Academic Sciences International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 5, Issue 3, 2013

Research Article

GC-MS ANALYSIS OF ETHANOLIC EXTRACT OF AERIAL PARTS OF *ALBIZIA PROCERA* (ROXB.) BENTH

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Received: 19 Apr 2013, Revised and Accepted: 02 Jun 2013

ABSTRACT

Objective: The investigation was carried out to determine the chemical constituents present in ethanolic extract of aerial parts of Albizia Procera(Roxb.)Benth.using GC-MS.

Methods: The chemical compositions of ethanolic extract of aerial parts ofAlbizia Procera(Roxb.)Benth.were investigated using Perkin-Elmer Gas Chromatography- Mass Specroscopy.

Results: The GC-MS analysis provided different peaks determining the presence twelve different compounds namely 3-O-Methyl-d-glucose [55.38 %] , 1,10-Decanediol [2.31%], 3-Pentanol, 2,3-dimethyl- [0.26%], Decanoic acid, ethyl ester [1.54%], Phytol [3.33%], 1-Undecyne [0.77%], Didodecyl phthalate [2.56%], Squalene [6.15%], 9,12-Octadecadienoic acid (Z,Z)-,phenylmethyl ester [3.85%], 6,9,12-Octadecatrienoic acid, phenylmethyl ester, (Z,Z,Z)-[4.87%],Benzo[b]thiophene-2-carboxamide,3-chloro-N-(4-methoxyphenyl)-[8.97%], 13-Tetradece-11-yn-1-ol [10.00 %].

Conclusions: The presence of various chemical compounds confirms the application of Albizia Procera(Roxb.)Benth. for various ailments by traditional practitioners.

Keywords: *Albizia procera(Roxb.)Benth.,* Ethanolic extract, *G*C-MS analysis.

INTRODUCTION

Plant is man's friend in survival, giving him food and fuel and medicine from the days beyond drawn of civilization [1]. Plant continue to be a major source of medicine, as they have throughout human history [2].Plants are rich source of secondary metabolites with interesting biological activities. In general these secondary metabolites are an important source with a variety of structural arrangements and properties [4]. Natural products from microbial sources have been the primary source of antibiotics but with the increasing recognition of herbal medicine as an alternative form of health care, the screening of medicinal plants for active compounds has become very significant because they may serve as talented source of bulk antibiotic prototypes [9]. To overcome health problems, the tribes of developing countries primarily on herbal medicines,which are giving beneficial effect to humans[11]. The tribal communities of many countries are still using medicinal plants to cure sickness[12]. Medicinal plant are used by 80% of the world population for health needs. The relationship between man, plants and drugs derived from plants described the history of mankind. Plants are importance source of natural drugs. Traditional system of medicine has become a burning issue of global importance.India is the birth place of renewed system of Indigenous medicine such as siddha, Ayurvedha and Unani. Traditional systems of medicines are prepared from a single plant or combinations of more than one plant. these efficacy depends on the current taxonomic identify of plant species, use of proper plant part and its biological potency which in turn depends upon the presence of required quantity and nature of secondary metabolite in a raw drug. Traditional system of medicine continued to be widely practiced Global estimate indicates that 80% of about 5 billion population cannot afford the products of the western pharmaceutical industry but they offered the uses of traditional medicines which are mainly derived from plant materials. In this modern world, nowadays plant based drags are widely used and many countries contributes 40-50% of their total, health budget in the population of novel drugs (Karthishwaran *et al.,* 2010.,Sati *et al*.,2010)[3].

Albizia Procera(Roxb.)Benth. is a medium sized deciduous tree, sparingly grown in India. This plant is used traditionally in dropsy, pain, rheumatism, convulsions, delirium, and septicaemia[5]. The bark of the plant is used as an astringent in the treatment of diarrhea. Its decoctions are recommended for ulcers as a useful was solution[6]. They are reported to exhibit various pharmacological activities such as CNS activity, cardiotonic activity, lipid-lowering activity, anti-oxidant activity, hepatoprotective activity, hypoglycemic activity, etc [7]. Even through, traditionally, leaves of *Albizia Procera(Roxb.)Benth.* were extensively used for the treatment of variety of wounds, and no scientific data in its support is available. Our literature survey revealed that the chemical components of ethanolic extract of *Albizia Procera (Roxb.)Benth.* was not investigated. Hence the present study ethanolic extract of aerial parts of *Albizia procera(Roxb.)Benth.* was analysed for Gas Chromatography-Mass Spectrometry (GC-MS) to determine the chemical constituents present in it.

