QUALITATIVE ANALYSIS OF HINGULADYA RASASINDURA BY NAMBURI PHASED SPOT TEST (NPST)

Dr Abinash Pradhan¹, Dr M. Gopikrishna²

¹ Final Year PG Scholar, Dept Of Rasa Sashatra and Bhaisajya Kalpana, SJGAMC&H Koppal,  
² HOD and Professor of Dept of Rasa Sashatra and Bhaisajya Kalpana, SJGAMC&H Koppal

ABSTRACT:

Introduction: Hinguladya Rasa Sindura (Red Sulfide of Mercury) is a herbomineral preparation and a well-known Sagandha Kupipakwa Rasayana kalpana. An equal ratio of Shodhita Hingula (Purified Cinnabar) and Shodhita Gandhaka (Purified Sulphur) was used to prepare Hinguladya Rasa Sindura. The form of preparation which was considered by Rasa Acharya to know the effect of minimizes dose for therapeutic purpose. Mainly used in the condition of Prameha (diabetes mellitus), Bhagandara (fistula), Rajayakshma (tuberculosis), Kushtha (leprocy), Pandu (anaemia), Gulma (extra growth) etc.

To analyze the medicine the best way is to standardize it and after that analyse with standard and sophisticated instrumental techniques. Aims: To ensure and assess the quality of Hinguladya Rasa Sindura through Namburi Phased Spot Test (NPST) analysis.

Material and Method: The analysis was observed in three phases, from 0 min to 72 hours and compared with standard protocol.

Result: The prepared Hinguladya Rasasindura (red sulphide of mercury) shows accurate results.

Conclusion: This technique is very helpful for quality assessment of Sindura as per the standards of Rasashastra. It is a simple test that it can be carried out with minimum set up and requirements

Key Word: Hinguladya Rasa Sindura, Kupipakwa Rasayana, Analysis, NPST

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INTRODUCTION:

Hinguladya rasasindura is one of the important classical kupipakva rasayan containing hingula and gandhaka as ingredients. It is sagandha, bhahirdhuma, kantastha kupipakva rasayan potentiated with agni samskara. It is indicated in various diseases like prameha, shula, jwara, bhagandara etc.

Hinguladya Rasasindura (red sulphide of mercury) is Deha-Bala (strengthens the body) and Virya-vardhaka (increases the potency), Rasayana (rejuvenative). It alleviates Vatadidosha and increases longevity and vitality.

N.P.S.T (NAMBURI PHASED SPOT TEST)

N.P.S.T. is to be introduced by Dr. Namburi Hanumantha Rao in the year 1970. He has taken up the project of quality control of Bhasmas and Sindhras along with other projects.

Definition:

When a drop of clear solution of a substance (Bhasma or Sindura) that is under examinations is will appear. It is the study of this spot and colour at three successive phases spreading over three different time intervals is known as “Phased Spot Test”.

The Namburi Phased Spot Test (NPST), a spot test based on a chemical reaction, is a technique for quality assessment of a Sindhura and bhasma (calx). When a drop of clear solution of a substance under examination (Bhasma or Sindhura) is put on specially prepared paper, a spot appears which manifests a series of colour and pattern changes. The NPST involves observations of the spot and its colour, at three successive phases spread over three different time intervals. It thus has the advantage of measuring reactions at different time intervals. The technique was developed and standardized by Dr. Namburi Hanumantha Rao in 1970, it has been accepted by CCRAS, New Delhi.

Table number No. 1 showing different compounds and solvents of NPST analysis. So that, we can analysis NPST of different compounds.

<table>
<thead>
<tr>
<th>SUBSTANCE</th>
<th>SOLVENT</th>
<th>CHEMICAL REACTION PAPER</th>
<th>COLOUR DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajata</td>
<td>Conc. HNO₃</td>
<td>10 % Pot Iodide Paper</td>
<td>Cream to Yellow</td>
</tr>
<tr>
<td>Tamra</td>
<td>20 % HCl, 5N HNO₃</td>
<td>5 % Ferro Cyanide Paper</td>
<td>Charcolate</td>
</tr>
<tr>
<td>Sudha Varga</td>
<td>Distilled Water</td>
<td>Haridra Paper</td>
<td>Pink</td>
</tr>
<tr>
<td>Abhraka Bh.</td>
<td>Conc. HCl</td>
<td>2.5 % Ferro Cyanide Paper, 10 % Pot Iodide Paper</td>
<td>Blue, Deep Brown</td>
</tr>
</tbody>
</table>
Table no 1 : Showing the Different Compounds And Solvents Of NPST Analysis

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Kajjali</td>
<td>5N HNO₃</td>
<td>10 % Pot Iodide Paper</td>
<td>Brick Red</td>
</tr>
<tr>
<td>Sinduara</td>
<td>Conc. HNO₃</td>
<td>10 % Pot Iodide Paper</td>
<td>Brick Red</td>
</tr>
<tr>
<td></td>
<td>Aquaragia</td>
<td>10 % Pot Iodide Paper</td>
<td>Brick Red</td>
</tr>
</tbody>
</table>

**MATERIALS AND METHOD:**

Involves following steps,

- Preparation of Hinguladya Rasasindura (red sulphide of mercury)
- Preparation of paper and solution for NPST
- Evaluation of NPST

**Preparation of Hingualdyaa Rasasindura (red sulphide of mercury)**

Authenticated raw drugs were procured from S.J.G Ayurveda Pharmacy Koppal, Karnataka. Hingula (Cinnabar) and Gandhaka (sulphur) were subjected to shodhan (purification) procedure.

