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ICPOES ANALYSIS OF HERBOMINERAL FORMULATION *RAJATHAPAASANA PARPAM*

***[1]Dr. S. Selva Anbini, [2]Dr. G. Essakky Pandian**

*[1]PG Scholar, Department of PG Gunapadam, GSMC, Palayamkottai.
[2]Professor, Department of PG Gunapadam, GSMC, Palayamkottai.

***Corresponding Author: Dr. S. Selva Anbini**

PG Scholar, Department of PG Gunapadam, GSMC, Palayamkottai.

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ABSTRACT

Background: Siddha system is one among the oldest system of medicine. *Rajathapaasana parpam* is a herbomineral formulation used for treating hemiplegia (paarisavatham), facial palsy (mugavatham) present in the text book "siddha vaithiya pathartha guna vilakam. **Objective:** The objective of the present study is to detect heavy metals (Arsenic, lead, cadmium, mercury) and other elements within the permissible limits as per WHO guidelines present in the Siddha herbo-mineral Formulation "*RAJATHAPAASANA PARPAM"* **Materials and Methods:** The ingredients were collected and purified and the drug was prepared as per Siddha literature "*siddha vaithiya patharthaguna vilakam*". Here, the drug was subjected to standardization by simultaneous ICP-OES analysis equipment (PERKIN ELMER OPTIMA 5300 DV). **Result:** This paper revealed the therapeutic safer level of heavy metals and other elements present in *Rajathapaasana parpam*, as per WHO guidelines with the help of simultaneous ICPOES analysis equipment (PERKIN ELMER OPTIMA 5300 DV). **Conclusion:** From the ICP-OES analysis reveals that *Rajathapaasana parpam*, is free from heavy metals there by proving the safety of its utilization in siddha system. This study forms the base for the pharmaceutical analysis of *Rajathapaasana parpam*,(RPP)which will be followed by safe and efficacy studies later.

KEYWORDS: *Rajathapaasana parpam*, herbomineral, ICPOES, Hemiplegia.

INTRODUCTION

The Siddha system of medicine is the most primitive medical system and mainly practiced in the southern part of India, which treats not only the body but also the mind and the soul. The word 'Siddha' comes from the word 'Siddhi' which means 'an object to be attained' or 'perfection' or 'heavenly bliss'. Siddhi generally refers to Ashtama Siddhi that the eight great supernatural powers which are enumerated as Anima etc. Those who attained or achieved the above said powers are known as Siddhars. Medicine, as everyone knows is not merely a science but an art as well. Siddha medicine is claimed to revitalize and rejuvenate dysfunctional organs that cause the disease. This system possesses bountiful forms of herbal, herbo-mineral and animal derived combinations. It consists not merely of compounding mixtures, preparing decoctions, pills, plasters and drugs of all kinds; but it also deals with the different processes of life. For treating life threatening and long lasting disease the system plays a major role in rejuvenating the body. *Rajatha paasana parpam* is one among the herbomineral formulation containing velli (silver) and sangu paasanam (white arsenic)has the potent action on Hemiplegia. The literature review reveals so far, no scientific evaluations were carried out this particular preparation. Here the drug was subjected to standardization by simultaneous ICP-OES analysis equipment (PERKIN ELMER OPTIMA 5300 DV) to detect heavy metals (lead, cadmium, mercury) and other elements, which should be within the permissible limits as per WHO guidelines.

MATERIALS AND METHODS

The Siddha drug *Rajathpaasana parpam* selected from a classical Siddha literature cited in siddha vaithiya pathartha guna vilakam by kannusamy.

COLLECTION, IDENTIFICATION AND AUTHENTICATION OF THE DRUG

The required raw drug Silver was purchased from a well reputed jewellery shop and saangu paasanam from reputed Siddha drug store. The drugs are identified and authenticated By the HOD, Department of Gunapadam, Government Siddha Medical College and Hospital, Palayamkottai, Tirunelveli.

INGREDIENTS

- *Velli(*silver)
- *Sangu paasanam(*white arsenic*)*
- *Mullu keerai (Amaranthus spinosus)*

Purification

Purification of Velli (Silver)

Silver sheets were heated until red-hot and immediately quenched in the fresh juice of *Manathakkali (Solanum nigrum)* repeatedly until the metal became soft and lustreless. This process removes oxide scales and surface contaminants, enhancing medicinal assimilation.

