

Original Research Article

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## Assessment of function group in Herbal formulation Arugampul Ver Kudeneer through FT-IR, UV-VIS Spectroscopy.

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### Abstract

**Background:** The Arugampul Ver Kudeneer Chooranam is a single herbel drug formulation is used for the treatment of Kalladaippu (Urolithiasis). **Aim:** The present study is the UV- Vis spectroscopy and FTIR analysis of alcoholic extract of Arugampul ver kudeneer, which is herbel drug indicated for the management of Kalladaippu (Urolithiasis) in the textbook Gunapadam mooligai (pg.no.56). **Materials and methods:** Arugampul ver (*Cynodon dactylon*) roots and seeds of white pepper (*Piper nigrum*) were collected from the locality of Tirunelveli, Tamilnadu and were dried under sunshade and ground into coarse powder and then mixed in 4: 1 ratio respectively. UV- Vis spectroscopy can provide quantitative information on the different phytochemicals present in the sample. FTIR, a qualitative analytical technique can be helpful in identification of the functional groups and naming the compounds in the sample. **Result:** The presence of absorption peaks between 200-900nm were confirmed by UV- Vis spectroscopy investigation. The presence of C-I stretching( halo compound), C-H bend (alkynes), C-H out of plane (aromatic), C-O stretching (primary alcohol, secondary alcohol), N-H out of plane (amides), C-H stretch (alkanes), and NH stretch (amides),functional groups was confirmed by FTIR analysis. **Conclusion:** The functional groups present in the Arugampul ver kudeneer have Analgesis, Anti oixitant, Diuretic, Anti nephrolithiatic, activities. This will ensure the efficacy and therapeutic effect of the drug Arugampul ver kudeneer. This study forms the base for the pharmaceutical analysis of the Arugampul ver kudeneer.

**Keywords:** Arugampul ver kudeneer Siddha medicine, UV-Vis spectroscopy, FTIR analysis.

### Introduction

The Siddha system of medicine which belongs to the southern part of India. Siddha system of medicine has a distinctive approach to care

specific aliments and also to build up immunity power of the person being treated against all disease. It has various treatment methods which prescribe both internal and external modes of treatment derived from herbs, metals and animal origin. One such medication is Arugampul ver

kudeneer described in the textbook Gunapadam mooligai vaguppu (pg .no. 56) indicate for kalladaippu (Urolithiasis). It needed to be prepared as a decoction consisting of coarse powder of Arugampul ver (*Cynodon dactylon*) and white pepper (*Piper nigrum*).

Fourier Transform Infra-Red (FTIR) spectroscopy is one of the most extensively used technologies for identifying chemical constituents and elucidating compound structures, and it is required for identifying medicines in many pharmacopeias. FTIR can be used to find out the structure of unknown compositions as well as the intensity of absorption spectra related to molecular compositions or chemical group content. The functional groups of the components are separated based on its peak values. In this article Arugampulver kudeneer is subjected to access the functional group present in the drug with the help of FTIR instrument.

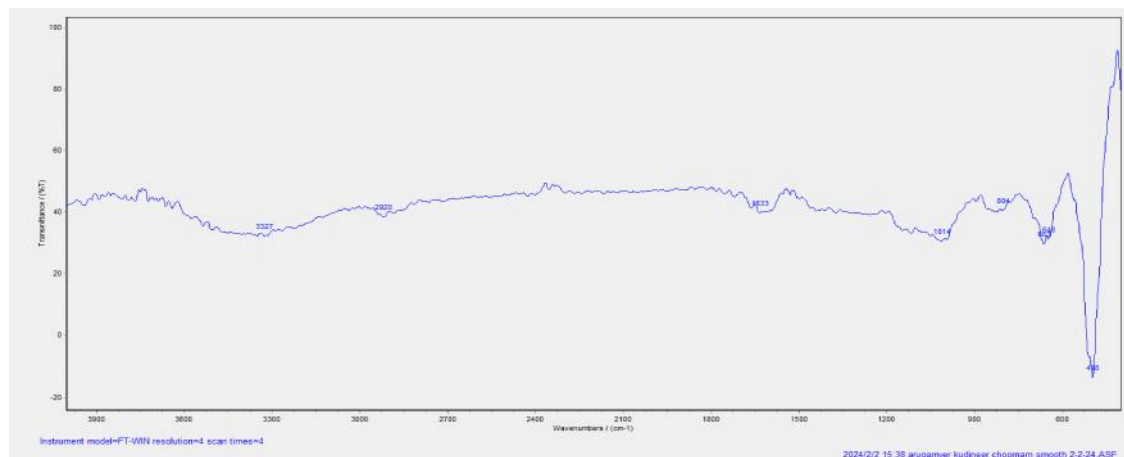
Table 1; Ingredience of Arugampul ver kudeneer

