

**INTERNATIONAL JOURNAL OF CURRENT RESEARCH IN
CHEMISTRY AND PHARMACEUTICAL SCIENCES**

(p-ISSN: 2348-5213; e-ISSN: 2348-5221)

www.ijrcrps.com

DOI:10.22192/ijrcrps

Coden: IJCROO(USA)

Volume 4, Issue 2 - 2017

Research Article



DOI: <http://dx.doi.org/10.22192/ijrcrps.2017.04.02.001>

**Functional groups identification through FTIR
Characterization of siddha poly herbal formulation
“Muppirandai chooranam”**

Arunachalam K^{*1}, Thiruthani M²

PG Scholar, Department of *Nanju Noolum Maruthuva Neethi Noolum*, Govt.Siddha Medical College,
Palayamkottai, Tamilnadu, India.

HOD, Department of *Nanju Noolum Maruthuva Neethi Noolum*, Govt.Siddha Medical College,
Palayamkottai, Tamilnadu, India.

Corresponding author:

Dr.K.Arunachalam, PG Scholar, Department of *Nanju Noolum Maruthuva Neethi Noolum*,
Govt.Siddha Medical College, Palayamkottai, Tamilnadu, India.

E.mail: drarunachalam91@gmail.com

Abstract

Herbals play a vital role for the treatment of many diseases in humans. Since thousands of years ago herbal medicine and their therapeutic significance were mentioned in ancient texts. Scientific validation and characterization of herbal formulations are essential for gaining the entire knowledge regarding the medicinal principles of concern formulation and their proper use to cure diseases. FTIR characterization was carried out for the siddha herbal formulation “*Muppirandai chooranam*” to identify its functional groups. Some organic functional groups such as alcohol/phenols, alkyl groups, carboxyl groups, amides, aromatic, alkyne, alkane, alkene were identified in poly herbal siddha drug “*Muppirandai chooranam*”. This identified functional groups will help to evaluate the molecular structure regarding research findings for this herbal formulation “*Muppirandai chooranam*” in future for its extensive use.

Keywords: Herbal drug, Pirandai, Siddha drug, FTIR characterization, *Chooranam*

Introduction

Herbal medicines contribute a lot to cure many diseases¹. Herbal medicines are the hope for the people all over the world now to get proper safe remedy from the diseases. Though herbal and poly herbal preparations are being considered as good in nature because of its therapeutic value, characterization is also essential to know the structural and functional property of herbal formulations for wide use. Even for herbal drug scientific validation is needed for safe use before going to administer clinically². FTIR spectrum analysis is very helpful nowadays to identify the presence of functional groups. Characterization of herbal formulations are

essential to identify the lead molecule for further research to elucidate the structure of functional compounds which is reasonable for its therapeutic value. Here one siddha herbal formulation “*Muppirandai Chooranam*” was subjected into FTIR Characterization to create fingerprints for standardization of this drug.

Experimental section:

Details regarding the sample:

“*Muppirandai chooranam*” is a poly herbal formulation which indicated as a drug in siddha sastric text

"Yaekoebu vaithiya chindhamani 700" for the treatment of peptic ulcer, ascites, jaundice, edema, Menorrhagia, Renal calculi, cardiac disorders etc., The ingredients of *Muppirandai chooranam* are five in

number. They are *Cissus quadrangularis* (three sided), *Trachyspermum ammi*, *Piper nigrum*, *Piper longum*, *Zingiber officinale* (dried). The drug was prepared as per the text³.



Fig 1 Image of *Muppirandai chooranam*

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 of *Muppirandai chooranam* in Potassium Bromide (KBr) matrix with scan rate of 5 scan per minute at the resolution 4cm⁻¹ in the wave number region 450-4000cm⁻¹. The samples were

grounded to fine powder using agate mortar 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 conditions⁴. FT- IR Spectra were used to determine the presence of the functional groups and bands in the *Muppirandai chooranam*. The recorded spectrum shows in figure 2.

