



QUALITATIVE ANALYSIS OF MRIGANKARASA EMPLOYING NAMBURI PHASED SPOT TEST

Syama Maniyankutty¹, Gauthaman M²

¹Assistant Professor, Dept of Rasashastra and Bhaishajya Kalpana, Krishna Ayurved Medical College, KPGU, Vadodara, India

Corresponding Author: syaamaabhi@gmail.com

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ABSTRACT

Rasaushadhis are a category of *Ayurvedic* formulations that have to be explored scientifically and therapeutically. *Mrigankarasa* is a *Kupipakwa Rasayana* preparation that has got a wide range of indications from *Prameha* to *Dhatukshaya*. The ingredients present in this formulation are *Navasara*, *Saindhava*, *Vanga*, and *Gandhaka*. So, knowing its pharmaceutical and therapeutical importance the present study has been conducted. Before introducing to the market, a product has to undergo a systemic analysis as a primary step. In this study, we selected Namburi Phased Spot Test (NPST) analysis as a qualitative step. NPST method is newly introduced in the field of *Ayurvedic* pharmaceutical standardization and accepted by CCRAS. The *Namburi phased Spot Test* (NPST), a spot test based on chemical reaction, is a technique for quality assessment of a *Sindura* and *bhasma*. The analysis was observed in three phases from 0 to 48hrs and compared with standard protocol. The result observed here was a dark brown coloured periphery with a greyish white coloured central spot-on 10% KI Paper in 5NHNO₃ and a Central glittering spot surrounded by dark brown periphery again surrounded by a yellowish brown margin on 10% KI Paper in Aquaregia proving *Mrigankarasa* with that of standard.

Keywords: *Mrigankarasa*, NPST Analysis, Dark brown, Phases, *Kupipakwa rasayana*

INTRODUCTION

In clinical practice, the usage of *rasaushadhis* is increasing because of the shortage of herbal drugs, increased demand, multiple pathologies, and the need for instantaneous relief (1). *Mrigankarasa* is a mineral preparation mentioned in *Rasayogasagaram* (2) which is a *Kupipakva rasa* (3) preparation containing *Navasara*, *Saindhava*, *Gandhaka*, and *Vanga*. These are prepared in a specially designed glass bottle covered with seven layers of mud-smear cloth, which is then heated over a fire in a *Valuka yantra* (4) and finally, the product is collected from the base of the bottle. It has got a wide range of indications from *Prameha* to *Dhatukshaya*. The purity of any preparation is important before prescribing it to the patients. Different methods are available to verify the purity of a preparation. In this study, an attempt is made to understand the quality of *Mrigankarasa* using NPST (5). It is a modified circular paper chromatographic technique developed by Dr. Hanumanth Rao, for the identification of *bhasmas* and *sinduras*. Even though the test is simple its sensitive and highly informative pattern of colour changes observed across different phases is considered characteristic of the particular product. When a drop of a clear solution of a substance under examination is put on Whatman paper impregnated with a suitable reagent a spot with a series of changes in color and pattern will appear. The study of these spots and colours in three phases at three different time intervals is termed the Phased Spot test. This technique is helpful in the detection of continued chemical reactions that take place gradually between two chemical substances on static media at every second or even a fraction of a second. It says that each *bhasma* has a unique reaction when it is

spotted. It is a sensitive test for the identification of *bhasma* which has the same chemical content. So far, no research work had been done on *Mrigankarasa*, so this was an attempt to standardise the NPST pattern for the drug.

Materials and Methods

Procedure: *Mrigankarasa* (0.25 gm) was taken into a centrifuge test tube and to which drop by drop freshly prepared 0.5ml aquaregia was added. The solution was kept undisturbed for about 30 minutes for its reaction to being taken place. Then it was heated gently on a spirit lamp for about a minute. The solution was shaken occasionally for 48 hrs and allowed to react. Afterwards, one drop of the sample was put on the 10% Potassium Iodide paper prepared by using Whatman filter paper No 1. Similarly, two more samples of *Mrigankarasa* were treated with 5NHNO₃ and heated and dropped on 10% Potassium Iodide paper and Haridra paper was prepared using Whatman filter paper No 1. Three samples were used for the analysis of *Mrigankarasa*.

Observation and Results

Colour changes during the study were observed in three different phases, 1st phase: 0 to 5 min, 2nd phase: 5 to 20 min, and 3rd phase: 20 min to 48 hours. At the end of the third phase, the reaction showed a dark brown coloured periphery with a greyish white coloured central spot-on 10%KI Paper in 5NHNO₃, a Central glittering spot surrounded by dark brown periphery again surrounded by a yellowish brown margin on 10%KI Paper in Aquaregia and Central light red color spot surrounded by a bright red colour periphery on Haridra paper in 5NHNO₃.

