

FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) ANALYSIS ON SIDDHA HERBAL DRUG KUKKILADHI CHOORANAM

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ABSTRACT

Background

The *kukkiladhi chooranam* is a herbo mineral combination used for treating eczema and other skin diseases.

Objectives

To strandize the herbo mineral drug *kukkiladhi chooranam*

Materials and methods

The ingredients such as *Zingiber officinalis*, *Piper longum*, *Piper nigrum*, *Nigella sativum*, *Encostemma axillare*, *Shorea robusta*. These drugs was purified and finely powdered as per *siddha* literature *Viranakarappan roga sigichai*. These drugs were examined under FTIR Spectrum

Results

FTIR charecterization shows the presence of some functional group such as alcohol, alkanes, nitrites, dimer (carboxylic acid), imine, tertiary alcohol, primary alcohol, sulfoxide, aromatics, alkyl halides, halo compound, bromide, iodide.

Conclusion

The instrumental analysis FTIR study for *Kukkiladhi chooranam* shows the presence of functional groups through the stretch and bends which responsible for its functional activity. It shows the presence of alkanes, alcohol, aromatics, halo compound. It consist the activities like anti inflammatory, auto immune activities, anti microbial. Further researches want to done in the *Kukkiladhi chooranam* to prove the efficacy and strandization of the drug.

Keyword: FTIR, *Siddha* medicine *kukkiladhi chooranam*, Herbo mineral, Eczema.

INTRODUCTION

Attention of scientists all over the world focused towards the alternative systems of medicine in recent past. *Siddha* systems of medicine, the heritage of the family practice in south India, is a special, scientific, significant, most respectable and of high order one. Ancient *siddha* text books documented 4448 variety of diseases included *karappan*. This system states not only the treatment but also the prevention and diagnosis. Agasthiyar is considered as the emperor and guru of *siddha* system of medicine and considered one of the 18 *siddhars*. He is the author of the famous literatures *agasthiyar nadisasthiram* and *agasthiyar gunavagadam* which are framed the basic principles on in *siddha* system are astonishing. Further hi book *agasthiyar rananool* is one of the valuable medical book in *siddha* system of medicine which state about *karappan*.

Atopic dermatitis (AD) often called eczema (pronounced "EK-zema") Greek name Ekzein meaning "to boil out". The term atopic is from Greek meaning "Strange". The dermatitis means "inflammation of the skin". Atopic dermatitis is a chronically relapsing skin disorder with an immunologic basis. The clinical presentation varies from mild to severe. In the worst cases, atopic dermatitis may interfere with normal growth and development. Treatment consists of adequate skin hydration, avoidance of allergenic precipitants, topical anti-inflammatory medications, systemic antihistamines, and antibiotic coverage of secondary infections. Although often used interchangeably, the terms eczema and atopic dermatitis are not equivalent. Eczema is a reaction pattern with various causes and the most common pediatric cause is atopic dermatitis. Other causes of eczematous dermatitis include allergic contact dermatitis, irritant contact dermatitis, seborrheic dermatitis, nummular eczema, dyshidrotic eczema, asteatotic eczema, and lichen simplex chronicus. Eczematous reactions can be classified as acute, sub acute, or chronic, depending on historical and physical characteristics.

Globally dermatitis affected approximately 230 million people as of 2010, 3.5% of the population. In india 52.7% infantile patients had acute eczema 47.4% of childhood patients had chronic type of eczema. 0.43% of childhood atopic dermatitis. Acute eczema was most prevalent was found in 42% patients, sub acute 41%, chronic 17%.

DRUG INGREDIENTS

TABLE: 1

S.NO	DRUG NAME	BOTANICAL NAME	USED PART	QUANTITY
1.	Chukku	<i>Zingiber officinalis</i>	Rhizome	35g
2.	Milagu	<i>Pipert nigrum</i>	Dry fruit	35g
3.	Thippili	<i>Piper longum</i>	Dry fruit	35g
4.	Karunserakam	<i>Nigella sativum</i>	Dry seed	35g
5.	Vellarugu	<i>Encostema axillare</i>	Whole plant	105g
6.	Kukkil	<i>Shorea robusta</i>	Resin	175g

