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Standardization and characterization of Siddha Herbo-mineral formulation “Visha Kuzhambu” through FTIR.

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Abstract

The toxins are produced by or found among a variety of animal species that includes venoms of snakes, arthropods such as scorpions, spiders, centipedes, stinging insects, ticks etc. Poison management are very important to the people in the rural areas where the absence of hospital near by to treat such cases. The siddha formulation “Visha Kuzhambu” was peculiarly indicated to poisons. This siddha formulation was characterized by FTIR. Some organic compounds like carboxylic acid, ether, amide, amine, alkanes, alkyls, alkenes, alkyl halide, alcohol groups are identified. This identified group, will help to evaluate their molecular structure which is useful in further research findings for this herbo mineral formulation “visha kuzhambu” for its extensive use.

Keywords: Toxins, Poison Management, Siddha Formulation, FTIR Characterization, Kuzhambu

Introduction

Siddha system is a one of the traditional medicine followed in India especially in southern parts. It is incorporated with science and spirituality. Snake bite causes the greatest burden of human suffering, killing 46,000 people each year in India alone and resulting in physical handicap in many survivors. Scorpion stings cause an estimated 3000 deaths per annum worldwide. Visha kuzhambu is a herbo mineral siddha formulatory medicine indicated for poisons. Scientific validation and characterization always lead a major role for determining a drug in various aspects. In current era, evaluating safety and efficacy of every drug before administration in human is essential. In order to develop new drug standardization of the

traditional siddha formulation through characterization using modern equipment is an emergence need to strengthen the field of pharmacology. So, the siddha formulation “Visha kuzhambu” is exposed into characterization using FTIR.

Experimental Section

Details regarding sample

“Visha kuzhambu” is a herbomineral formulated drug purchased from IMCOPS, Tirunelveli indicated for poisons as in the siddha text “Siddha vaithiya thirattu”

There are 14 ingredients in formulation of 'visha kuzhambu'. The ingredients of "visha kuzhambu" are as follows

<i>S No</i>	<i>Tamil Name</i>	<i>English Name</i>	<i>Botanical Name</i>
1	Karunaabi	Indian Aconite	<i>Aconitum napellus</i>
2	Vengaaram	Borax	-
3	Indhuppu	Rock Salt	-
4	Nir Visham	Larkspur	<i>Delphinium denudatum</i>
5	Karunjeeragam	Black Cumin	<i>Nigella sativa</i>
6	Gandhagam	Sulphur	-
7	Rasam	Mercury	-
8	Manosilai	Red Orpiment	-
9	Nervaalam	Purging Croton	<i>Croton tiglium</i>
10	Navachaaram	Ammonium Chloride	
11	Veliparuthi	Dog's Bane White Low Plant	<i>Pergularia daemia</i>
12	Thengaai Paal	Milk Of Coconut	<i>Cocos nucifera</i>
13	Karuppatti	Palm Jaggery	<i>Borassus flabellifer</i>
14	Sirattai Kari	Charcoal Of Coconut Shell	<i>Cocos nucifera</i> (charcoal)

Details regarding FT-IR analysis

FT-IR spectra was recorded at IIT Madras. The Perkin Elmer specturm on Fourier Transform Infra Red (FTIR) spectrometer was used to derive the FTIR

spectra of 'Visha kuzhambu' in Potassium Bromide (KBr) matrix with scan rate of 5 scan per minute at the resolution 4cm^{-1} in the wave number region $450\text{-}4000\text{ cm}^{-1}$ and the emission lines have been indexed by using the standard report values.

