

**INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN
CHEMISTRY AND PHARMACEUTICAL SCIENCES**

(p-ISSN: 2348-5213; e-ISSN: 2348-5221)

www.ijcrpcs.com

DOI: 10.22192/ijcrpcs

Coden: IJCROO(USA)

Volume 6, Issue 3 - 2019

Research Article



DOI: <http://dx.doi.org/10.22192/ijcrpcs.2019.06.03.004>

**Standardization of Herbo marine formulation
Palagarai chunnam**

S. Balamurugan^{1*}, V.Manjari², V. Banumathi³

¹ PG Scholar, Dept. of Nanju Maruthuvam, National Institute of Siddha, Chennai-47.

² Lecturer, Dept. of Nanju Maruthuvam, National Institute of Siddha, Chennai-47.

³ Director, National Institute of Siddha, Chennai-47.

***Corresponding author:** Dr. S.Balamurugan, PG Scholar,
Dept. of Nanju Maruthuvam, National Institute of Siddha, Chennai-47.

E-mail: drbalasmart2010@gmail.com

Abstract

Palagarai is a good choice of drug for indication which mentioned in siddha text. These are herbo marine drug available in seacoast. Palagarai is purified with Elumichai Pazha Charu and Palagarai chunnam (PC) prepared as per siddha literature. Standardization of the drug done with sophisticated instruments and Organoleptic characters also evaluated. Organoleptic characters indicates good quality purification procedure and SEM analysis indicates the absorption is possible and ICP OES analysis indicates Heavy metals are not deducted and other minerals are responsible for good pharmacological action. Calcium is in higher concentration and FTIR peaks constitute some functional group such as alcohol, phenol, amines, carboxylic acid, ether, anhydrides, bromide, iodide. This study concluded the good efficacy of Herbo marine formulation Palagarai chunnam and highlights the importance of palagarai.

Keywords: Siddha Medicine, Palagarai, SEM analysis, ICP OES analysis, FTIR analysis.

1. Introduction

Siddha system is unique among the Indian system of medicine. It is believed to have been developed by the Siddhar's the ancient supernatural spiritual saints of India. In Siddha system of medicine the drug sources are obtained from plant, mineral, metal and animals¹. The unique formulations in Siddha include Parpam (mineral/metallic oxides), Chendhooram (mineral/metallic sulphides), Chunnam (caustic or major oxides) and Pathangam (sublimation)². Traditional Medicine has played an important role in meeting the demands of primary health care in many developing countries and its use has expanded widely in many developed countries.³ Standardization of herbal drugs is a burning topic in herbal drug industry today. Standardization is difficult because they are

usually mixtures of many constituents and the active principle in most cases is unknown.⁴ The prevalence of dysmenorrhea in adolescent girls was found to be 79.67%. However, the population group with the greatest number of individuals affected is non-pregnant women (468.4 million, 95% CI: 446.2–490.6). Because of the increased prevalence there is an emergence need of an effective drug for the management of female infertility, Dysmenorrhea, anemia and other chronic diseases⁵ Palagarai chunnam is one of the traditional Siddha formulation which is indicated as a best drug for Female Infertility, Dysmenorrhea, Anaemia, Dropsy in Siddha text Siddha maruthuva nool thirattu Anubhava Siddha Vaithiya Muraigal. Scientific validation of this formulation Palagarai chunnam have to be studied and the safety of the drug have to be ensured.

2. Materials and Methods

2.1 Purification of palagarai:

1. Palagarai (*Cypraea moneta*) - 100gm
2. Elumichai Pazha Saaru (Citrus limon) - Q.s

Take the above mentioned quantity of Palagarai kept immersed in juice of lemon up to 24 hours.⁶ Then wash those Palagarai with pure water and then dried in sun light.