Results

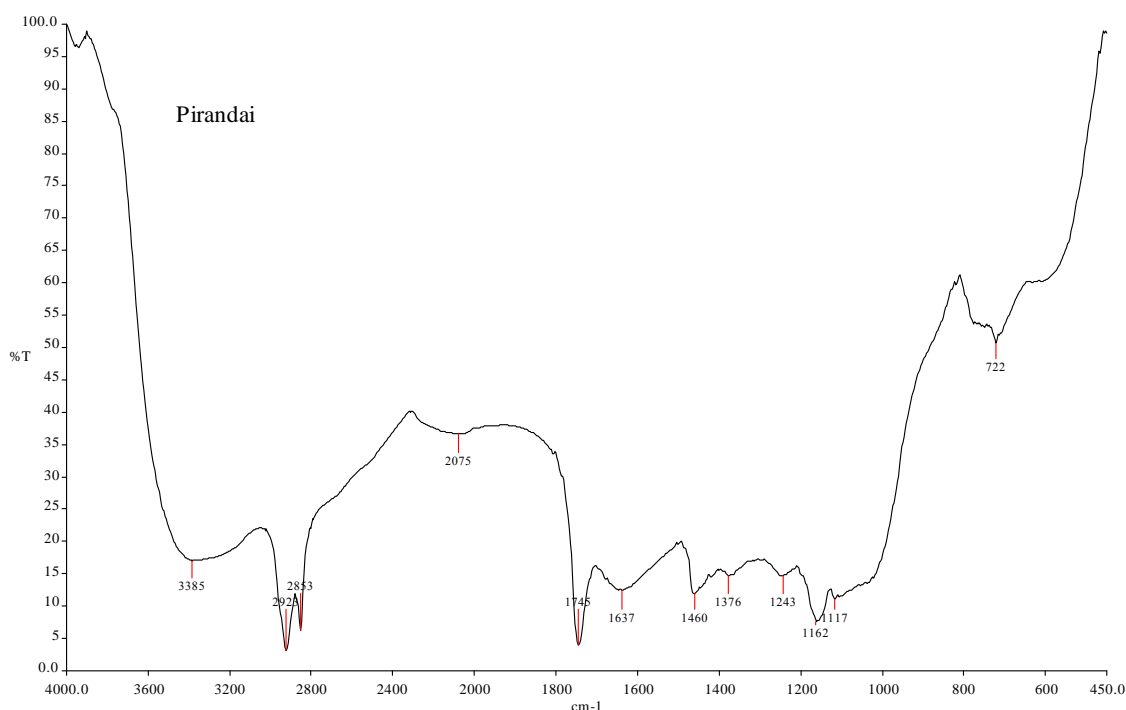


Fig: 2 FTIR Spectra of "*Muppirandai chooranam*"

Wave number (cm-1)	Vibrational modes of “ <i>Muppirandai Chooranam</i> ” in IR region	Functional group
3385	O-H Stretch	Alcohol/Phenol
2923	C-H Stretch	Alkyl
2853	O-H Stretch	Carboxylic Acid
2075	-C=C- Stretch	Alkyne
1745	C=O Stretch	Carboxylic Acid
1637	C=O Stretch	Amide
1460	C=C Stretch	Aromatic
1376	-C-H Bending	Alkane
1243	C-N Stretch	Amine
1162	C-N Stretch	Amine
1117	C-N Stretch	Amine
722	=C-H bending	Alkene

In the FT-IR Spectra analysis, this poly herbal siddha drug “*Muppirandai Chooranam*” sample exhibits the peak value shows in Table 1 at the wave number of 3385, 2923, 2853, 2075, 1745, 1637, 1460, 1376, 1243, 1162, 1117, 722 having O-H Stretch, C-H Stretch, O-H Stretch, -C=C- Stretch, C=O Stretch, C=O Stretch, C=C Stretch, -C-H Bending, C-N Stretch, C-N Stretch, C-N Stretch, =C-H bending. This indicates the presence of some organic functional groups such as alcohol/phenols, alkyl groups, carboxyl groups, amides, aromatic, alkyne, alkane, alkene.

Discussion

The presence of Some organic functional groups such as alcohol/phenols, alkyl groups, carboxyl groups, amides, aromatic, alkyne, alkane, alkene were identified in the poly herbal siddha medicine “*Muppirandai Chooranam*” through FTIR spectrum analysis. There may be the presence of some inorganic compounds in this drug such as potassium, ammonium, sodium and majorly as zinc compounds were confirmed through the frequencies observed at the above mentioned wave number.

Conclusion

These observed data from this FTIR characterization helps to standardize this siddha compound drug “*Muppirandai chooranam*” regarding its functional behaviour. The presence of Zinc compounds majorly and all other compounds like potassium, sodium, ammonium will helps to treat human diseases especially peptic ulcer. The salts of zinc was found that it prevents gastric ulceration in albino rats⁵. Research study found that the presence of aluminium in antacids exhibits ulcer healing property and induce mucosal protection in rats⁶. This identification will become a platform for further research in future regarding the therapeutic uses like anti-ulcer activity of this siddha herbal formulation “*Muppirandai chooranam*”.

Acknowledgments

The authors wish to thank The Vice Chancellor, The Tamilnadu Dr.MGR Medical university, Guindy, Chennai and to Indian Medicine And Homoeopathy Department, Arumbakkam, Chennai and specially thank to The Principal, Government siddha medical college, Palayamkottai and to Mr.S.Krishnasamy, Mrs.K.Revathi, K.Venkateswaran, Dr.K.Rajamaheswari MD(S) and Late.Vaithiyar K.Subramanian R.I.M.P, Pattukkottai for their full support to complete this study.

References

1. Singh SK, Jha SK, Chandharya, Yadava RD, Rai SB, Quality control of herbal medicines by using spectroscopic techniques and multivariate statistical analysis, Pharm Biol, 2010 Feb;48(2):134-41.
2. Rajamaheswari K¹ and Rajasekaran M², Analysis and characterization of the Traditional Siddha formulation Sangu parpam through Fourier Transform Infra-Red Spectroscopy, Journal of Chemical and Pharmaceutical Research, 2016, 8(6):309-311
3. Yaakoebu vaithiya chindhamani 700, *Thaamarai pathipakam*, Third edition, Page.no: 303
4. Northern Illinois University, Chemistry Analytical lab, FT-IR sample preparation. 2007. <http://www.niu.edu/ANALYTICALLAB/ftir/samplepreparation.shtml> (06 Oct 2013)
5. Sonali A. Pimpalkhute, Anand S. Kale, Chaitali S. Bajait, Effect of Zinc Salts on Acid Secretion and Peptic Ulceration in Albino Rats, Indian Medical Gazette, January 2012, Pages 19-22.

6. Konturek SJ, Brzozowski T, Garlicki J, Majka J, Stachura J, Nauert C, Intragastric pH in the gastroprotective and ulcer-healing activity of aluminum-containing antacids. *Digestion*, 1991; 49(3):140-50.

Access this Article in Online	
	Website: www.ijrcrps.com
	Subject: Siddha Medicine
Quick Response Code	
DOI: 10.22192/ijrcrps.2017.04.02.001	

How to cite this article:

Arunachalam K, Thiruthani M. (2017). Functional groups identification through FTIR Characterization of siddha poly herbal formulation “*Muppirandai chooranam*”. *Int. J. Curr. Res. Chem. Pharm. Sci.* 4(2): 1-4.
DOI: <http://dx.doi.org/10.22192/ijrcrps.2017.04.02.001>