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ICPOES Analysis of *Seeragathi chooranam*

K.N.Narmadha^{*}, G.Essakkyandian[#]

^{*}PG Scholar, Dept of Gunapadam, Govt.Siddha Medical College & Hospital, Palayamkottai.

[#]Reader, Dept of Gunapadam, Govt.Siddha Medical College & Hospital, Palayamkottai.

Abstract

Siddha system of medicine is one of the ancient traditional method originated from south India, It has contributed lot to mankind by its vast therapeutic by its herbal, mineral formulations in curing disease. According to siddha our body is conglomeration of three humours (vatha, pitha, kapha), seven basic tissues and waste products such as feces, urine and sweat. The equilibrium of humours is considered in keeping ones body healthy any distortion to these humours results in causing disease. There are various preparations which emphasise specific cardioprotective action. The herbomineral formulation *Seeragathi chooranam* is a classical siddha drug indicated for treatment of *iruthayaviyathigal*, *vaayu* and *pithavaayu*. *Iruthayaviyathigal* here mainly indicates heart related disease and its associated with symptoms like breathlessness, Respiratory obstruction, chest disease, weakness and fatigue. Cardiovascular disease is escalating in recent years and it's the main cause of mortality in recent years. The objective of this study is to evaluate the components present in herbomineral formulation *Seeragathi choornam*. The ICPOES analysis of *Seergathi choornam* indicates the presence of components like Calcium, potassium, magnesium, sodium, phosphorous, sulphur and zinc.

Keywords: Siddha medicine, Herbomineral formulation, *Seeragathi chooranam*, *Iruthayaviyathigal*.

Introduction

Iruthaya viyathi is also known as *thamaraga vaayu*, *thamaraga noi* and *uruthira noi*. The essential feature of this disease are breathlessness, respiratory obstruction, weakness, fatigue and oedema of legs. sometimes this disease may cause death. the symptoms of this disease has been explained in Siddha literature *Agathiya vaithya kaviyam* which correlates with the common symptoms of myocardial infarction.

Myocardial infarction is the technical term for heart attack. A heart attack occurs when an artery leading to heart becomes blocked and heart does not get enough blood or oxygen. Most heart attack are caused by blood clots, which are caused by arteriosclerosis it is responsible for over 15% of mortality each year. The prevalence of myocardial infarction is higher in men in all specific age group than women. The risk factors of this disease include dyslipidemia, smoking, diabetes mellitus,

hypertension, stress and physical inactivity are strongly associated with MI.

The herbomineral formulation *Seeragathi chooranam* is a classical Siddha drug used in

treating heart related diseases as mentioned in Siddha literature *agathiyar 2000 part (2)*. The main objective of this study is to validate the components present in *Seeragathi chooranam*

Materials and Methods

Ingredients:

Tamil name	Botanical name	Family	Part used
<i>Seeragam</i>	<i>Cuminum cyminum</i>	Apiaceae	Fruit
<i>Sukku</i>	<i>Zingiber officinale</i>	Zingiberaceae	Rhizome
<i>Milagu</i>	<i>Piper nigrum</i>	Piperaceae	Fruit
<i>Kadukkaithol</i>	<i>Terminalia chebula</i>	Combretaceae	Fruit
<i>Thandrithol</i>	<i>Terminalia bellerica</i>	Combretaceae	Fruit
<i>Vaivilangam</i>	<i>Embelia ribes</i>	Primulaceae	Fruit
<i>karuncheeragam</i>	<i>Nigella sativa</i>	Ranunculaceae	Seed
<i>Thippili</i>	<i>Piper longum</i>	Piperaceae	Fruit
<i>Sithiramoolam</i>	<i>Plumbago indica</i>	Plumbaginaceae	Root bark
<i>Nellivatral</i>	<i>Phyllanthus emblica</i>	Phyllanthaceae	Fruit
<i>Perungayam</i>	<i>Ferula asafoetida</i>	Umbelliferae	Gum resin
<i>Kadugurohini</i>	<i>Picrorhiza kurroa</i>	Plantaginaceae	Root

Tamil name	English name	Chemical name
<i>Indhuppu</i>	Rock salt	Sodium chloride impure
<i>Pooneeru</i>	Fullers earth	Sodium carbonate impure

Collection of raw drugs:

All the raw drugs were purchased from raw drug shop Nagercoil.

Authentication of raw drugs:

All the above drugs has been authenticated by Reader Dr.G.Essakypandian MD(S), Department of PG Gunapadam, Govt. Siddha Medical college and hospital, Palayamkottai.

Preparation of seeragathi chooranam:

All the raw drugs were purified individually, grounded and mixed together. It is then sieved to fine powder and weighed, 10 gm of this chooranam is further given for ICPOES analysis at IIT laboratory, Chennai.

Dosage: *Thirikadi* (800-1000mg)

Adjuvant: Honey.

Shelf life: 3 months.

ICPOES study of Seeragathi chooranam:

Principle of ICP Optical Emission Spectrometry (ICP-OES)

ICP Optical Emission Spectrometry Principle

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 center 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 Figure 1.

1) Sequential type

A spectrophotometer with a Czerny-Turner monochromator, and a detector with a photomultiplier is most common for this type. With this equipment, programmed wavelength of the spectrophotometer is consecutively varied to measure multiple elements. This causes rather long measuring time, however, with its high resolution spectrophotometers, it is favorable for measurement of high-matrix samples.