2.2 Method of preparation:

Take the above mentioned quantity of Palagarai (*Cypraea moneta*) kept immersed in juice of lemon upto 24 hours. Then wash those Palagarai by using water. Those purified Palagarai have to be kept inside the 200g of Grinded Ilaikalli (*Euphorbia nerrifolia* Linn..) Leaves and it is covered by 5 layers of mud sealed cloth and dried well. Then it will be subjected into putam by using 30 cow dung cakes. After incineration remove the mud sealed cloth and collect the chunnam. Then it will be grind and have to be kept in air tight container⁷.

2.3 Organoleptic and Physico chemical characters analysis:

Palagarai chunnam was evaluated for the organoleptic characters like Colour, odour, Nature and Physico chemical characters like Alcohol soluble extractive, Odour, Loss on drying at 105 C, Determination of pH, Total Ash, Water soluble extractive, Acid Insoluble Ash were evaluated.

2.4 Analysis of particle size

The particle size of the Palagarai chunnam was determined using High resolution scanning electron microscopy (HR SEM). The Experimental Procedure was done at SAIF, IIT Madras, Chennai-36.

a) HR SEM

A scanning electron microscope (SEM) is a type of electron microscope that produces images of a sample by scanning the surface with a focused beam of electrons. The SEM analysis is carried out by using FEI-Quanta FEG 200-High Resolution Instrument

Resolution : 1.2 nm gold particle separation on a carbon substrate

Magnification : From a min of 12 X to greater than 1,00,000 X.

Calculation of the particle size:

The horizontal line in the right corner of the micrograph corresponds to micron in length would be given. A comparison could be made between the length of the particles visible in the micrograph with this line and the length of the particle was calculated.

2.5 Trace elements analysis of palagarai chunnam:

The analysis of heavy metals and trace elements were estimated by using Inductively coupled plasma optical emission spectrometry (ICP- OES). The Experimental Procedure was done at SAIF, IIT Madras, Chennai-36.

a) ICP-OES:

Perkin Elmer Optima 5300DV was used for standard ICP-OES analysis. The optimized operating conditions are given in table 1, the wavelength of analytical lines are given below and the test drug Palagarai chunnam underwent microwave digestion for sample preparation.

ICP- OES Operating Conditions:

Rf frequency: 40 M Hz

Range: 165 – 782 nm

Detection limit: Up to ppm level using SCD detector.

2.6 Fourier Transform Infrared Spectroscopy (FTIR)

Fourier transform infrared spectroscopy (FTIR) is a technique which is used to obtain an infrared spectrum of absorption or emission of a solid, liquid or gas. An FTIR spectrometer simultaneously collects high spectral resolution data over a wide spectral range. This confers a significant advantage over a dispersive spectrometer which measures intensity over a narrow range of wavelengths at a time. The Perkin Elmer Spectrum1 FT-IR instrument consists of global and mercury vapor lamp as sources, an interferometer chamber comprising of KBr and mylar beam splitters followed by a sample chamber and detector. Entire region of 450-4000 cm⁻¹ is covered by this instrument. The spectrometer works under purged conditions. Solid samples are dispersed in KBr or polyethylene pellets depending on the region of interest. This instrument has a typical resolution of 1.0 cm⁻¹. Signal averaging, signal enhancement, base line correction and other spectral manipulations are possible.

3. Results

a) Organoleptic analysis of –Palagarai chunnam

Table 1:

S.no	Parameters	Results	Method of Testing
1.	Colour	Dull white	By visual
2.	Odour	Odourless	Olfactory examination
3	Nature	Fine powder	By visual
4	Taste	Tasteless	By consume

From Table 1, The Organoleptic characters shows that Palagarai chunnam is dull white in color and odorless powder.

b) Physiochemical analysis of –Palagarai chunnam

Table 2:

S.no	Parameters	Percentage
1	Loss on drying	Less than 1%
2	Solubility	Soluble in water& alcohol.
3	pH At 25 °C (1% w/w solution)	7.87%
4	Total ash value	97.01%
5	Acid insoluble ash	34.69%
6	Water soluble ash	16.96%
7	Water soluble extraction	Less than 1%
8	Alcohol soluble extraction	Less than 1%

