



## FTIR Characterization of Siddha Medicine Sivanaramirtham

Mahalakshmi K<sup>\*1</sup>, Kingsly A<sup>2</sup>

<sup>1</sup>PG Scholar, <sup>2</sup>Reader & Head of the Department of Gunapadam, Government Siddha Medical College, Palayamkottai, Tamilnadu, India

### Abstract

**Background:** The sivanaramirtham is a herbal and mineral combination used for treating vadha, pitha, kabha diseases, bronchial asthma, leprosy, peptic ulcer, hemorrhoids, tuberculosis, ascites, delirium.

**Objectives:** To characterize the herbo-mineral drug “Sivanaramirtham”.

**Materials and Methods :** The ingredients such as Iruvi, Rasam, Karunabi, Kanthagam, Chukku, Manosilai, Venkaram, Arisi thippili, milagu. The drugs was prepared as per siddha literature Siddha vaidhya thirattu. the drugs was analysed by using FTIR Spectrum.

**Result:** FTIR charecterization shows the presence of some functional group such as alcohol, alkyne, alkane, aldehyde, carbon-di-oxide, conjugated alkene, carboxylic acid, sulphonamide, an aromatic ester, amine, carboxylic acid, halo compounds where identified in Siddha herbo mineral formulation. “Sivanaamirtham”. This study forms the base for the pharmaceutical analysis of sivanaramirtham which will be followed by safety and efficacy studies later.

**Conclusion:** The instrumental analysis FTIR study for sivanar amirtham shows the presence of functional groups through the stretch and bends which responsible for its functional activity. It was to subject for further many studies to validate its efficacy and safety through proper standardization procedure. For its potency.

**Keywords :** FTIR, Siddha drug, Herbomineral compound, Functional group

### Introduction

The siddha system of medicine is mainly practised in the southern part of India as it originates from Tamilnadu, It is one of the earliest traditional medicine system in the world which treat not only the body but also the mind and the soul. According to siddha the five basic elements (panchapootham) are present in all living and non-living things of the universe in various proportions.

### Address for correspondence:

Mahalakshmi K

<sup>1</sup>Department of Gunapadam, Government Siddha Medical College, Palayamkottai, Tamilnadu, India

CODENJ : IJRPHR

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### To access this article online

Website : <http://www.ijrphr.com/>

DOI : 10.121/ijrphr/02.0203.322

### Quick response code



### How to cite this article:

Mahalakshmi K, Kingsly A, *FTIR Characterization of Siddha Medicine Sivanaramirtham*, International Journal of Reverse Pharmacology and Health Research, 2019, 2(2), 61-63

Received: February, 2019.

Accepted: April, 2019.

In the siddha system of medicine, all vital processes (physiological, biochemical-metabolic) have been classified under three functional heads namely vali, azhal, Iyyam (Vaatham, Pitham, kabam) are called three uyir – thaathukal. Siddha medicine was formulated to treat various disease are some modern analytical equipments are helpful to get knowledge regarding the traditional medicinal compound formulation.

FTIR characterization was done for the herbo mineral Siddha formulation “Sivanar amirtham” to evaluate functional group identification. It is an excellent tool for quantitative analysis.

## MATERIALS AND METHODS

Sivanaramirtham is a siddha herbo-mineral formulation has the ingredients of

Siddha name	Scientific name	Quantity
Iruvi	Dryopterisfilix-mas	35 gram
Rasam	Hydragyrum	35 gram
Karunabi	Aconitum ferox	35 gram
Kanthagam	Sulphur	35 gram
Chukku	Zingiber officinale	35 gram
Manosilai	Red orpiment	35 gram
Venkaram	Sodium tetraborate	35 gram
Arisithippili	Piper longum	35 gram
Milagu	Piper nigrum	280 gram

## Purification of drugs

### 1. Iruvi (Dryopterisfilix-mas)

Cut into small pieces and soaked in human urine for 3 days. Then allow it to dry.

### 2. Rasam (Hydragyrum)

Filter mercury through a tough cloth of close mesh several times. Heat with pure water till the water does not show any alteration in colour. Then wash with fermented rice water seven times. Finally wash with water.

### 3. Karunabi (Aconitum ferox)

For purification of aconitine roots, roots are soaked in cow's urine for three days. These roots are exposed to sunlight daily. After exposure to sunlight cow's urine is replaced by fresh water. After third day, purified roots are dried and preserved for medicinal uses.

### 4. Nellikai kanthagam (Sulphur)

Melt sulphur in a spoon with butter. Pour into cow's milk. Repeat for 30 times wash in water and dried in sunlight.

### 5. Chukku (Zingiber officinale)

Soak in limestone water for 3 hours. Then remove the skin and dried in sunlight.

### 6. Manosilai (Red orpiment)

Soak in any of the following for 4 hours, wash and dry.