MATERIALS AND METHODS

Collection and Identification of Plant materials

The aerial parts of *Albizia procera* were collected from Tuliarai, Thirunelveli District of Tamil Nadu, India. Taxonomic identification was made from Botanical Survey of Medicinal Plants Unit Siddha, Government of India. Palayamkottai. The aerial parts of Albizia *procera,* were dried under shade, segregated, pulverized by a mechanical grinder and passed through a 40 mesh sieve.

Preparation of Extracts

The above powdered materials were successively extracted with ethanol by hot continuous percolation method in Soxhlet apparatus[8]for 24 hrs. The extract was concentrated by using a rotary evaporator and subjected to freeze drying in a lyophilizer till dry powder was obtained.The final residue thus obtained was then subjected to GC-MS analysis.

Gas Chromatography-Mass spectrometry (GC-MS) analysis

GC-MS analysis of ethanolic extract was carried out by following the method of Hema *et al.* [10]. GC-MS analysis were performed using a Perkin-Elmer GC clauses 500 system and Gas Chromatograph interfaced to a mass spectrometer (GC-MS) equipped with a Elite-1, fused silica capillary column (30 m × 0.25 mm ID × 1 µ df, composed of 100% Dimethyl poly siloxane). For GC/MS detection, an electron ionization system with ionizing energy of 70 eV was used. Helium gas (99.999%) was used as the carrier gas at constant flow rate 1

ml/min and an injection volume of 2µl was employed (Split ratio of 10:1) injector temperature 250°C; ion-source temperature 280°C. The oven temperature was programmed from 110°C (isothermal for 2 min) with an increase of 10°C/min to 2000°C, then 5°C/min to 280°C, ending with a 9 min isothermal at 280°C. Mass spectra were taken at 70eV; a scan interval of 0.5 seconds and fragments from 45 to 450 Da. Total GC running time was 36 minutes. The relative % amount of each component was calculated by comparing its average peak area to the total areas, software adopted to handle mass Spectra and chromatograms was a Turbo mass.

Identification of Compounds

Interpretation of mass spectrum of GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more than 62,000 patterns. The spectrum of the known component was compared with the spectrum of the known components stored in the NIST library. The name, molecular weight and structure of the components of the test materials was ascertained.

RESULTS AND DISCUSSION

GC-MS chromatogram of ethanolic extract of aerial parts of Albizia Procera(Roxb.)Benth. Analysis clearly showed the presence of twelve compounds (Tab-1).The active principles with their retention time (RT).molecular formula, molecular weight (MW),and concentration (peak area%) are presented in Table-1.The GC-MS chromatogram of the twelve peak of the compounds detected was shown in Figure1. Chromatogram GC-MS analysis of the ethanolic extract of Albizia Procera(Roxb.)Benth. showed the presence of 12 major peaks and the components corresponding to the peaks were determined as follows. 3-O-Methyl-d-glucose [55.38 %] , 1,10-Decanediol [2.31%], 3-Pentanol, 2,3-dimethyl- [0.26%], Decanoic acid, ethyl ester [1.54%], Phytol [3.33%], 1-Undecyne [0.77%], Didodecyl phthalate [2.56%], Squalene [6.15%], 9,12-Octadecadienoic acid (Z,Z)-,phenylmethyl ester [3.85%], 6,9,12 Octadecatrienoic acid, phenylmethylester, (Z,Z,Z)-[4.87%], Benzo [b]thiophene-2 carboxamide, 3-chloro-N-(4-methoxyphenyl)-[8.97%], 13-Tetradece-11-yn-1-ol [10.00 %].

