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## NAMBURI PHASED SPOT TEST (NPST) OF KASISA BHASMA

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### ABSTRACT

#### Introduction

Kasisa (Green vitriol) is a mineral drug mentioned under uparasa classification of rasa dravya. It is chemically identified as ferrous sulphate (FeSO<sub>4</sub>), indicated in ashmari, mutrakricchra and shwitra kushta. It possesses kashaya- amla- tikta rasa, grahi guna, katu vipaka, sheeta virya used externally in vrana and shwitra. Namburi Phased Spot Test (NPST) is a technique based on chemical reaction to assess the quality of bhasma and sindura preparations of Ayurveda pharmaceuticals.

#### Materials and Methods

Kasisa bhasma of prepared (sample A) and market (sample B) samples were taken and their classical bhasma pareeksha and NPST study were carried out to assess the purity and quality of both.

#### Observations and Results

Both samples were subjected to different tests and the parameters obtained were compared to standard values as per CCRAS guidelines. NPST test was done and observations were drawn at three different intervals of time duration.

#### Discussion

Both samples of Kasisa bhasma have passed the classical bhasma pareeksha suggestive of proper formation of bhasma but differed in the time period of changes observed at different phases in NPST test and was analyzed. pH of both samples signifies the acidic nature of bhasma. Observations on NPST test at three different intervals of time suggest the quality and purity of both samples.

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## Conclusion

Both samples have tested for different parameters in which sample A showed changes as mentioned in NPST standards on-time compared to sample B.

**Keywords: Kasisa bhasma, NPST, Bhasma pareeksha**

## INTRODUCTION

Rasashastra is a branch of Ayurveda that explains about metals, minerals and other rasadravya. Ayurveda aushadhi can be classified into kashta aushadhi (herbal preparations), rasa aushadhi (metallic preparations) and jangama aushadhi (animal preparations) where bhasma (calx), sindura (mercury preparations) comes under rasa aushadhi classification [1]. Kasisa (Green vitriol) comes under uparasa group of rasadravya classification chemically identified as  $\text{FeSO}_4$  [2]. Kasisa bhasma possesses kashaya (astringent)- amla (sour)- tikta (bitter) rasa, grahi guna, katu (pungent) vipaka, sheeta virya (cold potency) and is vata-kaphahara (alleviates vata and kapha) [3, 4]. It is effective as kesharanjaka (black coloring of hair), netrya (good for eyes), vishaghna (anti- poisonous) and kandughna (anti- pruritic). It is indicated in ashmari (calculus), mutrakricchra (dysuria) and shwitra kushta (diseases of skin) [5].

Before prescribing any medications it is necessary to check its purity. Many methods can be employed to check the purity of medications; among them Namburi Phased

Spot Test (NPST) is a unique technique to assess the quality of sindura and bhasma. Study of spot at three different time intervals is a special feature of this technique [6]. This NPST technique was developed and standardized by Dr Namburi Hanumantha Rao in 1970 which was accepted by CCRAS, New Delhi [7]. Hence, this study focuses on the quality assessment of Kasisa bhasma of two samples; prepared sample named as sample A and market sample named as sample B through different analysis tests and by NPST test.

## AIM

- To assess the quality of Kasisa bhasma of prepared and market samples by NPST technique

## MATERIALS AND METHODS

Includes following steps:

- Analysis of two samples
- NPST study of two samples

Sample A was prepared according to the classical reference [8]. Sample B was procured from the local market of Hassan, Karnataka and both were subjected to

classical bhasma pareeksha, pH NPST test method for further assessment.

### Evaluation of NPST [9]

Quantity of Bhasma- 0.25g of each sample

Reagent- 5N HNO<sub>3</sub>

Chemical reacting paper- 5% Potassium ferrocyanide paper

0.25g of each samples were taken into test tubes and heated for a while till the bottom appeared red. Then both the samples were cooled and added with reagent 0.5 ml 5N HNO<sub>3</sub> and heated again for a while. Test tubes were shaken often for first two hours before treating with the chemical reacting papers. Samples in the test tubes were kept

undisturbed for 40 hours to react with their reagents. After 40 hours, two drops of supernatant solution was carefully placed over the 5% Potassium ferrocyanide paper with the use of a dropper. Then the change in color and the pattern of spot was observed at three different intervals of time i.e., 0- 5 minutes- 1<sup>st</sup> phase, 5-20 minutes- 2<sup>nd</sup> phase and 4 hours after 1<sup>st</sup> phase- 3<sup>rd</sup> phase.