Results and Discussion

Peak values of Visha Kuzhambu

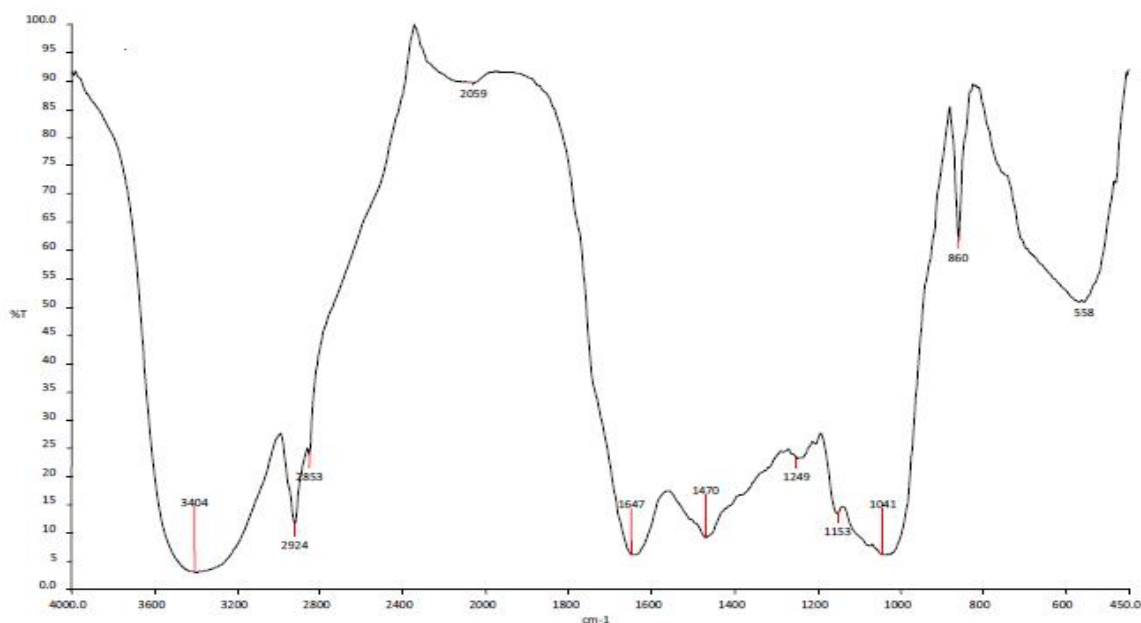


Table – 1

Absorption cm-1	Class of compounds (Intensity)	Assignment
3404	Amide (w-m)	N-H stretch
	Amine (w)	N-H stretch
	Carboxylic acid (S, broad)	O-H stretch
2924	Carboxylic acid (S, broad)	O-H stretch
	Alkanes & Alkyls (s)	C-H stretch
2853	Alkanes & Alkyls (s)	C-H stretch
	Carboxylic acid (S, broad)	O-H stretch
1647	Alkenes (vw-m)	C=C stretch
	Amides (S, broad)	C=O stretch
1470	Alkanes and alkyls (s)	C-H bend
1249	Alcohol (m-s)	C-O stretch
	Ether (m-s)	=C-O-C sym & asy.stretch
1153	Alcohol(m-s)	C-O stretch
1041	Alkyl halide (vs)	C-F stretch
	Alcohol (m-s)	C-O stretch
558	Alkyl halide (s)	C-Br stretch

In the FTIR Spectra analysis, this herbo mineral siddha drug “Visha Kuzhambu” sample exhibits the peak values shown in Table 1 at the wave number of 3404, 2924, 2853, 1647, 1470, 1249, 1153, 1041, 558 having N-H Stretch, O-H Stretch, C-H Stretch, C-O stretch, C-H Bend, C-O-C Symmetric and Asymmetric stretch, C-O Stretch, C-F Stretch, C-Br Stretch. This indicates the presence of Amide, Amine, Carboxyl group, Alkane and Alkyls, Alkenes, Alcohol, Ether, Alkyl halide Functional group.

Conclusion

Effective antivenoms are the mainstream of treatment of envenoming, but their lack of availability is the major concern in many regions of India. This siddha formulation “Visha kuzhambu” is convenient in to carry anywhere and easy administration. Thus this drug should be evaluated for further studies regarding therapeutic uses will bring about further scientific validation of the system in poisoning cases.

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