Ginger juice

Lime juice

Sour butter milk

### 7. Venkaram (Sodium tetraborate)

Heat on a pan into complete dehydration.

### 8. Arisithipilli (Piper longum)

Soak in lime juice and dried it.

### 9. Milagu (Piper nigrum)

Soak in the sour butter milk for 3 hours and dry it in sunlight.

## Process of preparation

Grind mercury and sulphur in stone mortar. then add powder of remaining drugs (Dryopterisfilix mas, aconitum ferox, zingiber officinale, red orpiment, sodium tetraborate, piper longum, piper nigrum) and continuously triturated for 7 days to obtain a very fine black product.

## Dose

100 to 200mg

## Adjuvant

Honey, ginger juice (or) mother's milk.

## Indication

Vadha, pitha, kabha diseases, bronchial asthma, leprosy, peptic ulcer, hemmorhoids, tuberculosis, ascites, delirium.

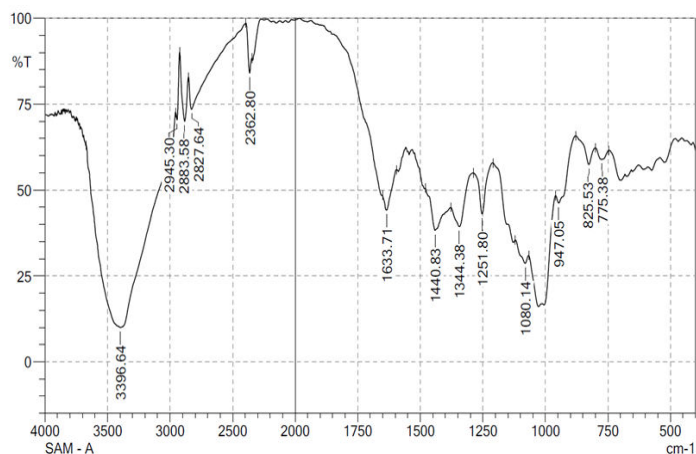
## Details regarding the analysis

FTIR spectra were recorded at kalasalingam academy of research and education (International research centre) Srivilliputhur.

## FTIR Spectrum analysis

Fourier transform infrared spectroscopy it is an important and more advanced technique. It is used to identify the functional group to determine the quality and consistency of the sample material and can determine the amount of compound present in the sample.

In FTIR- infrared is passed from a source through a sample. This infrared is absorbed by the sample according to the chemical properties and some are transmitted. The spectrum that appears denotes the molecular absorption and transmission. It forms the molecular finger print of the sample. It is recorded as wavelength and the peaks seen in the spectrum indicate the amount of material present.



**RESULTS****Table.1: FTIR Data interpretation of SAM**

Wave number	Vibrational modes of SAM In IR	Functional groups
3396.64	O-H Stretch	Alcohol
2945.30	C-H Stretch	Alkyne
2883.58	C-H Stretch	alkane
2827.64	C-H Stretch	aldehyde
2362.80	O=C=O	Carbon di oxide
1633.71	C=C Stretch	Conjugated alkene
1440.83	O-H bending	Carboxylic acid
1344.38	S=O	Sulphonamide
1251.80	C-O Stretch	Aromatic ester
1080.14	C-N Stretch	Amine
947.05	O-H bend	Carboxylic acid
825.53	C-Cl Stretch	Halo compound
775.38	C-H bond	Aromatics

**DISCUSSION**

In FT-IR spectra analysis, this sample sivanaramirtham exhibits the peak value at 3396.64, 2945.30, 2883.58, 2827.64, 2362.80, 1633.71, 1440.83, 1344.38, 1251.80, 1080.14, 947.05, 825.53, 775.38 having O-H-Stretch, C-H stretch, O=C=O, C=C stretch, O-H bending, S=O stretch, O-H bend, C-N stretch, C-C stretch, C-cl stretch, C-H bond

This indicates the presence of some organic functional groups such as alcohol, alkyne, alkane, aldehyde, carbon-dioxide, conjugated alkene, carboxylic acid, sulphonamide, an aromatic ester, amine carboxylic acid, halo compound and aromatics. The presence of alkanes protects against bacteria and fungal infections (3). The presence of aromatics are good pain relievers has anti-pyretic, anti-inflammatory auto-immune activities(13) likewise the presence of other these identified functional groups in the medicinal compound are also responsible for their therapeutic function.

**CONCLUSION**

The instrumental analysis FTIR study for sivanaramirtham shows the presence of functional groups through the stretch and bends which responsible for its functional activity. It was to subject for further many studies to validate its efficacy and safety through proper standardization procedure. For its potency.

**CONFLICT OF INTEREST**

The authors declare no conflict of interest.

**SOURCE OF FUNDING**

Nil

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