



FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) CHARACTERIZATION OF SIDDHA MEDICINE KODIVELI CHOORANAM

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ABSTRACT

BACKGROUND: The Kodiveli Chooranam is a herbal and mineral combination medicine used for treating all type of arthritis.

OBJECTIVES: To characterize the herbo mineral drug 'Kodiveli Chooranam'

MATERIALS AND METHODS: The ingredients such as, *Carum copitum*, *Plumbago indica*, *Rock Salt*, *Ferula assafoida*, *Saussurea costus*, *Zingiber officinalae*, *Santalum album*, *Cedrus deodara*, *Piper longum*, *Oldenlandia umbellata*, *Corus calamus*, *Nigella sativa*, *Lawsonia inermis*. The medicine was prepared as per Siddha text yugi vaithiya kaviyam.

RESULT: FTIR characterization shows the presence of some functional group such as Halo compound, Sulfoxide, Fluro compound, Amine, Sulfone, Alkane, Nitro compound, Conjugated aldehyde, Amine salt, where identified in Siddha herbo mineral formulation 'KODIVELI CHOOORANAM'.

CONCLUSION: The instrumental analysis FTIR study for Kodiveli chooranam shows the presence of functional groups through the stretch and bends which is responsible for its functional activity. It consists of activities such as anti-inflammatory, analgesic, anti-bacterial effect. Further researches want to done in Kodiveli chooranam to evaluate its efficacy and drug standardization.

KEYWORDS : FTIR, Siddha medicine Kodiveli chooranam, Herbo mineral, Arthritis.

INTRODUCTION

The siddha medicine is a system of traditional medicine originating in ancient tamilnadu in south india. Traditionally, it is taught that the Siddhars laid foundation for this system of medication . The system is mainly based on "ANDAPINDA THATHUVAM" which are interlinked through 'panchaboothas'. The structural aspect of the human body is 'udalthathus' and the functional unit is 'uyirthathus' (vatha, pitham, kabam). In YugiVaithiyaChinthamani, Yugimunivar has explained 84 types of vatha diseases. In Siddha system, vadha diseases are compared with different types of arthritis.

Arthritis is one of the most common joint diseases in India. Arthritis is an inflammation of one or more joints with involvement of synovium, articular surfaces and capsule. The critical stage of the disease is the involvement and destruction of the articular cartilage, as any gross damage to the cartilage is irreversible, leading to ankylosing and loss of function. Arthritis is classified into inflammatory arthritis, Non inflammatory arthritis and Miscellaneous arthritis. Most common types are Rheumtoid arthritis, Osteoarthritis, Polyarthritis, Psoriatic arthritis, Tuberculous arthritis. The common symptoms are pain may present in small joints, back pain and stiffness, pain and swelling of hip/knee/ankle, deformities of the hip and spine.

METHODS AND MINERALS

Kodiveli chooranam is siddha herbo mineral formulation has a ingredients of

Table 1.1

| DRUG | BOTANICAL NAME | PART USED | DOSE |
|------------|---|-----------|------|
| Omam | <i>Carum copticum</i> | Seed | 35g |
| Kodiveli | <i>Plumbago indica</i> | Root | 35g |
| Indhuppu | <i>Sodium chloride impure/Rock salt</i> | - | 35g |
| Perungayam | <i>Ferula assafotida</i> | Resin | 35g |
| Koshtam | <i>Saussura costus</i> | Root | 35g |
| Chukku | <i>Zingiberofficinalis</i> | Rhizome | 35g |

| | | | |
|--------------|------------------------------|-------------|-----|
| Sandhanam | <i>Santalum album</i> | Wood | 35g |
| Devatharam | <i>Cedrus deodara</i> | Wood | 35g |
| Thipili | <i>Piper longum</i> | Fruit | 35g |
| Imbural | <i>Oldenlandia umbellata</i> | Whole plant | 35g |
| Vasambu | <i>Acorus calamus</i> | Bark | 35g |
| Karunjiragam | <i>Nigella sativa</i> | Seed | 35g |
| Maruthondri | <i>Lawsonia inermis</i> | Root | 35g |

PROCESSE OF PREPARATION

The above mentioned drugs are purified properly and they are dried in shade and made into fine powder it separately and mix well.

DOSE

500-800 mg

ADJUVANT

Ghee

INDICATIONS

Vadha diseases (All types of arthritis)

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 n 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.

The 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.

RESULT

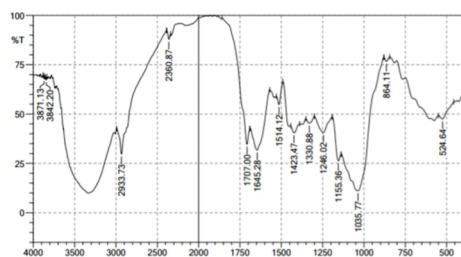


Table 1.2
FTIR data interpretation of Kodiveli chooranam

| Wave number | Vibrational modes of Kodiveli chooranam | Functional groups |
|-------------|---|---------------------|
| 2933.73 | N-H Stretching | Amine salt |
| 1707.00 | C=O Stretching | Conjugated aldehyde |
| 1645.28 | N-H Bending | Amine |
| 1514.12 | N-O Stretching | Nitro compound |
| 1423.47 | C-H Bending | Alkane |
| 1330.88 | S=O Stretching | Sulfone |
| 1246.62 | C-N Stretching | Amine |
| 1155.36 | S=O Stretching | Sulfone |
| 1035.77 | S=O Stretching | Sulfoxide |
| 864.77 | - | Unknown |
| 524.64 | C-L Stretching | Halo compound |

DISCUSSION

In FTIR spectra analysis, this sample *Kodiveli chooranam* exhibit the peak value at 3871.18, 3842.20, 2933.73, 2360.87, 1707.00, 1645.28, 1514.12, 1423.47, 1330.88, 1246.62, 1155.36, 1035.77, 864.11, 524.64 having N-H stretching, C=O stretching, N-H bonding, N-O stretching, C-H bending, S=O stretching, C-N stretching, C-L stretching.

The indicates the presence of some organic functional groups such as Halo compound, Sulfoxide, Sulfone, Amine, Fluro compound, Alkane, Nitro compound, Conjugated aldehyde, Aromatic compound, Amine salt and Carboxylic acid. The presence of sulfoxide, sulfone, amine, sulfonamide are indicates that contains anti-inflammatory, analgesic, antibiotics, antiseptic activities.

CONCLUSION

The instrumental analysis FTIR study for *Kodiveli chooranam* shows the presence of functional groups through the stretch and bends which is responsible for its functional activity. It was to subject for further many studies to validate its efficacy and safety through proper drug standardization procedure. For its potency.

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