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**Standardization of Nilavagai chooranam through
Fourier Transform Infrared Spectroscopy**

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Abstract

Nilavagai chooranam is one of the best Siddha formulation indicated in Siddha literatures for the treatment of constipation and various poisonous stings. Though this formulation Nilavagai chooranam is subjected into characterization using FTIR Nilavagai chooranam is purely herbal drug. The results confirmed that the presence of functional groups are observed. These findings will help for further research in Nilavagai chooranam.

Keywords: Nilavagai chooranam, FTIR, Herbal drug.

Introduction

Herbals are widely used in Siddha system of medicines for getting more scientific knowledge the traditional medicines need much more investigation. Those are always considered as safe with great medicinal value. Though herbal products have been gaining importance throughout the world. One of the obstacle is the lack of standardization of drugs. Modern instruments are helpful analyse herbal and herbo mineral drugs. So, standardization is necessary for herbal drugs and products before its clinical application. Scientific validation of safety and efficacy of the each and every drug before going administer in humans are essential. Because various changes happened nowadays in our Ecosystem. In order to develop new drug strategy or standardization of the traditional Siddha formulations through

characterization using sophisticated modern equipments is an emergence need to strengthen the field of Siddha pharmacology.

Materials and Methods

Details about sample drug:

The ingredients of Nilavagai chooranam are Nilavagai (*Cassia senna*) leaves.

Purification:

The dried leaves was powdered, then purified by pitaviyal process using milk.

Details about experiment:

Infrared spectroscopy is one of the most powerful analytical techniques which offer the possibility of chemical identification. It provides useful information about the structure of molecule. The technique is based upon the simple fact that a chemical absorption in the infrared region. After absorption in the infrared region radiations, the molecule of a chemical substance vibrate at many rate of vibration, giving rise to close – packed absorption bands, called an IR absorption spectrum which may extend over a wide wavelength range. Various bands will be present in IR spectrum which will correspond to the characteristic functional groups and bonds present in a chemical substance is a fingerprint for its identification.

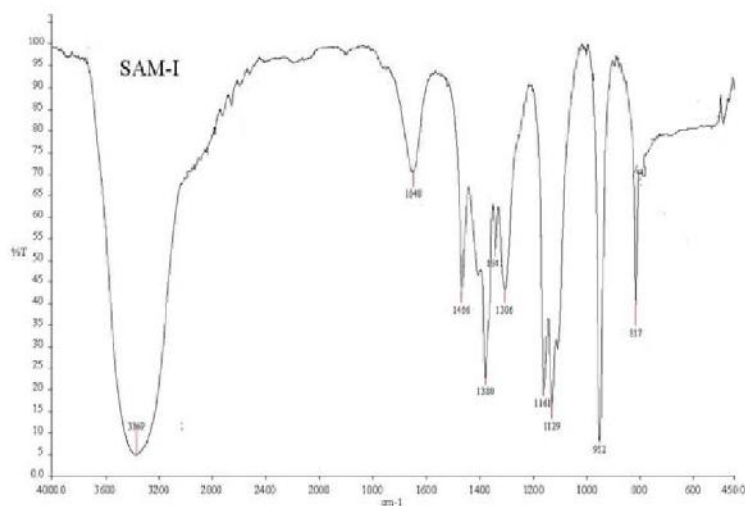
Band position in an infrared spectrum may be expressed conveniently by the wave number 'U' whose units is cm^{-1} . A Nicolet 5700 FTIR USA,

FTIR Interpretation:

instrument was used for recording the IR spectra with 2-3mg of the sample as KBr pellet. IR spectra of the drug was recorded. A small quantity of dry KBr was mixed with a little amount the sample and ground for homogenization. An IR lamp was used for drying during mixing. The mixture was then pressed into a transparent thin pellet at $5\text{ton}/\text{cm}^2$. These pellets were used for IR spectral recording.

Results

In FTIR analysis this herbal drug Nilavagai chooranam sample exhibits the peak value shows in table at the wave number 3369, 1648, 1466, 1380, 1341, 1306, 1161, 1129, 952, 817 having OH stretch, C=O stretch, C-F stretch, C=C stretch, CH_2 bend, NO_2 stretch. This indicates the presence of some organic functional groups such as primary and secondary amides, water, alkene, aromatics and alcohols.



Absorption peak cm^{-1}	Stretch	Functional group	Intensity
3369	OH stretch	Alcohol	Strong
1648	C=O	Amide	Strong
1466	C=C	Aromatic	Weak
1380	CH_2	Bend	Medium
1341	NO_2		Strong
1306	C-F	Fluoride	Strong
1161	C-F	Fluoride	Strong
1129	C-F	Fluoride	Strong
952		Alkene	
817		Aromatic	

Discussion

FTIR analysis is utilized to find out the organic nature of the sample and oxygen stretching frequencies. The presence of some organic functional groups were identified in this herbal Siddha medicine Nilavagai chooranam through FTIR analysis. This study which may be confirmed through further studies.

Conclusion


Nowadays it is very essential to validate the traditional formulations to get various knowledge regarding the science behind those formulations. These observed data from this FTIR characterization helps to standardize this Siddha drug Nilavagai chooranam regarding its functional behavior. Though Siddha literature Gunapadam part I mooligai vaguppu states that this drug is indicated for diseases such as constipation, various poisonous stings and etc., which may be confirmed through further studies. So, the author hopes that this study could help future studies regarding Nilavagai chooranam.

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