From Table 2, The Physico-chemical analysis of Palagarai chunnam explained in the parameters such as Moisture content, Total ash value, Acid insoluble ash, Water soluble ash, Water soluble extraction,

Alcohol soluble extraction and pH are within the normal limits. The drug with pH of 7.87%. It is easily soluble in water, alcohol and acetone and ether.

c) ICP-OES:

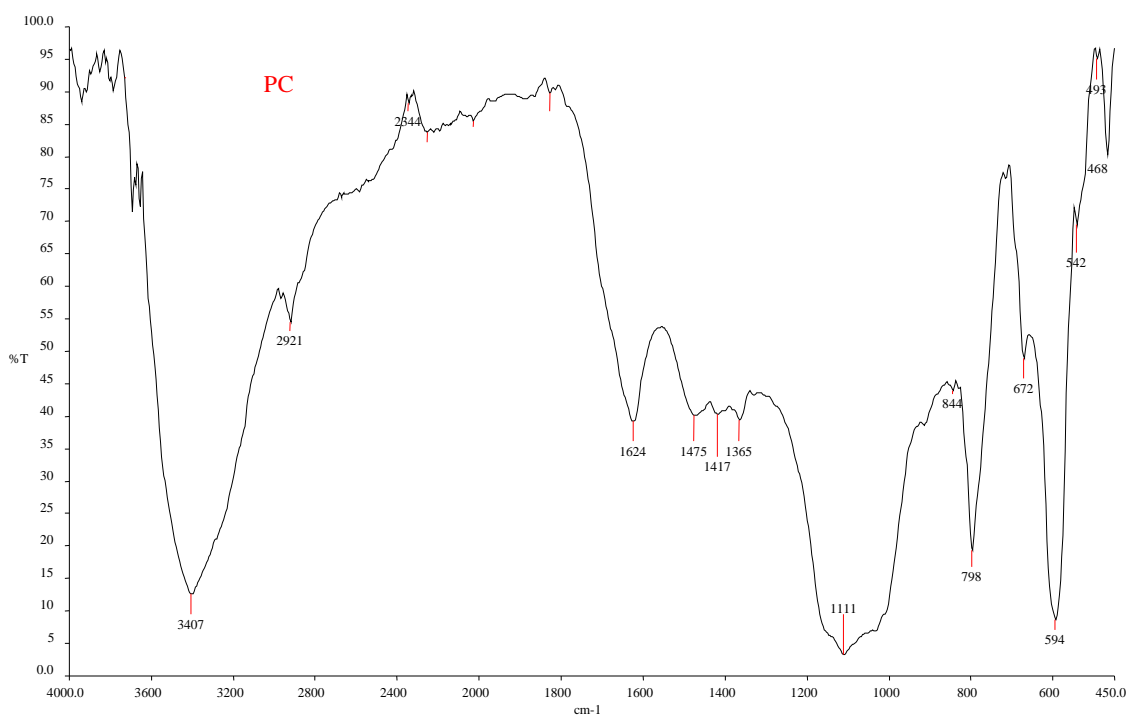
Sample Weight of test drug: **0.35300gm**

Table no: 3 Result of Quantitative analysis by ICP-OES for Palagarai chunnam

S.No:	Elements	Wave length in nm	Results (in mg/L)
1.	Aluminium	Al 396.152	30.213
2.	Arsenic	As 188.979	BDL
3.	Calcium	Ca 315.807	625.150
4.	Cadmium	Cd 228.802	BDL
5.	Copper	Cu 327.393	BDL
6.	Iron	Fe 238.204	45.016
7.	Mercury	Hg 253.652	BDL
8.	Potassium	K 766.491	3.004
9.	Magnesium	Mg 285.213	1.004
10.	Sodium	Na 589.592	BDL
11.	Nickel	Ni 231.604	BDL
12.	Lead	Pb 220.353	BDL
13.	Phosphorus	P 213.617	38.541
14.	Sulphur	S 180.731	45.224
15.	Zinc	Z 206.200	10.018

d) FT-IR Analysis of Palagarai chunnam

Graph-1: Graph of Characteristic IR absorption frequencies of Organic Functional Groups for unpurified raw drug Palagarai



