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**FTIR characterization and analysis of Siddha sastric  
formulation “*Karunchoorai chooranam*”**

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**Abstract**

Herbals are highly unique because of its admiring medicinal values. Globally herbals are almost considered as safe for therapeutic uses. But nowadays the pharmacological community has some awareness towards the safety issues of herbal medicine. To ensure the safety of herbal medicines there is a need for characterization and other structural analysis at molecular level to confirm the nature of the drug. Poly herbal siddha formulation “*Karunchoorai chooranam*” was subjected into FTIR Characterization to determine its functional groups. The identified functional groups of this siddha drug are Amine, alkene, alkene, alkene, aromatic, aromatic, amine, amine, alkyl halide, amine, alkyl halide, alcohol, alkyl halide, alkene, alkene, alkyl halide, alkyl halide. This fingerprints helps to standardize this drug and helps to evaluate the molecular findings of this drug for further research in future.

**Keywords:** FTIR, characterization, Standardization, *Chooranam*, Siddha

**Introduction**

Siddha science is an ancient medical science which is loaded with spiritual concepts. The universe made up of 5 elements such as space, air, water, fire, and earth. Likewise according to siddha science, the human body is also made up of those same five elements. In addition with the medicinal compound also formed based on those elements. Due to this siddha medicinal compounds it is clear that these drugs are not to treat symptomatically, it helps to cure the disease completely. The usages of herbal drugs to treat disease are increasing now a days because of its

negligible adverse effects. Overall consideration of the world nowadays is though herbal medicines are considered as safe, some toxic effects also herbals could produce at various ranges. The proper guidance is needed while taking herbal compounds. In addition to this always it is wonder that the herbal and its active ingredients and their mechanism of action in humans against diseases are still a mystery according to the modern scientific world. The knowledge behind the siddha formulations have to be known in drug designing and its development. Modern scientific equipment's plays a wider role in the structural and functional identification of drugs. This will lead to

therapeutic potential of herbal compounds. Likewise one of the siddha medicinal preparation was indicated as a drug to treat psoriasis and some other skin disorder in sastric siddha text *Agasthiyar paripooranam* 400<sup>[1]</sup>. *Karunchoorai Chooranam* was subjected into FTIR analysis to understand the presence of functional groups in it.

## Materials and Methods

### Details regarding the sample:

The ingredients of the siddha formulation *Karunchoorai chooranam* are *Capparis sepiaria*, *Plumbago indica*, *Enicostema axillare*, *Toddalia asiatica*, *Piper nigrum*, *Gymnema sylvestre*, *Carollacarpus epigaeus*, *Acacia nilotica*, *Ficus racemosa*. The drug *Karunchoorai chooranam* was prepared as per the text.

### Details regarding the FT-IR analysis:

FT-IR spectra were recorded at SAIF, IIT Madras, India. The Perkin Elmer Spectrum One Fourier Transform Infrared (FTIR) Spectrometer was used to derive the FT-IR Spectra in Potassium Bromide (KBr) matrix with scan rate of 5 scan per minute at the

resolution 4cm<sup>-1</sup> in the wave number region 450-4000cm<sup>-1</sup>. The samples were grounded to fine powder using agate motor and pestle and the mixed with KBr. 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<sup>[2]</sup>. FT- IR Spectra were used to determine the presence of the functional groups and bands in the *Karunchoorai Chooranam*. The recorded spectrum shows in figure 1.

## Results

In the FT-IR Spectra analysis, this *Karunchoorai Chooranam* sample exhibits the peak value shows in Table 1 at the wave number of 3402, 2922, 2133, 1635, 1492, 1446, 1326, 1253, 1152, 1078, 858, 764, 605, 455 having NH Stretch, =CH Stretch, -C=C- Stretch, C=C Stretch, C=C Stretch, C=C Stretch, C-N Stretch, C-N Stretch, C-F Stretch, C-F Stretch, C-O Stretch, C-F Stretch, C-F Stretch, =C-H bending, =C-H bending, C-Cl Stretch, C-Cl Stretch, This indicates the presence of some organic functional groups such as Amine, alkene, alkene, alkene, aromatic, aromatic, amine, amine, alkyl halide, amine, alkyl halide, alcohol, alkyl halide, alkene, alkene, alkyl halide, alkyl halide.

