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Research Article

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FTIR Characterization of Siddha medicine *Nilapanai kizhangu chooranam.*

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Abstract

Though siddha medicines having high therapeutic value their standardization is essential to get wider knowledge about that drug for extensive safe use worldwide. Characterization plays a major role to identify the nature of the drug for standardization. FTIR characterization will helps to determine the functional compounds of the drug. Siddha medicine *Nilapanai kizhangu chooranam* was subjected into characterization through sophisticated analytical equipment FTIR to identify the presence of functional groups. The presence of Some functional group such as alcohols, phenols, alkanes, amines, nitro compounds, aromatics, alcohols, alkyl halides, carboxylic acids were identified in the Siddha poly herbal formulation *Nilapanai kizhangu chooranam*. If Further research will be followed by the results based on this research work, it helps to utilize the medicinal effect of this Siddha drug clinically in a safe manner.

Keywords: FTIR, Siddha drug, Herbal compound, Infertility, Functional group

Introduction

Siddha science is an ancient medical system for mankind. Siddha medical system is based on various amazing principles such as Theory Of *Arusuvai*, Theory Of *Panchabootham*, Concept of *Thonnooththaaru Thaththuvam* (96 principles), concept of *Naadi* and so on. Based on these type of specialized concepts such as principles *Arusuvai*, *Panchabootham* Siddha medicine was formulated to treat various diseases[1]. Though it is consider that the herbal formulations are always safe, scientific validation is essential nowadays because of our changing environmental condition. Some modern analytical equipments are helpful to get knowledge regarding the traditional medicinal compound formulations. FTIR characterization was done for the poly herbal Siddha formulation *Nilapanai kizhangu chooranam* to evaluate the functional group identification. Thus can create fingerprints to standardize this medicinal formulation.

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Materials and Methods

Details regarding the sample:

"Nilapanai kizhangu chooranam" is a Siddha herbal formulation has the ingredients of *Curculigo orchioides, Tribulus terrestris, Phyllanthus emblica, Mucuna pruriens ,Tinospora cordifolia, Bombax malabaricum, Saccharum officinarum*. This drug was prepared as per the Siddha literature "***Kannusamy parambaraivaithiyam"***[2].

Details regarding the analysis:

FT-IR spectra were recorded at SAIF, IIT Madras, India. The Perkine Elmer Spectrum One Fourier Transform Infrared (FTIR) Spectrometer was used to derive the FT IR Spectra of *Nilapanai Kizhangu Chooranam* in Potassium Bromide (KBr) matrix with scan rate of 5 scan per minute at the resolution 4cm^{-1} in the wave number region 450-4000cm^{-1}. The samples were grounded to fine powder using agate motor and pestle and the mixed with KBr[3]. They were then Pelletized by applying pressure to prepare the specimen (the size of specimen about 13 mm diameter and 0.3 mm in thickness) to recorded the FT-IR Spectra under Standard conditions. FT- IR Spectra were used to determine the presence of the functional groups and bands in the *Nilapanai Kizhangu Chooranam*. The recorded spectrum shows in figure.

Results

FTIR Spectrum Analysis:

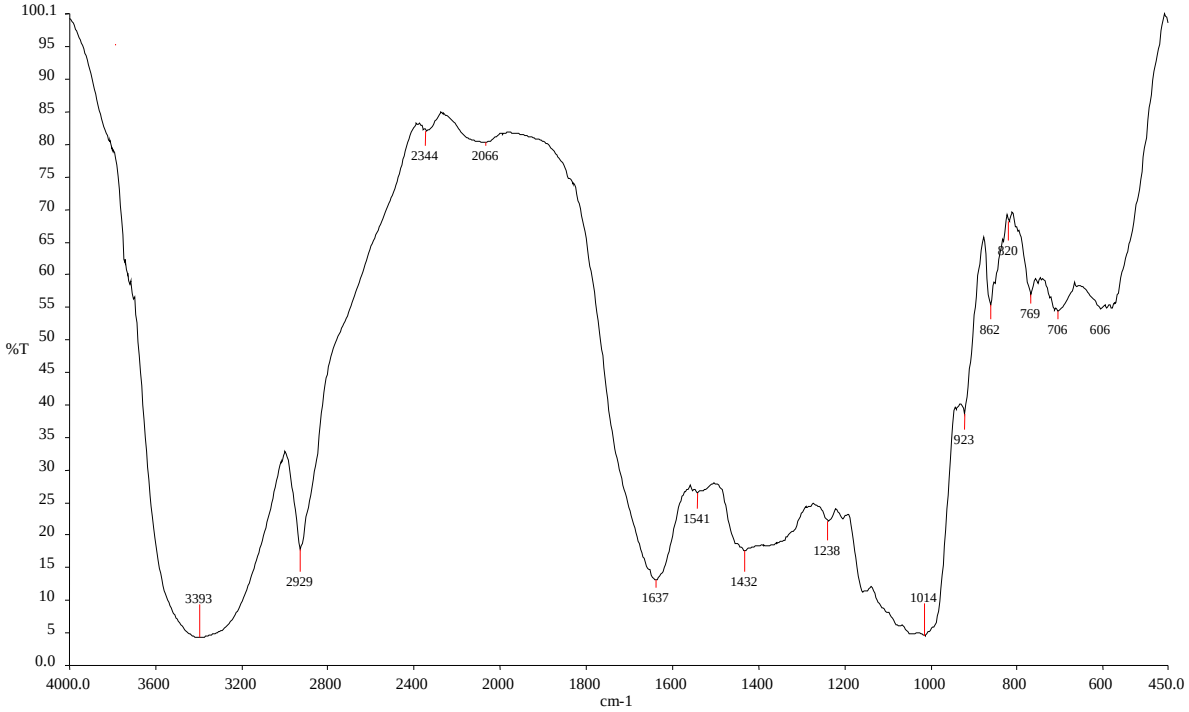

Image of FTIR Spectrum

FTIR data interpretation of NPKC

Wave number (cm-1)	Vibrational modes of NKC in IR region	Functional groups
3393	O-H Stretch, H-Bonded	Alcohols , phenols
2929	C-H stretch	alkanes
1637	N-H bend	1 amines
1541	N-O asymmetric stretch	nitrocompounds
1432	C-C stretch	Aromatics
1238	C-O stretch	Alcohols, carboxylic acids, esters, ethers
923	O-H bend	Carboxylic acids
820	C-Cl stretch	Alkyl halides
769	C-Cl stretch	Alkyl halides
606	C-Br stretch	Alkyl halides

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Discussion

In FT-IR Spectra analysis, this sample *Nilapanai Kizhangu Chooranam* exhibits the peak value at 3393, 2929, 1637, 1541, 1432, 1238, 923, 820, 769, 606 having O-H stretch, C-H stretch, N-H bend, N-O asymmetric stretch, C-C stretch, C-O Stretch, O-H bend, C-Cl stretch, C-Br stretch. This indicates the presence of some organic functional groups such as alcohols, phenols, alkanes, amines, nitro compounds, aromatics, alcohols, alkyl halides, carboxylic acids. The presence of nitro compounds indicates that the drug can be used to treat against infectious conditions[4]. Likewise the presence of other these identified functional groups in medicinal compound are also responsible for their therapeutic function.

Conclusion

Traditional medicines are always provides higher therapeutic use without causing any harmful effects. Scientific validation of traditional medicines through standardization will provide the knowledge regarding the mechanism of drug action. These FTIR Characterization findings on siddha drug "*Nilapanai kizhangu chooranam*" creates the fingerprints to standardize this drug. These results may form the base for further structural determination of this polyherbal siddha formulation "*Nilapanai kizhangu chooranam*".

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