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Research Article

GC-MS ANALYSIS OF PHYTOCONSTITUENTS PRESENT IN ETHANOLIC EXTRACT OF PLANT *COCCULUS PENDULUS* (J.R. & G. FORST.) DIELS

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ABSTRACT

The present study was aimed to investigate phytoconstituents ethanolic extract of whole plant of *Cocculus pendulus* using Gas chromatography and mass spectroscopy (GC-MS). GC-MS analysis carried out by using Perkin Elmer clarus 680 model, calrus 680 (EI) and Column Elite-5MS.The GCMS analysis of the ethanolic extract revealed the presence of 16 phytocomponents with valuable biological activities. The major components are Phytol, Oleic acid, Ethyl Iso-allocholate, 14,14A,14B-Octadecahydro-2 , Stigmasterol, Sulfurous acid, Pentadecyl 2-propyl ester 2-methyl-3-(3-methyl-but-2-enyl)-2-(4 methyl-pent-3-enyl) Stigmasteryl Tosylate, 9,19- cyclolanost-24-en-3-ol,acetate, (3.beta.)-. 4,22-Stigmastadiene-3-one The identification of different compounds in plant *Cocculus pendulus* showed that importance in herbal pharmaceutical importance. Finally concluded that investigation of plant revealed up a new perspective in pharmaceutical research and plant can used for various ailments like anticancer flavouring agents, antioxidant antimicrobial, Hepatoprotective, hypolipidemic activities.

Keywords: Gas chromatography and mass spectroscopy, *Cocculus pendulus,* pharmaceutical research, ethanolic extract

INTRODUCTION

Herbal medicines are predominant ingredient derived from diverse parts of the plants with miscellaneous applications in pharmaceutical and herbal industry[1]. Herbal medicines have become more prominent in the treatment of innumerable diseases due to fashionable belief that green medicine is secured and easily convenient, with less side effects and extension of the therapeutic value by condensing the toxicity and side effects of drugs at the same time it also boost the bioavailability[2-3]

The plant *Cocculus pendulus* (synonym: *Cocculus leaeba*) is a woody climbers and scandent shrub which is commencing unusally in efficient areas, along rocks and in the dry mountainous areas of Venkatadri and Seshadri hills of Chittoor district in Andhra Pradesh this species dispersed in subtropical and tropical countries all over the world to treat discrete abnormalities[4]

In the present study, we evaluated the phytochemical constituents of ethanol extract of *Cocculus pendulus* by gas chromatography and mass spectrometry (GC-MS), to furnish the scientific information to evolve potential phytomedicine[5]

MATERIALS AND METHOD

The plant materials for the current research was integrated from the indigenous source of the region of Tirumala hills. Where as acquire of the plant material, care was taken to interpret the healthy plant. After instant assemblage of the plant material voucher no. 1122 it was authenticated by Botanist T. Madhava Shetty, Tirupati, Sri Venkateswara University Andhra Pradesh. The captured whole plant materials were shade dried for fifteen days and concise the size by using grinding mill into coarse powder. It was conserve in a well closed transparent container, it can be used for forward process[6-7]

The plant *Cocculus pendulus*(1.5kg) was dehydrated and extracted by using three peculiar solvents (Pet.Ether, Ethyl acetate, Hydroalcohol) with succeeding hot continuous percolation in soxhlet apparatus. The extracts were concentrated on a rotary evaporator and furnish to freeze drying in a lyophilizer till dry powder was accomplished[8]

GCMS analysis

GC-MS information

Make	: Perkin Elmer
GC model	: clarus 680
Mass Spectrometer	: clarus 600 (EI)
Software	: TurboMass ver 5.4.2
Library year	: NIST-2008

Inst() ACQUISITION PARAMETERS
Flow Rate: 1 mL/mint
Oven: ramp 10°C/min to 300°C, hold 6 min, Initial temp 60°C for 2 min.
Split=10:1, Inj A auto=260°C, Volume=1 µL.
Total Run Time: 32.00 mint
Carrier Gas=Helium
Column=Elite-5MS (30.0m, 0.25mmID, 250µm df)

MASS CONDITION (EI)
Split=10:1,
Source Temp=240°C,
Solvent Delay=2.00 min,
Transfer Temp=240°C.
Scan: 50 to 600Da

GC-MS analysis

The Clarus 680 GC was passed down in the analysis to engaged a fused silica column, packed with Elite-5MS (30 m × 0.25 mm ID × 250µm df, 5% biphenyl 95% dimethylpolysiloxane) and the components were distinct using Helium as carrier gas at a constant flow of one ml/min. The injector temperature was set at 260°C throughout the chromatographic run. The 1µL of extract sample infuse into the instrument the oven temperature was as follows: 60 °C (2 min); pursue by 300 °C at the rate of 10 °C min−1; and 300 °C, where it was held for six minutes. The mass detector conditions were, transfer line temp 240 °C, ion source temp 240 °C, and ionization mode Electron impact(EI) at 70 eV, a scan time 0.2 sec and scan interval of 0.1 sec. The fragments from 40 to 600 Da. The spectrums of the components were compared with the database of spectrum of known components stored in the GC-MS NIST (2008) library.