Fourier Transform Infra Red Spectroscopy (FTIR)

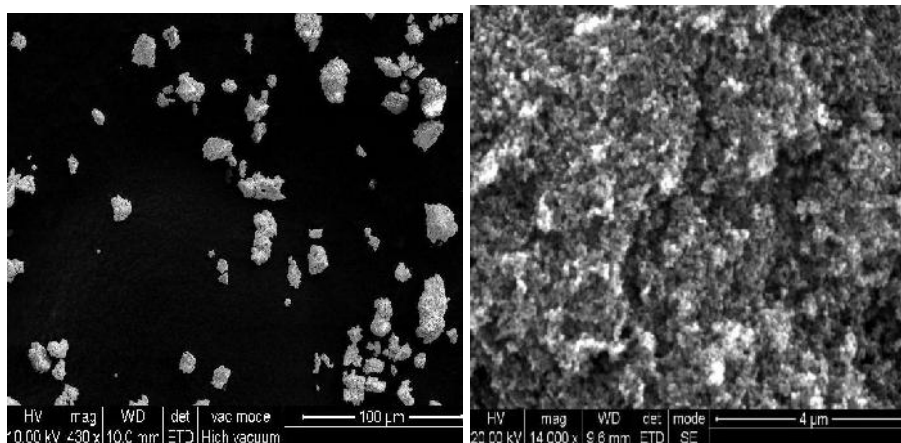
analysis of Palagarai chunnam shows the presence of vibrational band observation around ~ 1420 to 1500 cm^{-1} and 860 to 875 cm^{-1} confirms is attributed to the presence of calcium carbonate. The FTIR results shows the observed N-H stretch, O-H stretch, H-C-H

stretch, C=O stretch, N-H stretch, C-C=C symmetric stretch, H-C-H bend, C-O stretch, C-H bend, C-C stretch which indicates that the presence of functional groups Amide, Phenols and alcohols, Alkanes, Aldehyde, Amine, Alkenes, Alkanes, Ester, ether, Alkyne.

e) Scanned Electron Microscopy

Determination of Particle size of Palagarai chunnam

Figure-1: SEM Image of Palagarai chunnam



The morphology of the Palagarai chunnam drug can be determined by SEM (FEI Quanta). A representative portion of each sample must be sprinkled onto a double side carbon tape and mounted on aluminium stubs, in order to get a higher quality secondary electron image for SEM examination. We have observed from SEM photographs that particles are spherical in shapes and sizes are in the range from **0.1 micron to 0.3 microns**. Although the particle sizes of different batches showed similarity, it seems that these particles are aggregates of much smaller particles. When dispersed in an aqueous medium, these preparations form a negatively charged hydrophobic particle suspension. This hydrophobicity gives these particles a tendency to aggregate together to form larger particles. Palagarai Chunnam exhibited larger sizes and agglomeration of the particles. Therefore, the comparatively larger size may be due to the agglomeration of the particles by repeated cycles of calcinations involved in preparation.

4. Discussion

Physiochemical analysis of the palagarai chunnam **From Table 1**, shows that The Organoleptic characters shows that Palagarai chunnam is dull white in color and odorless powder form of drug with pH of 7.87%. reveals that, this is a slightly alkaline which is expected to have significant absorption in the stomach than in intestine. The loss on drying is less than 1% w/w, which explains its moisture content of

test drug is very low. Loss on drying is loss of weight expressed as in percentage w/w resulting from water and volatile matter of any kind that can be driven off under specific condition. It is easily soluble in water, alcohol and acetone and ether.