RESULTS FOR NPST

Table 01: Showing 3 Phases of *Mriganka rasa* sample on 10%KI Paper in 5NHNO₃

PHASES	CHANGES IN PATTERN AND COLOUR
PHASE 1	A central brown spot surrounded by a dark brown coloured border which is again surrounded by a light brown coloured periphery
PHASE 2	A light-coloured central spot is surrounded by a light brown coloured border which is again surrounded by a dark brown coloured border.
PHASE 3	Dark brown coloured periphery with a greyish white coloured central spot

Table 02: Showing 3 phases of *Mriganka rasa* sample on 10% KI Paper in Aquaregia

PHASES	CHANGES IN PATTERN AND COLOUR
PHASE 1	A dark brown coloured central spot is surrounded by a black coloured ring which is again surrounded by a dark brown colour margin
PHASE 2	The central brown spot fades following the formation of a glittering grey central spot surrounded by a dark black coloured ring which again gets surrounded by a yellowish-brown margin.
PHASE 3	Central glittering spot surrounded by dark brown periphery again surrounded by a yellowish brown margin

Table 03: Showing 3 phases of *Mrigankarasa* sample on Haridra paper in 5N HNO₃

PHASES	CHANGES IN PATTERN AND COLOUR
PHASE 1	A bright red central spot
PHASE 2	Central bright red colour faded and a bright red coloured periphery was developed
PHASE 3	Central light red colour spot surrounded by a bright red colour periphery.

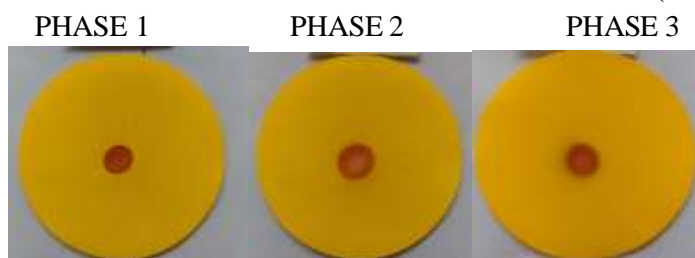
PICTURES OF NPST PATTERN ON KI PAPER (5N HNO₃)
PHASE 1 PHASE 2 PHASE 3



PICTURES OF NPST PATTERN ON KI PAPER(AQUAREGIA)



PICTURES OF NPST PATTERN ON HARIDRA PAPER (5N HNO₃)



DISCUSSION

Rasaushadhi is one of the medicaments in treating several diseases due to its quick action in a smaller dosage. *Mrigankarasa* which is a *rasaushadhi* is a formulation mentioned in *Rasayogasagam*. Before being made available on the market drugs have to

undergo several qualitative tests. In this study, we selected NPST analysis as a primary test to check its potentiality. NPST is a modified circular paper chromatographic technique developed by Dr. Hanumanth Rao, for the identification of *bhasmas* and *sinduras*. Even though the test is simple its sensitive and

highly informative pattern of colour changes observed across different phases is considered characteristic for particular products. When a drop of a clear solution of a substance under examination is put on Whatman paper impregnated with a suitable reagent a spot with a series of changes in colour and pattern will appear. The study of these spots and colours in three phases at three different time intervals is termed the Phased Spot test. This technique is helpful in the detection of continued chemical reactions that take place gradually between two chemical substances on static media at every second or even a fraction of a second. It says that each *bhasma* has a unique reaction when it is spotted. It is a sensitive test for the identification of *bhasma* which has the same chemical content. So far, no research work had been done on *Mrigankarasa*, so this was an attempt to standardise the NPST pattern for the drug. Initially, 5N HNO₃ extract of the samples were spotted on 10%potassium iodide paper and observed for colour changes including the margin, zones, etc appearing over the period of time across 3 different phases. The pattern observed was almost similar among the samples. In the 1st phase, a central brown spot was surrounded by a dark brown coloured border and in the 2nd phase the central brown colour faded away in the 3rd phase it changed to a dark brown colored periphery with a greyish white coloured central spot. Observations of this phase were similar for all three samples. Then the aquaregia extracts of the samples were spotted similarly on 10%potassium iodide paper and the observations were noted. In the 1st phase, a dark brown central spot was surrounded by a black ring which was again surrounded by the dark brown margin. In the 2nd phase, the central brown faded, and a glittering grey central spot was formed which was surrounded by a yellowish-brown margin. 3rd phase was almost similar to that of the 2nd phase. These patterns were similar for all three samples. And finally, 5N HNO₃ extracts of the samples were spotted on haridra paper and observed for colour changes as

above. In 1st phase, a dark red spot was observed. In the 2nd phase, the central dark red spot faded away with a dark red margin. In 3rd phase, the colour became a little more prominent and no further change was observed. The reaction occurring with the reacted paper in the NPS test depends upon the type and amount of extract applied.

CONCLUSION

NPST is a simple test that can be carried out with minimum set up and requirements. CCRAS has also accepted the monograph of NPST, so the quality of *bhasma* can be checked before being used therapeutically. NPST was carried out to develop in-house standards and in the present study *Mrigankarasa* showed a positive result in comparison with standards and it also helped for the quality standardization of the *Mrigankarasa*.

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