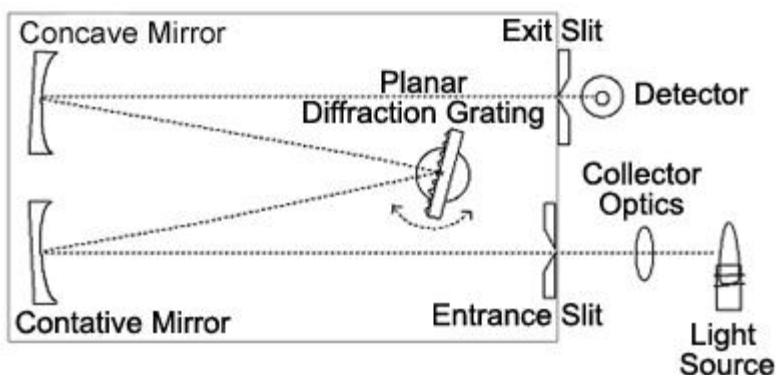


Figure 1: Sequential Type ICP-OES

2) Simultaneous Type

This type typically uses an echelle cross disperser in spectrophotometers and semi-conductor detector such as CCD for the detector. Echelle cross disperser disperses light of measurable wavelength range two-dimensionally by combining prism and echelle diffraction grating.

Combination of echelle cross disperser and a CCD detector enables multi-element measurement at any wavelength. The most notable feature of this equipment is the high-speed measurement, providing information on all 72 measurable elements in measurements of 1 to 2 minutes normally.

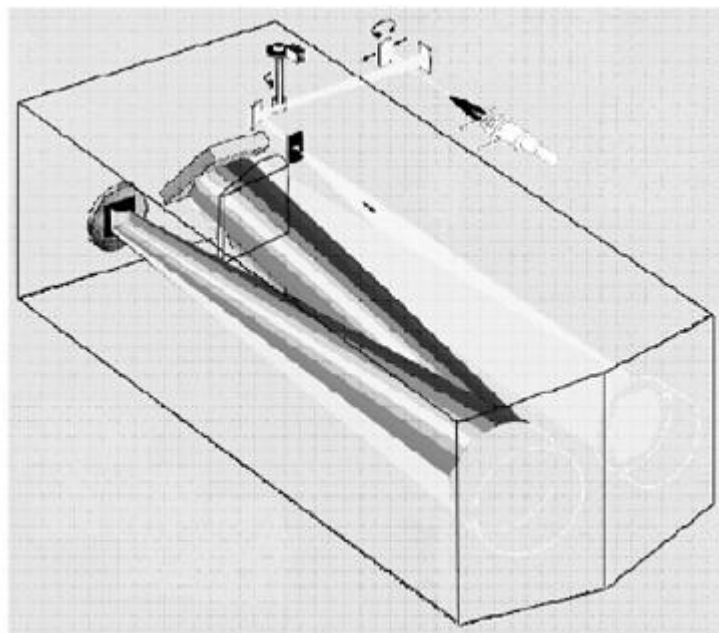


Figure 2: Simultaneous ICP-OES

Application:

Siddha drug analysis

SC drug has attracted attention because it is thought to contain a person's health history on some level and is thought to act as an excretory organ for heavy metal in the body. However, there are problems because there are few usable samples and knowledge about multiple elements is required. With simultaneous analysis

equipment, we can collect useful information with a small amount of sample.

Equipment: Simultaneous ICP-OES, **PERKIN ELMER OPTIMA 5300 D**

Sample: 0.5g of Seeragathi chooranam is measured, and then dissolved in a decomposition vessel with nitric acid into 10ml solution.

Partial spectral profile and analysis results shown below.

Results

Sl.no	Elements	Level
1.	Arsenic(188.979)	BDL
2.	Calcium(315.807)	73.530 mg/L
3.	Mercury(253.652)	BDL
4.	Potassium(766.491)	44.800 mg/L
5.	Magnesium(285.21.3)	01.340 mg/L
6.	Sodium(589.592)	81.310 mg/L
7.	Lead(220.353)	BDL
8.	Phosphorous(213.617)	92.341mg/L
9.	Sulphur(180.731)	01.250mg/L
10.	Zinc(206.200)	01.100mg/L

Discussion

ICPOES analysis of *Seeragathi chooranam* indicates the presence of elements like calcium, potassium, magnesium, sodium, phosphorous, sulphur, zinc. Elements like lead, mercury and arsenic were present below detection limit as per WHO guidelines.

Conclusion

From the ICPOES analysis of *seeragathi chooranam* it reveals that the elements present in chooranam are free from toxicity. Elements like calcium, potassium, magnesium, sodium has a major role in cardiovascular health, they directly influence the cell membrane potential of all tissues especially heart and important for muscle contraction. Zinc is an essential micronutrient which modulates oxidative stress and maintains myocardial structure. Phosphorous regulates the calcium level important for functioning of heart, maintains acid base balance of blood. Due to the presence of above said elements it is evident that the herbomineral formulation *seeragathi*

chooranam has an effective cardioprotective role. This study forms an effective base for the pharmaceutical analysis of *seeragathi chooranam* which will be followed by safe and efficacy studies later.

References

1. Dr. Thiyagarajan. R,L.I.M. Gunapadam thathujeevavaguppu, Indian medicine and homeopathy, Chennai -600 106.
2. Dr.Sornamaariyammal.I.M.D.(S), Gunapadam thaathujeevavaguppu, Indian medicine and homeopathy, Chennai 600106.

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