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Research article

Standardization of Kasthuri Karuppu by FTIR Study

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Abstract

Background: The kasthuri karuppu is a herbal and mineral compound used for treating rheumatic diseases, colds and sore throat and other respiratory diseases. Stimulate the respiratory and circulatory systems and raises body temperature.

Obejective: To characterize the Siddha herbomineral forumulation " Kasthuri Karuppu".

Materials and methods : The ingredient such as Patchai karpooram, Kungumapoo, Koorosanam, Lingam, Pooram, Ganthagam, Thalagam, manoosilai, Rasam, Rasachendooram, Thippili, Oomam, Kasthuri. The drugs was prepared as per Siddha literature Siddha vaidhiya thirattu. It was analysed by using FTIR spectrum.

Result : The instrumental analysis of FTIR study for kasthuri karuppu shows presence of functional groups such as alcohol, alkyne carbon-di-oxide, d-lactone, alcohol, an aromatic ester, tertitary alcohol, amine, fluoro compound, carbon alkene, halo compound, alkyl halides which are responsible for its biological activity.

Conclusion: These FTIR characterization finding on Siddha drug "Kasthuri karuppu" create a fingerprint to standerdize this drug. These result may form the base for further structural determination of this herbo-mineral Siddha formulation.

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

Introduction

Siddha system is the first system to emphasize health as a perfect state of physical, psycological, social and spiritual component of a human being the basic principle of the Siddha system consist of panchapootham theory, tri-humours pathology and 96 basic factor. In Siddha system of medicine, the understanding of the tri-humours status is very essential.

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The humours vadha, pitha and kabha exist in the ratio 1: ½ : ¼ is normal physiological states in man, any imbalance (or) deviation from this state leads to disease Siddha system is also base on arusuvai, theory of panchabootham, concept of naadi and so on though it is considered that the herbomineral formulation are always safe, scientific validation is essential now a days because of our changing environment.

Standardization is an important step for the establishment of a consistent biological activity, a consistent chemical profile (or) a quality assurance. FTIR-characterization was done for the herbomineral Siddha formulation "Kasthuri Karuppu" to evaluate functional group identification.

MATERIALS AND METHOD

In the present study, herbomineral preparation "Kasthuri karuppu" has been selected to establish its standardization status from classical Siddha literature the ingredients used in formulation was listed below in table:1

Table.1: Herbomineral formulation kasthuri karuppu

Siddha name	Scientific name	Quantity
Patchai karpooram	Camphor	10.5gram
Kungumapoo	Crocus sativus	10.5gram
Koorosanam	FEL Bovinum purifoctum	10.5gram
Lingam	Red sulphide of mercury	10.5gram
Pooram	Hydragyram sub-chloride	10.5gram
Ganthagam	Sulphur	10.5gram
Thalagam	Trisulphuret of arsenic	10.5gram
Manoosilai	Red orpiment	10.5gram
Rasam	Hydra gyrum	10.5gram
Rasa chendooram	Red sulphide of mercury	10.5gram
Thipilli	Piper longum	15.6 gram
Oomam	Carum copticum	15.6 gram
Kasthuri	Moschus morchiferus musk	2.1 gram.

Method of purification :

Pachai karpooram(Camphor):

Soak in pontederia vaginalis flower juice for 24minutes and dry in the sun.

Kunkumapoo(Crocus sativus):

It should be fried slightly and till gets broken.

Lingam(Red sulphide of mercury):

Heat with sufficient juice of lime fruit, Acalypha leaf juice and milk mixed together till dehydrated and wash.

Pooram(Calomel):

Calomel 35gm is consoldified in mother's milk for 3 hours and again it is consoldified in garlic oil for 9 hours. It is taken out as purified .

Ganthagam(Sulphur):

Melt sulphur in a spoon with butter pour into cow's milk. Repeat for a total 30 times. Wash in water and dry.

Thaalagam (Arsenic trisulphide):

Place the drug pieces in a heap of burnt lime ststones. Sprinkle ass's urine or toddy. Recover the pieces when heat subsides,wash and dry.Repeat the process for 10 more times.

Manosilai (Arsenic disulphide):

Soak in any of the following for 4hours,wash and dry. a) Ginger juice,b)Lime juice,) Sour butter milk.

Rasam (Mercury):

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.

Rasa chendooram (Hydragyrum subchloride):

Soak in lime juice and or breast milk for 24 hours each,wash and dry.

Thippili(Piper longum):

It is soaked in leaf juice of plumbago zeylanica.

Oomam(Carum capticum):

Soak in the lime stone water(3hours)and dry it in sunlight.

Process of preparation:

Grind mercury and sulphur in stone mortar till it turns black in colour.Then add Cinnabar,Hydragyrum subchloride,Arsenic trisulphide,Calomel,Arsenic disulphide one by one and triturated into fine powder. Then Piper longum&Carum capticum are roasted and powdered and add this powdered content to it.Finally Moschus morchiferus musk, FEL Bovinum purifoctum,Crocus sativus,Camphor added to above preparation and it is triturated till it turns black in colour.