### OBSERVATIONS AND RESULTS

Both samples were analyzed for classical bhasma pareeksha, pH and NPST test method and the obtained parameters were compared to standard values as per CCRAS guidelines [10].

Table 1: Analysis of both samples of Kasisa bhasma

Parameters/ Test	Sample A	Sample B
Color	Brick red	Brick red
Odor	Not specific	Not specific
Touch	Soft and fine	Soft and fine
Taste	Tasteless	Tasteless
Rekhapurnatva	Present	Present
Varitara	Present	Present
Nishchandra	No shiny particles	No shiny particles
Unama	Present	Present
pH	2.32	3.16

Table 2: NPST observations of both samples of Kasisa bhasma

Criteria	Sample A	Sample B
Changes on heating	Liberation of fumes	Nil
	Charring	Nil
	Odor	Not specific
Spot, color and fading time at different phases	At 1 <sup>st</sup> phase (0-5 minutes)	A deep blue solid spot formed immediately, blue margin encircled the entire spot
	At 2 <sup>nd</sup> phase (5-20 minutes)	Deep blue solid central spot with a dominating moderately deep blue periphery
	At 3 <sup>rd</sup> phase (4 hours after 1 <sup>st</sup> phase)	A deep blue solid spot formed without blue periphery. A blue margin encircled the entire spot very closely



Figure 1: Weighing of sample



Figure 2: Heating of sample A



Figure 3: Heating of sample B



Figure 4: Settling of solutions

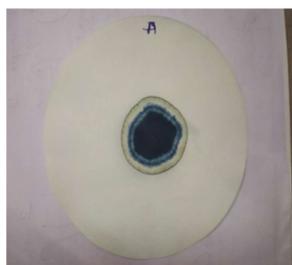


Figure: 5(a)  
Sample A at first phase



Figure: 5(b)  
Sample B at first phase



Figure: 5(c)  
Samples at second phase



Figure: 5(d)  
Samples at third phase

Figure: 5(a) to (d) NPST evaluation

## DISCUSSION

Standardization is an evaluation which serves as a basis to evaluate similar substances especially the pharmaceutical preparations. Standardization parameters of all dosage forms are given by CCRAS which is approved by Department of AYUSH and being practiced for quality assessment of

products. Bhasma is one among the different dosage forms which includes several standard parameters like rekhapurnata, varitara, pH, etc. Both samples of Kasisa bhasma have passed classical bhasma pareeksha suggestive of the bhasma are properly prepared. Rekhapurnata signifies the smooth texture, fineness and softness of

bhasma, varitara and unama indicates the lightness of bhasma that which is unable to break the surface tension of water and hence floats when sprinkled over the surface of stagnant water. Nischandra test is done to check the presence of shiny particles in the bhasma and absence of shiny and lustrous particles in the bhasma indicate the proper formation of bhasma [11]. Color of both samples is brick red, soft and fine in texture with pH of both samples indicates that the Kasisa bhasma is acidic in nature.

NPST is a technique based on chemical reaction, easy to differentiate between the properly processed and unprocessed bhasma and sindura. It's a simple test procedure that can be carried out within minimum setup and requirements. An observation of samples was done in three different intervals of time and was analyzed for better assessment. Sample A showed the changes as prescribed in the standards at three intervals of time and Sample B also showed the same pattern of changes but comparatively delayed, this could be because of the chemical reactions and changes that occurred in the particles of bhasma may vary with each sample. The duration of bhavana (trituration) process may also influence on the expression of chemical changes and bondage in between the particles also has its own effect on the reaction.

## CONCLUSION

In the present study, both samples were evaluated for classical bhasma pareeksha and NPST test methods. Both have showed result in which sample A showed results as mentioned in NPST standards on-time compared to sample B. NPST test proved the quality and purity of both samples.

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