S. No	Tamil Name	Botanical name	Family	Part used	Quantity
1.	Arugampul ver	<i>Cynodon dactylon</i>	Poaceae	Roots	10gm
2.	White pepper	<i>Piper nigrum</i>	Poaceae	Seeds	10

### UV- Vis Spectroscopy:

The alcohol extract of the drug was subjected to Ultra Violet- Visible spectroscopy analysis. The extract was scanned at wave length ranging from 200-900nm using UV/ VIS spectrophotometer (model UV 3120) and the characteristic peaks were detected and recorded.

Figure: 1 FTIR Spectral of Sample Arugampulver kudineer



## Materials and Methods

### Trial drug selection:

The details about the herbel drug formulation of Arugampul ver kudeneer selected from siddha literature Gunapadam mooligai vaguppu, author of Vaithya rathinam Dr. K.S. Murugesu Mudhaliyar.

### Collection of Raw metrials:

The raw metrials (*Cynodon dactylon* Linn. Roots and white pepper *Piper nigrum* Linn. seeds) were collected from the locality of Tirunelvel district. Tamil Nadu. They were authenticated by the experts of Gunapadam department, Government Siddha Medical College & Hospitals, Palayamkottai- 627002. The raw drugs were purified and shade dried and ground into coarse powder and mixed well. It is stored in airtight containers and preserves for future use.

### FTIR Spectroscopy:

The drug was subjected to FT-IR analysis using KBr pressed disk technique on analytical Technologies FT-IR Spectrophotometer (Model: INFRA 3000-50) and the characteristic peaks were detected and recorded.

**Table: 1. FTIR Spectral of Arugampulver kudineer**

S. No	Peak	Characteristic Absorptions (cm <sup>-1</sup> )	Possible Functional Group	Class
1	498	300 – 600	C-I stretching	halo compound
2	648	600 – 900	C–H bend	Alkynes
3	663	600 -900	C–H bend	Alkynes
4	804	600 -900	C – H out of plane	Aromatic
5	1014	900 – 1200	Si-OR	Misc
6	1633	1500 – 1800	N–H out of plane	Amides
7	2920	2700 – 3000	C–H stretch	Alkanes
8	3327	3300 – 3600	NH stretch	Amides

## Results and Discussion

FTIR Study Of Arugampu Ver Kudeneer exhibits the peak value at 498, 648, 663, 804, 1014, 1633, 2920,3327, having C-I Stretching, C- H bend, C- H Out of bend, Si –OR, N-H out of bend, C-H Stretch, NH stretch.

This peak value indicate the presence of some organic functional group such as Halocompounds, Alkynes, Aromatic, amides, alkanes. These functional group have some pharmaceuticals properties and briefly discussed below

### Halo Compounds:

It has to use these molecules for different biological activity in Analgesic activity, Anti – Inflammatory activity, Anti oxidant activity, Anti microbial activity.

### Alkynes:

In organic chemistry, an alkyne is biological activity in Anti-Inflammatory activity, Anti-fungal activity, Anti-depressant activity.

### Aromatic:

Aromatic plants often contain phenolic compounds like flavonoid and polyphenol. These compounds have Anti- oxidant and Anti – Inflammatory activity.

### Amides:

Amides bearing a halogen substitution show aboard spectrum of pharmacological properties including Anti –Inflammatory activity, Anti-oxidant activity, Analgesic activity, their importance lies in their biological activities like Anti spasmodic activity, and diuretic activity.

### Alkanes:

Alkenes are used as starting materials in the synthesis of a wide range of drug. This is due to their chemical reactivity, which allows for various reactions and transformations. For instance, the anti-inflammatory activity, Anti-microbial activity.

## Conclusion

The instrumental analysis FTIR studies the presence of functional group through the stretch and bend which is responsible for its functional activity. In consists activities such as anti-inflammatory, analgesia, antispasmodic, diuretic, and anti-oxidant, further research will be needed to find out the structural analysis of flavonoids compounds by use of different analytical method such as NMR and mass spectrophotometer.

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