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PHYSICO CHEMICAL STANDARDIZATION OF THE SIDDHA HERBO MINERAL DRUG – GANDHAGA PARPAM

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ABSTRACT

Gandhaga Parpam (GP) is a traditional Siddha Herbo-mineral medicine. The aim of the present study was to standardize the Gandhaga Parpam (GP). The physico-chemical characters like colour, ash values, pH value, Percentage yield and solubility were analysed and modern instrumental techniques such as Scanning Electron Microscopy (SEM), and inductively coupled plasma optical emission spectrometry (ICP-OES).The total ash value was found to be 9.79%w/w, acid insoluble ash value is 0.98%w/w, water soluble ash value is 5.5%w/w, Moisture content 8.80%w/w and Foreign organic matter 7.99%w/w. The pH value is 7.6 and yield of percentage is 46. The ICP-OES reveals that the heavy metals such as Mercury, Lead, Arsenic, cadmium are present in the drug are below detected limit. HR-SEM analysis has been used to study particle size shape and distribution. The SEM analysis of the sample showed the particle size of 100nm in the sample.

KEYWORDS: Gandhaga parpam, SEM, ICP-OES, Siddha medicine, Herbo mineral drug.

1. INTRODUCTION

Siddha medicine are in high demand as effective therapeutic retailers globally. To preserve the satisfactory and reliability of the medicines for the shoppers the producers need to keep the minimum requisites at various levels from raw material resolution to packaging. As a result of lack of infrastructures, skilled manpower, risk-free methods and stringent regulatory legal guidelines these types of manufacturers do not follow the regular systems and manufacture their product on arbitrary basis. As a way to have a just right coordination between the first-rate of uncooked materials, in procedure substances and the final products,

it has become important to boost reliable, specified and sensitive best manipulate methods utilising a combination of classical and cutting-edge instrumental procedure of evaluation. Standardization is a major size for making certain the exceptional manage of the natural drugs. The phrase "Standardization" is used to describe all measures, which are taken for the duration of the manufacturing approach and best control leading to a reproducible fine. "Evaluation" of a drug means affirmation of its identification and resolution of its nice and purity and detection of its nature of adulteration. With a purpose to acquire nice herbal products, care must be taken correct from the suitable identification of crops, season and discipline of assortment, extraction and purification system and rationalizing the mixture; in case of formulations. The system can be standardized schematically. According to Siddha classical text the medicines are obtained from herbs, metals, minerals and animals products.[1] This is a preliminary attempt to establish Gandhaga parpam (GP) an effective drug in Siddha system of medicine. The present study investigated to standardize its physico-chemical characters like colour, ash values, pH value, Percentage yield and solubility were analysed and modern instrumental techniques such as Scanning Electron Microscopy (SEM)[2], and inductively coupled plasma optical emission spectrometry (ICP-OES).

2. MATERIALS AND METHODS

2.1 Selection of drug

The drug Gandhaga parpam (GP) was collected from the classical Siddha literature Anuboga Vaidhiya Navaneedham.[3]

2.2 Collection and authentication of the drug

The raw materials included in the formulation are, Sulphur, *Terminalia arjuna,* were procured from the country drug shop at Chennai, Tamilnadu. Fresh Lemon (*Citrus limon*) was procured from Koyambedu market at Chennai, Tamilnadu. They were identified and authenticated by the experts, National Institute of Siddha, Chennai. The specimen sample of each ingredient was labelled separately and kept in the lab for future reference.

2.3 Purification of the drug

The purification process was done according to the procedures mentioned in the classical Siddha literature.[4] For the purification of Sulphur, it was placed in an iron pan. Sufficient quantity of cow's butter was added and the pan was heated till the butter melts. This mixture was immersed in inclined position in cow's milk to get purified sulphur. Fresh milk was used

every time and the process was repeated for 29 times. *Terminalia arjuna* were purified by the procedure mentioned in the classical Siddha text.[5]

2.4 Preparation of the drug

Purified sulphur is soaked in the lime juice for 60 nazhigai (24 hours).Half the quantity of ash of marutham pattai is taken in a narrow mouthed clay pot and the purified sulphur is placed over this ash. Sulphur is covered by remaining half of the ash. The clay pot is sealed by seelaiman and dried.It is then subjected to calcination (pudam) by placing it in a pit of depth of oru muzham using 100 palams (3500 gms) of dried cow dung cakes (varatti) and allowed to cool. It is then taken out and finally powdered.[6]

2.5 Physicochemical Evaluation

The drug GP was subjected for the determination of physico-chemical characters like colour, ash values, pH value, Percentage yield and solubility were analysed according to the standard methods described in the texts.[7]

2.6 Instrumental analysis

SEM (Scanning Electron Microscope)

To evaluate the size of the particle, surface topography SEM analysis was carried out using S-3400n SEM-Hitachi at a magnification range of 12 X to 1,00,000 X at Anna University, Chennai.[2] The drug was fixed on specimen stub, placed inside the microscope's vacuum column evaporator and a beam of electrons passed from an electron gun, travelled through a series of magnetic lenses. The electrons are counted by the detector and the signals are sent to the amplifier. The number of electrons dispersed from each spot of the drug builds up the resultant image. The micrographs got sufficient statistics about the structure of the drug.