Ash values are helpful in determining the quality and purity of crude drugs, especially in powder form. Total ash value is 97.01%, it implies that presence of inorganic constituents. Acid insoluble ash is 34.69%, and Water soluble ash is 16.96%. This explains the purity of the test drug.

The **Inductively Coupled Plasma Optical Emission Spectrometry (ICP-OES)** analysis palagarai chunnam showed that the presence of physiologically important minerals like Iron, Calcium, Aluminum, Zinc and Magnesium. Heavy metals such as Mercury, Lead, Arsenic and Cadmium were found below the detectable limit. Iron and calcium are the major element in human body manage the various biological activity.

The **Fourier Transform Infra-Red Spectroscopy (FTIR) spectra** of the final product indicates the changes occurred in the fingerprint region. FTIR analysis of Palagarai chunnam shows the presence of vibrational band observation around ~ 1420 to 1500 cm^{-1} and 860 to 875 cm^{-1} confirms is attributed to the presence of calcium carbonate also confirms the presence of Alcohol, Amine, Amide, Acid, Alkene, Alkyl Halide, Ester and Ether groups.

The morphology of the Palagarai chunnam drug can be determined by **SEM**. The photographs shows that particles are spherical in shapes and sizes are in the range from **0.1 to 0.3 µm**. Thus, the size of the particle is capable to encourage the efficacy.

5. Conclusion

This study reveals the purity and bioavailability of the Palagarai chunnam. The analysis expound the presence of essential trace elements in test drug which is import for various imperative biological activity for human body. The presence Zinc which is required for wound healing property found in Palagarai may aid as topical application as an ointment for different kind of wounds also It is the second most abundant trace metal in humans after iron and it is the only metal which appears in all enzyme classes and Zinc plays major role in the Reproductive organ developments, ripe for fertilization. Particle size analysis indicates presence of nano particles which may be due siddha pharmacological medicinal preparation methods. Which Findings reveals the importance of Siddha drug preparation technique. Furthermore pharmacological studies need to be carried out to validate the medicinal value of the palagarai chunnam.

6. References

1. Mukherjee Pulok K, RaiSujay, Kumar V, Mukherjee Kakali, Hylands PJ and Hider RC, Plants of Indian origin in drug discovery. Expert Opinion on Drug Discovery, 2(5): 633 - 657, (2007).
2. Thiyagarajan, Gunapadam thathujeeva vaguppu Part II & III 4th reprint, Pub directorate of Indian medicine and Homeopathy. Chennai.1990, Pg 1.
3. World Health Organization. Promoting the Role of Traditional Medicine in Health Systems: a Strategy for the African Region 2001–2010. Harare, World Health Organization, 2000.
4. ArunSudha, V.S. Murty and 1T.S. Chandra , Standardization of Metal-Based Herbal Medicines , American Journal of Infectious Diseases 5 (3): 193-199, 2009
5. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2888348>
6. Dr.Thiagarajan. R, Gunapadam Thathu jeeva Vaguppu, Dept. of Indian Medicine and Homeopathy, Chennai -106, 2nd edition, 1968, 674, 676-682.
7. Judge V. Balaramayya . Siddha maruthuva nool thirattu - Anubhava Siddha Vaithiya Muraigal First edition 2015, pg217 .

Access this Article in Online	
	Website: www.ijcrops.com
	Subject: Siddha Medicine
Quick Response Code	
DOI: 10.22192/ijcrops.2019.06.03.004	

How to cite this article:

S. Balamurugan, V.Manjari, V. Banumathi. (2019). Standardization of Herbomarine formulation Palagarai chunnam. Int. J. Curr. Res. Chem. Pharm. Sci. 6(3): 33-38.
DOI: <http://dx.doi.org/10.22192/ijcrops.2019.06.03.004>