on surface of water) and the Namburi Phased Spot Test proved the fineness of Kapardaka bhasma and also aided for the quality standardization of the Kapardaka Bhasma. The bhasma prepared by direct agni method can be taken for further analytical and clinical research works.

ACKNOWLEDGEMENT

I would like to thank all collegues that made useful contributions to the success of this work especially teachers, PG scholars and laboratory workers in the Department of Rasashastra and Bhaishajya Kalpana, Sri Dharmasthala Manjunatheshwara College of Ayurveda and Hospital, Hassan, who assisted in some of thelaboratory analysis.

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