Table 1: GC-MS Analysis of Ethanolic extract of Aerial parts of Albizia Procera

No.	RT	Name of the compound	Molecular formula	MW	Peak Area %
1	10.34	3-O-Methyl-d-glucose	$C_7H_{14}O_6$	194	55.38
2	11.24	1,10-Decanediol	$C_{10}H_{22}O_2$	174	2.31
3	12.24	3-Pentanol, 2,3-dimethyl-	$C_7H_{16}O$	116	0.26
4	13.01	Decanoic acid, ethyl ester	$C_{12}H_{24}O_2$	200	1.54
5	14.48	Phytol	$C_{20}H_{40}O$	296	3.33
6	15.12	1-Undecyne	$C_{11}H_{20}$	152	0.77
7	20.27	Didodecyl phthalate	$C_{32}H_{54}O_4$	502	2.56
8	24.10	Squalene	$C_{30}H_{50}$	410	6.15
9	26.85	9,12-Octadecadienoic acid (Z,Z)-, phenylmethyl ester	$C_{25}H_{38}O_2$	370	3.85
10	27.64	6,9,12-Octadecatrienoic acid, phenylmethyl ester, (Z,Z,Z)-	$C_{25}H_{36}O_2$	368	4.87
11	31.45	Benzo[b]thiophene-2-carboxamide,3-chloro-N-(4-methoxyphenyl)-	$C_{16}H_{12}ClNO_2S$	317	8.97
12	33.17	13-Tetradece-11-yn-1-ol	$C_{14}H_{24}O$	208	10.00

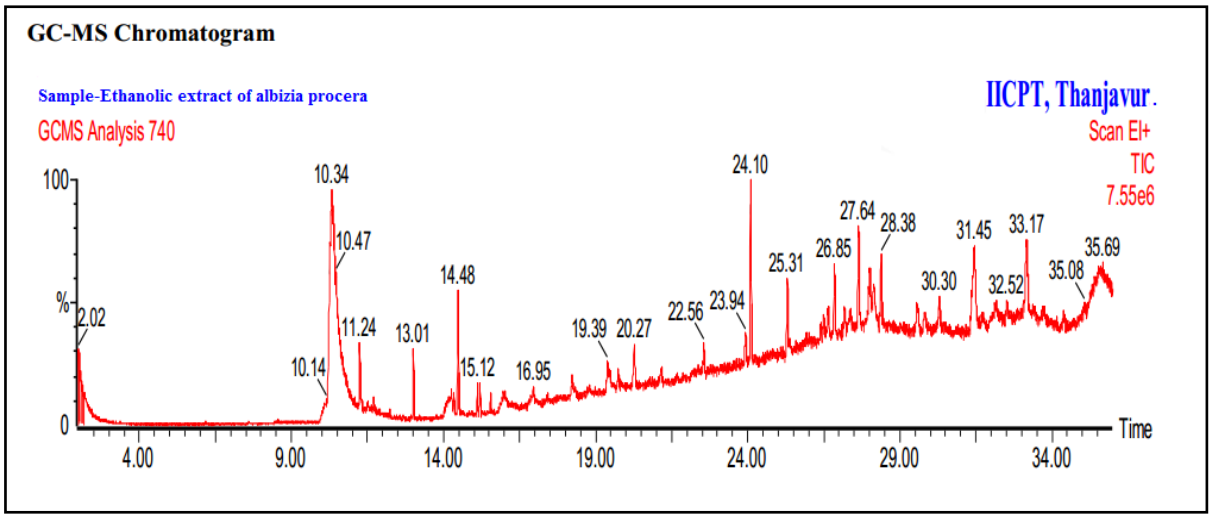

Fig. 1: GC-MS Analysis of Ethanolic extract of Aerial parts of Albizia Procera.

CONCLUSION

In the present study twelve chemical constituents have been identified from ethanolic extract of the aerial parts of *Albizia Procera(Roxb.)Benth*. by Gas Chromatogram-Mass spectrometry (GC-MS) analysis. The presence of various chemical constituents justifies the use of the whole plant for various ailments by traditional practitioners.

ACKNOWLEDGEMENTS

Authors thanks to Dr.S.Kumaravel, Quality Manager, Food Testing Laboratory and the Director, Indian Institute of Crop Processing Technology(IICPT), Thanjavur for providing all the facilities and support to carry out the work.

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