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**Physico-chemical and elemental analysis of
Gandhaga Baga Parpam - A Siddha medicine**

K. Kalaivanan^{1*}, V. Manjari^{2*}

¹Assistant Medical Officer (Siddha), GUPHC, Perunkattur, Thiruvannamalai Dt,
Tamil Nadu, India

² Lecturer, National Institute of Siddha, Tambaram Sanatorium, Chennai, Tamilnadu, India.

* - Corresponding Authors E- mail: drkalaimds@gmail.com, drmanjarimd@gmail.com

Abstract

Gandhaga бага парпам is one of the Sulphur based Siddha medicine. It is useful to treat Skin diseases. Gandhaga бага парпам was prepared as per Siddha literature. Physicochemical and elemental study was carried out to access the quality of test drug. The results showing Gandhaga бага парпам is acidic in nature, less moisture content, acid soluble in nature, presence of heavy metals are within the limit. Presence of Essential trace elements like Iron, manganese, zinc, copper and cobalt are identified. These conclude quality and purity of the Gandhaga бага парпам.

Keywords: Gandhaga бага парпам, Siddha medicine, Physicochemical analysis, Atomic absorption spectroscopic analysis.

Introduction

In Siddha System sulphur based medicines are widely used to treat skin diseases. Gandhaga бага парпам is one of the Sulphur contained medicine. Gandhagam (Sulphur) and Kari uppu (Sodium Chloride) are the ingredients of Gandhaga бага парпам. Gandhaga бага парпам is indicated for management of Thol noigal (skin diseases) and Mega noigal (venereal diseases) ⁽¹⁾. Gandhagam is bitter taste, astringent in nature and it has laxative, tonic and antiseptic action, it increases bile fluids and various secretions of the body ⁽²⁾. As per Siddha, Gandhagam have four types. In which golden yellow coloured Gandhagam (Called as Nellikkai Gandhagam) is used for medicine preparation. Nellikkai Gandhagam is useful in the treatment of skin diseases, chronic venereal diseases, urinary diseases, chronic diarrhoea, gastric ulcer,

poisonous bites and chronic dysentery ⁽²⁾. Kariuppu is salty in taste, no odour and easily dissolves in water. It has stomachic, laxative, emetic, anthelmintic and febrifuge action. It is useful to treat lymphadenitis, tumour, liver diseases, distended abdomen, gastric ulcer, indigestion and retention of urine ⁽²⁾. Analytical chemistry is one of the parts in the science. It deals with qualitative and quantitative analysis of substances. It is essential to standardize the drug ⁽³⁾. In present study to fulfill the standardization part of Gandhaga бага парпам, physico chemical and elemental analysis ⁽⁴⁾ was done.

Aim and Objectives:

To find out physicochemical properties and presence of elements in unpurified, purified Gandhagam and Gandhaga бага парпам.

Materials and Methods

Identification and authentication:

Gandhagam (Sulphur) and Kariuppu (Sodium Chloride) were purchased and pharmaceutical study was carried out at Gunapadam Lab National institute of Siddha, Dept. of Gunapadam.

Purification and Medicine preparation:

Gandhagam and kariuppu were purified (2) and Gandhaga baga parpam was prepared as per Siddha literature (1) and stored in closed air tight container.

Physico chemical analysis:

Organoleptic characters, loss on drying, pH, water, alcohol and acid soluble of Gandhaga baga parpam was carried out as per standard procedure.(5)

Atomic Absorbance Spectroscopic study:

Presence of elements in unpurified, purified Gandhagam and Gandhaga baga parpam were

analysed by AAS study using Perkin Elmer model 400/HGA900/AS800 (USA) coupled with Mercury Hydride System-15 (MHS-15).