DOSE

800-1000mg

ADJUVANT

Hot water

INDICATION

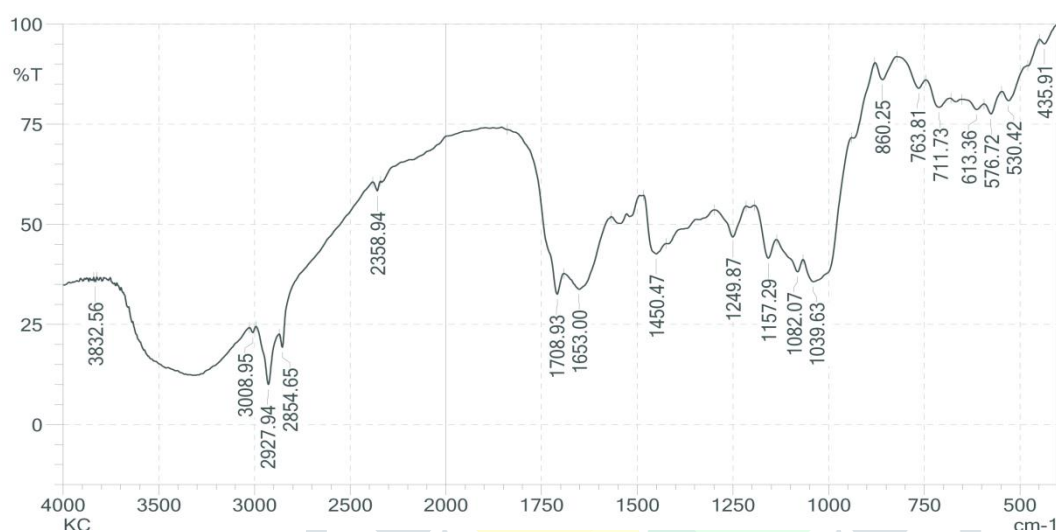
Eczema

DETAILS REGARDING 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

FIGURE: 1

**INTERPRETATION
TABLE: 2**

S.NO	WAVE NUMBER	VIBRATIONAL MODES OF KUKKILADHI CHOORNAM	FUNCTIONAL GROUP
1.	3832.56	----	Unknown compound
2.	3008.95	O-H stretching	alcohol
3.	2427.94	C-H stretching	alkanes
4.	2854.65	C-H stretching	alkanes
5.	2358.94	C=N stretching	nitrates
6.	1708.93	C=O stretching	Dimer(carboxylic acid)
7.	1653.00	C=N stretching	Imine/oxime
8.	1450.47	C=H bending	alkane
9.	1249.87	C-N stretching	amine
10.	1157.29	C-O stretching	Tertiary alcohol
11.	1082.07	C-O stretching	Primary alcohol
12.	1039.62	S=O stretching	sulfoxide
13.	860.25	C-H bending	aromatics
14.	763.81	C-Cl stretching	Alkyl halides
15.	711.73	C-H stretching	aromatics
16.	613.36	C-Br stretching	Halo compound
17.	576.72	C-Br stretching	Halo compound
18.	530.42	C-Br stretching	Halo compound
19.	435.91	C-X stretching	Bromide/iodide

DISCUSSION AND RESULTS

In FTIR spectre analysis, this sample analysis *Kukkiladhi chooranam* exhibit the peak value at 3832.56, 3008.95, 2427.94, 2854.65, 2358.94, 1708.93 1653.00, 1450.47, 1249.87, 1157.29, 1082.07, 1039.62, 860.25, 763.817, 711.73, 613.36, 576.72, 530.42, 435.91 having C-H stretching, O-H stretching, C=N stretching, C=O stretching, C-O stretching, C-N stretching, S=O stretching, C-Cl stretching, C-Br stretching, C-X stretching.

This indicates the presence of some organic functional groups such as alcohol, alkanes, imine/oxime, tertiary alcohol, primary alcohol, sulfoxide, aromatics, alkyl halides, halo compound, bromide/iodide. The presence of alkanes protects against bacteria and fungal infections. The presence of aromatics are good pain relievers has anti-pyretic, anti-inflammatory auto-immune activities. The presence of alcohol has an anti microbial action. Acts as an antiseptic agent.

CONCLUSION

FTIR spectroscopy is an important investigatory tool in the field of pharmaceutical science for the structural elucidation. It shows the presence of alkanes, alcohol, aromatics, and halo compound. It consist the activities like anti inflammatory, auto immune activities, anti microbial. These FTIR characterization on *siddha* drug *Kukkiladhi chooranam* creates the fingerprints to strandize this drug. In future, further researches want to done in the *Kukkiladhi chooranam* to prove the efficacy and strandization of the drug.

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