Inductively coupled plasma optical emission spectrometry (ICP-OES)

Analysis of GP was performed using Optima 5300 DV ICP-OES equipped with a Sea Spray concentric nebulizer (Glass Expansion, Pocasset, MA) and cyclonic spray chamber. Following parameters were introduced nebulizer flow, 0.8 l min-1; radiofrequency power, 1450 W; sample introduction, 1.5 ml min-1; flush time, 20 s; delay time, 10 s; read time, 10 s; wash time, 30 s; and replicates, three. Standards were prepared by dilution of 1000 mg l-1 stock solutions and the calibration curve was obtained using five to ten points including the blank.

3. RESULTS

3.1 Physicochemical evaluation

The drug GP appears Light brown in colour, solid in nature. The drug is weakly basic in nature having a pH of about 7.6.The values were noted in the Table no. 1 and Table no. 2 & 3. The total ash value is 9.79% w/w, acid insoluble ash value is 0.98% w/w, water soluble ash is 5.5% w/w, moisture content is 8.80% w/w, and foreign organic matter is 7.99% w/w.

Table-1: Colour, nature and percent yields of extracts of Gandhaga parpam.

S.No.	Extract Solvents	Colour	Nature	% Yield(w/w)	pH
1.	Water	Light brown	Solid	46	7.6-7.8

Table-2: Physicochemical properties of Gandhaga parpam.

S. No.	Parameters	Values obtained (%w/w)
1	Total ash value	9.79
2	Acid insoluble ash	0.98
3	Water soluble ash	5.5
4	Moisture content	8.80
5	Foreign organic matter	7.99

Table 3. Heavy metal analysis.

Heavy/ toxic metals	
Lead	BDL
Cadmium	BDL
Mercury	BDL
Arsenic	BDL
Volatile oil	BDL

BDL-Below detection limit.

3.2 Scanning Electron Microscopy (SEM)

SEM analysis of the drug GP revealed the presence of near nano particles of size 100nm. The Figure no.1 showed the particles had irregular morphology.

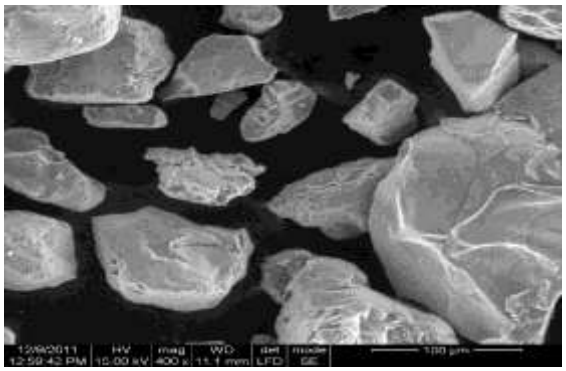

Fig. no. 1. SEM picture showing nano and near nano particles.

Table 4: ICP-OES analyses of Samples.

	Analyte	Mean
As	193.696	BDL
Ca	317.933	35.985 mg/L
Cd	226.502	BDL
Hg	253.652	BDL
Fe	238.204	1.789 mg/L
K	766.490	16.165 mg/L
Na	589.592	17.556 mg/L
P	213.617	19.364 mg/L
Pb	230.204	BDL
S	181.975	205.587 mg/L

BDL-Below detection limit.

4. CONCLUSION

The GP had been subjected to various studies to establish the works for standardization to evaluate the chemical compounds and particle size. Based on the results it is preferably non – toxic to humans in therapeutic dosage. The standardization of the drug was evaluated by physico chemical and chemical characterization like SEM, ICP-OES respectively. From the results it is concluded that GP is a kind of nano medicine which favours the advantages like better absorption, bio availability, non –toxic in nature.

REFERENCES

1. Thiyagarajan. R. Text Book of Materia Medica (Gunapadam)- Thathu & Jeevam, Department of Indian Medicine and Homoeopathy, 2008; 12.
2. Shree Devi MS, Kannan M, Sathiya Rajeswaran P, Natarajan S, Vasudevan R, and Muralidass SD: Instrumental Standardization of the Herbo Mineral Drug – Abraga Parpam. Research Journal of Pharmaceutical, Biological and Chemical Sciences, 2015; 6(6): 844-850.
3. Abdhula Sayubu PM. Anubhoga Vaidhya Navaneetham, Part VI. Thamarainoolagam; Chennai, 2006; 27.
4. Thiyagarajan, R. Siddha Materia Medica Mineral &Animal section, Chennai, Department of Indian Medicine and Homoeopathy, 2008; 305.
5. Kannusamy pillai C, Sikitcha Rathna Deepam Ennum Vaidiya Nool, Published by B. Rathina Nayakker and sons, Vol 1, 3rd edition, 1991; 28.
6. Abdhula Sayubu PM. Anubhoga Vaidhya Navaneetham, Part VI. Thamarainoolagam; Chennai, 2006; 27.

7. The Ayurvedha Pharmacopoeia of India, Vol I, Published by Ministry of Family health and welfare, Department of AYUSH, 2008; 59: 83.