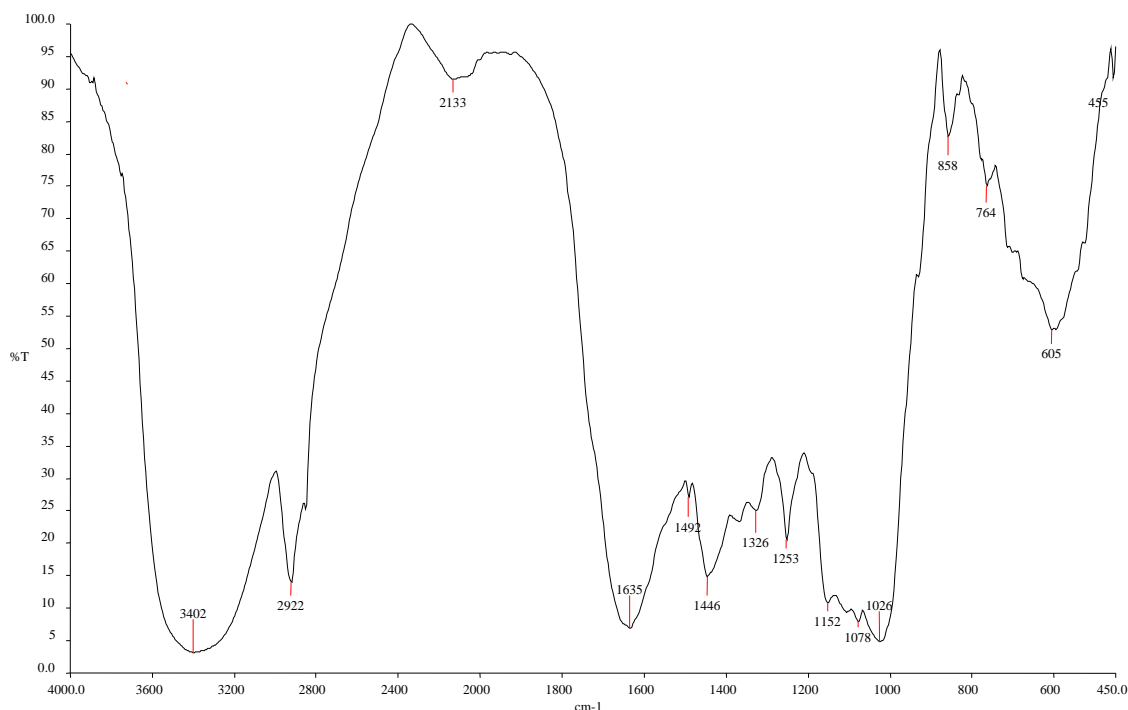


Figure 1: FTIR Spectra of *Karunchoorai chooranam*

Table 1 FTIR Interpretation of *Karunchoorai chooranam*

Wave number (cm-1)	Vibrational modes of <i>Karunchoorai chooranam</i> in IR region	Functional group
3402	NH Stretch	Amine
2922	= CH Stretch	Alkene
2133	-C=C- Stretch	Alkene
1635	C=C Stretch	Alkene
1492	C=C Stretch	Aromatic
1446	C=C Stretch	Aromatic
1326	C-N Stretch	Amine
1253	C-N Stretch	Amine
	C-F Stretch	Alkyl Halide
1152	C-N Stretch	Amine
	C-F Stretch	Alkyl Halide
1078	C-O Stretch	Alcohol
	C-F Stretch	Alkyl Halide
1026	C-F Stretch	Alkyl Halide
858	=C-H Bending	Alkene
764	=C-H Bending	Alkene
	C-C1 Stretch	Alkyl Halide
605	C-C1 Stretch	Alkyl Halide

## Discussion

Some inorganic elements such as Potassium thiocyanate, Sodium bicarbonate, Magnesium phosphate, Calcium phosphate, Sodium metaarsenite, Sodium phosphate, Sodium metabisulfite were observed at the relative obtained frequencies. Some organic groups which were identified alkene, aromatic, amine, alkyl halide, alcohol. Potassium containing compounds are highly useful in the treatment of psoriasis. Alkyl groups are identified as useful in the treatment of psoriasis.

## Conclusion

The presence of organic functional groups of siddha medicinal formulation *Karunchoorai chooranam* was identified. In addition to that some inorganic compounds also identified towards it. These create the fingerprints and can help to standardize this formulation. These identified functional groups when place their role in some currently available drugs play a major role for the treatment of psoriasis. In future some pharmacological evaluation of this drug to treat psoriasis and clinical trial will be followed. These research findings may help to know the molecular identification of this drug.

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