Sulfur Determination:

1. 0.2g of sample is taken in a conical flask; add 100ml of N/10 iodine+ 5ml of conc. HNO_3 . (N/10 iodine is prepared by: 14g iodine + 36g KI Dissolve KI in water and dissolve iodine in that solution and make it to 1000ml. Kept for 1/2 hr, add 5ml of con. HCl and than kept it for 1 hr. For evaporate to dryness until the residue get colourless. If the residue is in colour add con. HCl until it becomes colourless. Dissolve the residues in 30ml distilled water and then add 25% BaCl_2 (25% BaCl_2 is prepared by adding 25g BaCl_2 in 100ml distilled water). It will get precipitated. Stand for overnight and filter the solution using whatman 41 filter paper. Than the filter paper with residue are kept in incinerator at 500 c for 6 hrs. Ash of the filter paper weight were taken and calculate the sulfate content present in sample.

Results

Fig:1. Gandhagam (Sulphur)



Fig: 2.Kari Uppu (Sodium chloride)



Fig:3.Purified gandhagam



Fig:4. Gandhaga Baga Parpam



Table.no.1: Organoleptic characters of Gandhaga baga parpam

Sample name	Colour	Appearance	Odour	Taste	Touch (Siddha specification)
Gandhaga baga parpam	Straw yellow	Fine powder	Pungent odour	Tasteless	Soft and smooth. Touch with index and thumb fingers study drug entered into the crevices of fingers.

Table.no.2: Physico chemical analysis results of Gandhaga baga parpam:

Sl.No	Parameters	Result
1.	pH @25	5.53
2.	Loss on Drying @105°C	0.3207
3.	Water soluble (%)	1.60
4.	Alcohol soluble(%)	0.24
5.	Acid soluble(%)	85.60

Table.No.3: Showing presence of elements in before, after purification of Gandhagam and Gandhaga baga parpam

Elements	Un purified gandhagam	Purified gandhagam	Gandhaga baga parpam
Fe	93.33	186.67	146.67
Cu	7.9533	6.1833	10.066
Mn	0.1513	0.0413	0.0473
Zn	2.2660	2.2053	2.2680
Co	0.0060	0.0073	0.0120
Cd	0.0040	0.0033	0.0040
Hg	0.1366	0.1643	0.4912
As	0.2815	0.2576	0.1896
Sulphur	72.89	74.48	98.28

Discussion

Organoleptic characters of Gandhaga baga parpam (Table.No:1) showed it has straw yellow coloured pungent odour taste less fine powder. It entered into the finger ridges during touch. These suggest that Siddha specification and quality of Gandhaga baga parpam.

Mean pH value of Gandhaga baga parpam was shown acidic in nature; it was make easier the absorption of drug at the stomach level. Loss on drying helps to access moisture content. Gandhaga baga parpam was 0.3207% Loss on drying. So the moisture content of Gandhaga baga parpam could be less value. Gandhaga baga parpam has more acid soluble (85.60%) in nature. Presence of elements in before, after purification of Gandhagam and Gandhaga baga parpam were showed in Table.No:3. Presence of heavy metals like Mercury, Cadmium, Arsenic in Gandhaga parpam was below the permissible limit, it suggest safe for the drug to administration. Iron, Manganese, Cobalt, Copper and Zinc are high in after purification of gandhagam and Gandhaga baga parpam when compared with before purification.

Sulphur is increased after purification (74.8%) and in medicine (98.28%). Minerals perform several vital functions which are absolutely essential for very existence of the organism⁽⁶⁾. Iron, Copper, Manganese and Zinc are essential trace elements. Iron, Copper and Zinc are integral components of biologically important compounds such as haemoglobin (Fe), insulin (Zn) and Vit.B12 (Co) Copper, manganese and Zinc are participate as cofactors for enzymes in metabolism⁽⁶⁾. Sulphur is one of the principal element to constituent body's inorganic material⁽⁶⁾. Iron is associated with effective immune competence of the body⁽⁶⁾. So the presence of above said trace elements in Gandhaga baga parpam support the traditional claim of its usage.

Conclusion

From this study organoleptic characters of Gandhaga baga parpam full fill the Siddha specification of parpam. Organoleptic character analysis, physico chemical analysis and AAS analysis results represent the quality and purity of Gandhaga baga parpam. It is used as standard for future reference.


Conflict of interest: Nil.

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