Hingula is Sodhana³ by Giving Bhavana with Nimbu swarsha for 7 day. Hingula (Cinnabar) and Nimbu swarasha are taken in khalvayantra (mortar and pestle) and triturated continuously for 7 days i.e. 7-8 hrs /day approximately. Colour of hingula changes observed. Most of the Hingula (Cinnabar) was get collected in the middle of khalva (mortar and pestle) which was shining. This Hingula (Cinnabar) was collected after was washed with hot water. It was collected and store d in Container.

Gandhana Sodhana⁴ by Dhalana method with Gogugdha . Previously weighed Gandhaka (sulphur) was powdered in khalwayantra (mortar). Little quantity of Goghrita (cow’s ghee) was taken in lohadarvi (iron ladder) and subjected to mandagni(low flame). To this powdered Gandhaka (sulphur) was added and mandagni (moderate temperature) was continued and stirred with spoon intermittently. When Gandhaka (sulphur) melted completely, it was poured in to a Godugdha (Cow’s milk) in a vessel. The Gandhaka (sulphur) from Godugdha (cow’s milk) was collected and washed thoroughly with hot water. Then it was dried under shade. This procedure was repeated for 3 times.

Initially shodhita Gandhaka (processed Sulphur) was taken in the khalwayantra (mortar and pestle) and made into fine powder. Then equal quantity of shodhita Hingula (Cinnabar) was added and trituration was done. 6 to 7 hours trituration was carried
out daily. Then Fine powder of Homogeneous mixture was prepared. Homogeneous mixture was filled in kachakupi (glass bottle) which was rapped with 7 layers of kapadmitti (rags and mud) and kept in valukayantra (sand contained iron vessel), heat was given in mridu(150-550°C), madhyam (550-650°C) and teevragni (650- 800°C). The whole procedure was completed in 24 hours.

After swangasheetala (self cooling) kupi (glass bottle) was taken out from the valukayantra (sand contained iron vessel). The mud smeared cloth layers of the kupi (glass bottle) were scrapped out with a knife. A jute thread dipped in kerosene was tied to the kupi (glass bottle) below the level of sublimated product and ignited. When the whole thread gets burnt off, wet cloth was wrapped around that. The bottle gets broken into 2 equal halves with a breaking sound. From the neck region Sindura (red sulphide of mercury) was collected scraped and collected in a cleaned glass bowl.

Preparation of paper and solution for NPST

10% Potassium iodide paper preparation

Materials

10% Potassium iodide solution (10 Gm Of Potassium iodide and 100ml of Distilled Water)

Whatman’s Filter Paper No.1

SOLUTION PREPARATION MATERIALS

Hinguladya Rasa sindura 1gm

Aquaregia (Conc. HCL & Conc. Nitric acid, 3:1)

Procedure:

Taken 1gm of Hinguladya Rasasindura (red sulphide of mercury) in centrifuge test tube and added 2ml of freshly prepared Aquaregia drop by drop and allowed to react for 30 min. The heat was given for a minute on a spirit lamp. By heating the solution, the interaction between the substance and reagent started with effervescence. Allowed them to react for 48 hours, in between test tube was shaken. After 48 hours the clear solution was taken and single drop was putted on 10% Potassium Iodide paper. The colour changes of the paper observed in 3 different phases.

1st Phase – 0 to 5min
2nd Phase –5 to 20 min
3rd Phase – 20 min to 1 day

OBSERVATION AND RESULT:

NPST FOR HINGULADYA RASA SINDURA
<table>
<thead>
<tr>
<th>Sample Name</th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hinguladya Rasa Sindura</strong></td>
<td>Immediate drop was of Brick red colour. Drop was slowly spreading; developed Brick red coloured centre spot having white coloured margin; surrounded by Brick red coloured intermediate circle. Dull brown peripheral circle was forming around the red ring.</td>
<td>The white ring between central spot and intermediate spot became more prominent. Central spot and intermediate Brick red circle gradually faded; peripheral red ring was much prominent, while outer brown periphery was diminished.</td>
<td>Central spot became light Brick red colour; intermediate Brick red circle was bright near the centre and dull at its periphery; encircled by prominent red ring. Outer brown circle was completely disappeared and replaced by bright white circle.</td>
</tr>
</tbody>
</table>

**NPST OF HINGULADYA RASA SINDURA**

![0 MIN](image1)
![5 MIN](image2)
![20 MIN](image3)
**CONCLUSION:**

The Hinguladya Rasasindura (red sulphide of mercury) was prepared according to the classic but lots of difference in the procedure. In classic mentioned that heat should be given about 12 hours but practically it was completed in an around 24 hrs. The sealing was done after copper coin test; at the bottom suryodayakshana (colour of sunset) tests were positive.

NPST, as the test is chemical reaction based, with specific results for specific sindura or bhasma, we can differentiate clearly. This technique is very helpful for quality assessment of Sindura as per the standards of Rasashastra. It is a simple test that it can be carried out with minimum set up and requirements. CCRAS has also accepted the monograph of NPST, and so the quality of Sindura can be checked before being used therapeutically. In the present study, the Hinguladya Rasasindura (red sulphide of mercury) gave results in accordance to NPST standards.

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