Purification of Sangu Paasanam (White Arsenic)

Thirty-five grams of *Vellai Paasanam* were tied loosely in a cotton cloth. Pepper (*Milagu*, 35 g) was ground with water and dissolved in **1.3 L** of *Sirukirai* (*Amaranthus polygonoides*) juice. The cloth tied in rod was suspended in this decoction without immersing in the juice extract and heated gently until the liquid evaporated. Repeat the process for 3 times and then the residue was washed thoroughly with clean water and shade-dried.

Purification of MulluKirai

The herb was washed free of soil and debris, air-dried, and triturated to extract fresh juice used as the levigating medium.

Preparation

Each 1 tola (12g) of purified *Velli*and *Sangu Paasanam* were ground together with *Mullukeerai* juice for **four samam (≈ 12 hours)** in a *Kalvam* (stone mortar). The paste was then made into*villai*, shade-dried, placed in an earthen saucer, and sealed with clay-smeared cloth (*Seelai*). The sealed earthern saucer was subjected to **Pudam** heating using four to five cow-dung cakes as fuel (or equivalent electric-furnace heat ≈ 600 °C).

After cooling, the material was reground with fresh juice and the Pudam process is repeatedfor **four to five times** until the silver lost its metallic lustre, yielding a soft, ash-white *Parpam*. The final product was powdered finely, sieved (mesh no. 120), and stored in airtight glass containers.

ICP-OES: Inductively coupled plasma-optical emission spectrometry

ICP-OES analysis was done in Sophisticated Analytical Instrument Facility IITM, Chennai36.

Principle of ICP Optical Emission Spectrometry (ICP-OES) ICP, abbreviation for Inductively Coupled Plasma, is one Method of optical emission spectrometry. When plasma energy Is given to an analysis sample from outside, the component elements (atoms) are excited. When the excited atoms return to Low energy position, emission rays (spectrum rays) are released and the emission rays that correspond to the photon wavelength are measured. The element type is determined based on the position of the photon rays, and the content of each element is determined based on the rays intensity. To generate plasma, first, argon gas is supplied to torch coil, and high frequency electric current is applied to the work coil at the tip of the torch tube. Using the electromagnetic field created in the torch tube by the high frequency current, argon gas is ionized and plasma is generated. This plasma has high electron density and temperature (10000K) and this energy is used in the excitation emission of the sample. Solution samples are introduced into the plasma in an atomized state through the narrow tube in the centre of the torch tube. Equipment: Equipment for ICP optical emission spectrometry consists of a light source unit, a spectrophotometer, a detector and a data processing unit. There are several types of equipment based on differences in the Spectrophotometer and the detector. The most common type is shown in fig .1

1. Sequential type
2. Simultaneous ICP-OES.

RESULT AND DISCUSSION

Table 1: Elements of Rajatha paasana parpam ----------(wt-:0.416170g).

S.NO	Elements (symbol)	wavelength	Concentration
1.	Ag	328.068	33.143mg/l
2.	As	188.979	3mg/I
3.	C	193.0030	714.120
4.	Ca	315.807	BDL
5.	Cd	22.8802	BDL
6.	Cu	327.393	BDL
7.	Fe	238.201	01.870
8.	Hg	253.652	BDL
9.	Mg	2885.213	BDL
10.	Na	589.592	BDL
11.	Pb	220.353	BDL
12.	P	213.617	01.300mg/l

13.	**K**	**766.491**	**BDL**
14.	**S**	**180.731**	**11.102mg/l**

BDL-Below Detection Limit

From the above table the ICP-OES analysis indicates that the sample contains a very high concentration of carbon (714.12 mg/L), suggesting a strong presence of organic substances as carbon compounds. Silver was also detected at a considerable level (33.14 mg/L), which has anticancer, anti microbial, rejuvenating activity .The presence of arsenic is within the permissible amount whch has anti pyretic, anti inflammatory activity. Additionally, Moderate amounts of sulfur (11.10 mg/L) and trace levels of iron (1.87 mg/L) and phosphorus (1.30 mg/L) were observed, which may be attributed to mineral or organic components in the sample. All other analyzed elements, including toxic heavy metals such as cadmium, mercury, and lead, were below detection limits. Overall, the results suggest that the sample is rich in organic and metallic content, with significant silver presence but no evidence of major heavy metal contamination. The study forms a base for further research on RPP and the compounds present are safer to use. In future further studies will be a step forward to scientific validation of RPP.

CONCLUSION

The compounds present in the test drug suggest it to use for Hemiplegia. The heavy metals are within the permissible limit indicate it is safer for human use and it takes the study to further validation in future.

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