Dosage:

50mg

Adjuvant:

Honey,Ginger juice (or) Mother's milk.

Detail regarding the analysis

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

FITR spectrum analysis

In Infra-red spectroscopy, the resonance absorption is made possible by the change in dipole moment accompanying the vibrational transition. The infrared spectrum originates from the vibrational motion of the molecule. The vibrational frequencies are a kind of fingerprint of the compounds. This property is used for the characterization of organic. Inorganic and biological compounds. The band intensities are proportional to the concentration of the compound and hence qualitative estimations are possible. The IR spectroscopy is carried out by using Fourier Transform technique.

Infrared Spectro Scopy involves study of the interaction of electromagnetic radiation with matter. The experimental data consist of the nature (frequency of wavelength) and the amount (intensity) of characteristic radiation absorbed (or) emitted.

RESULTS

Fig.1: Image of the FTIR spectrum

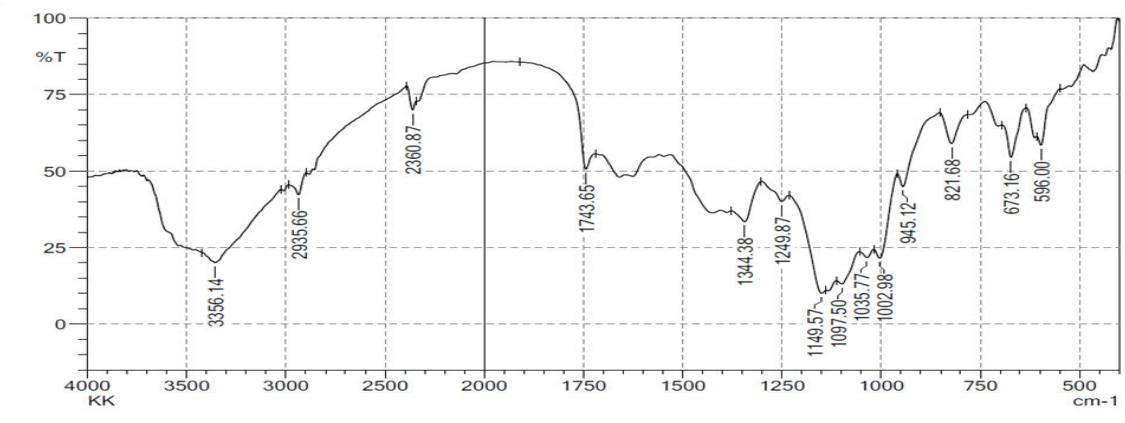

Table: FTIR Data Interpretation of KK

Wave number	Vibrational modes of KK In IR Region	Functional groups
3356.14	O-H stretching	Alcohol
2935.66	C-H stretching	Alkene
2360.87	O=C=O stretching	Carbon dioxide
1743.65	C=O stretching	d-Lactone
1344.38	O-H bending	Alcohol
1249.87	C-O stretching	Aromatic ester
1149.57	C-O stretching	Tertiary alcohol
1097.50	C-N stretching	amine
1035.77	C-N stretching	Fluoro compound
945.12	C-C stretching	Carbon
821.68	C=C bending	Alkene
673.16	C-Br stretching	Halocompounds
596.00	C-Br stretching	Alkyl halides

DISCUSSION

In FT-IR spectra analysis, this sample kasthuri karuppu exhibit the peak value of 3356.14, 2935.66, 2360.87, 1743.65, 1344.38, ,1249.87, 1149.57, 1097.50, 1035.77, 1002.98, 945.12, 821.68, 673.16, 596.00 having O-H stretch, C -H stretch, O=C=O stretch, C=O stretch, O-H bend, C-O stretch, C-O stretch, C-O stretch, C-N stretch, C-F stretch, C-C stretch, C=C stretch, C=C bend, C-Br stretch,C-Br stretch.

This indicate the presence of functional groups such as alcohol, alkyne, carbon-di-oxide, d-lactone, alcohol, aromatic ester, tertiary alcohol, amine, fluoro compound, carbon, alkene, halo compound and alkyl halide. The presence of amines are a class of compound derived from ammonia by replacement of one (or) more effective antagonists of SSTR5 (stomatostatin receptor 5) and are used for treatment, control and prevention of disorders such as type 2 diabetes, insulin resistance, lipid disorder and obesity (8) likewise the presence of other identified functional groups in medicinal compound are responsible for therapeutic action.

CONCLUSION

These FTIR characterization finding on Siddha drug "Kasthuri karuppu" create a fingerprint to standardize this drug. These result may form the base for further structural determination of this herbo-mineral Siddha formulation.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

SOURCE OF FUNDING

Nil

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