Identification of phytocomponents

Analysis on mass-spectrum GC-MS was conducted using the database of National Institute Standard and Technology (NIST) having more than 62,000 patterns. The spectrum of the unknown components was correlated with the spectrum of known components stored in the NIST library. The structure, name and molecular weight of the components of the test materials were confirmed[9]

Table 1: GC-MS analysis of ethanolic extract of Plant *Cocculus Pendulus*

RT	Scan	Height	Area	%Area	% Nom
17.279	2895	24,335,376	3,899,740.2	3.698	11.68
18.950	3229	14,410,578	1,469,873.1	1.394	4.40
24.257	4290	40,293,592	2,082,055.4	1.974	6.24
24.737	4386	20,650,830	3,043,972.5	2.887	9.12
25.948	4628	40,260,388	1,725,745.1	1.636	5.17
26.598	4758	18,362,742	1,430,075.5	1.356	4.28
26.853	4809	13,983,545	1,378,759.1	1.307	4.13
28.424	5123	286,325,408	33,386,818.0	31.660	100.00
28.949	5228	193,807,984	22,096,334.0	20.954	66.18
29.209	5280	72,441,808	10,005,161.0	9.488	29.97
29.644	5367	23,910,596	2,827,529.2	2.681	8.47
31.430	5724	120,608,824	22,107,946.0	20.965	66.22

Table 2: Phytocomponents identified in ethanolic extract of *Cocculus pendulus*

S.No.	RT	Name of the compound	Molecular Formula	Molecular Weight	Peak Area %	Biological activity
1	17.279	Phytol	$C_{20}H_{40}O$	296.53	3.698	Hypocholesterolemic, Antimicrobial, Anticancer, Cancer preventive, Diuretic Anti inflammatory
2	18.950	OCTADECANOIC ACID, ETHYL ESTER	$C_{20}H_{40}O_2$	312	1.394	Hepatoprotective, antihistaminic, hypocholesterolemic, antieczemic, antioxidant and anticancer properties
3	24.257	1-HEXYL-2-NITROCYCLOHEXANE	C12H23O2N	213	1.974	Antimicrobial activity
4	24.737	OLEIC ACID	$C_{18}H_{34}O_2$	282	2.887	Flavourings Agents and surfactants Hypolipidemic
5	25.948	SULFUROUS ACID, PENTADECYL 2-PROPYL ESTER	C18H38O3S	334	1.636	No Activity
6	26.598	4,4,6A,6B,8A,11,11,14B-OCTAMETHYL-1,4,4A,5,6,6A,6B,7,8,8A,9,10,11,12,12A,14,14A,14B-OCTADECAHYDRO-2	C30H48O	424	1.356	No Activity
7	26.853	CHOLESTA-8,24-DIEN-3-OL, 4-METHYL-, (3.BETA.,4.ALPHA.)-	C28H46O	398	1.307	Hypolipidemic

8	28.424	ETHYL ISO-ALLOCHOLATE STIGMASTEROL STIGMASTERYL TOSYLATE 4,22-STIGMASTADIENE-3-ONE	C26H44O5	436	31.660	Anti-Atherogenic Antimicrobial Diuretic Anti-inflammatory Anti-Asthma
9	28.949	SULFUROUS ACID, PENTADECYL 2-PROPYL ESTER	C18H38O3S	334	20.954	No activity
10	29.209	9,19-CYCLOLANOST-24-EN-3-OL, ACETATE, (3.BETA.)-	C32H52O2	468	9.488	No Activity
11	29.644	CIS-Z-.ALPHA.-BISABOLENE EPOXIDE	C15H24O	220	2.681	Essential oils
12	31.430	2-METHYL-3-(3-METHYL-BUT-2-ENYL)-2-(4-METHYL-PENT-3-ENYL)-	C15H26O	222	20.965	No activity

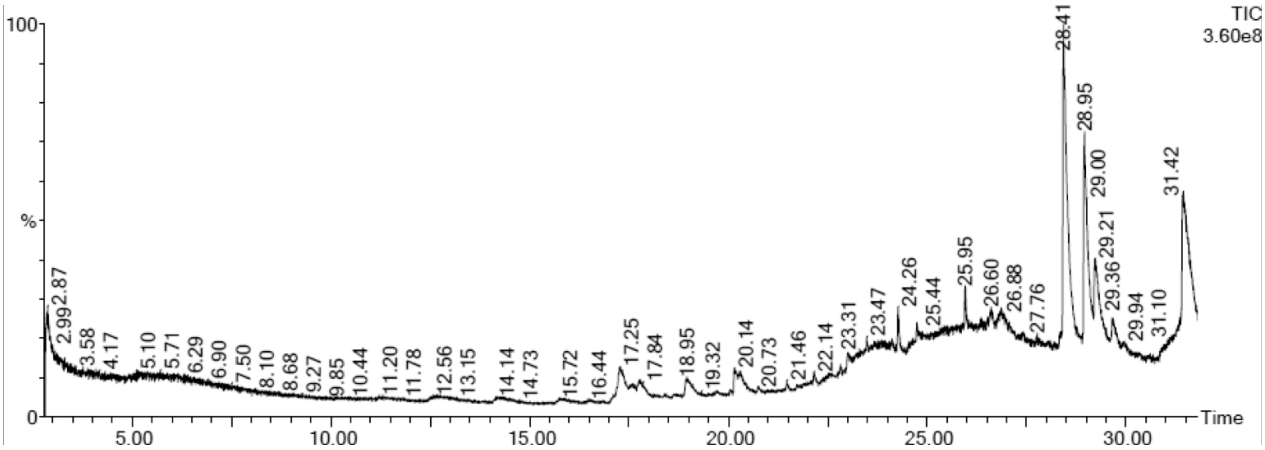

Figure 1: Chromatogram of ethanolic extract of Plant *Cocculus Pendulus*

RESULTS AND DISCUSSION

GC-MS analysis of Ethanolic extract whole pant of *Cocculus pendulus* revealed various compounds with helps of NIST library [10]. Totally 16 compounds were identified which have been listed in Table 2. The most abundant components found in the Ethanolic extract whole pant of *Cocculus pendulus* were Phytol, Oleic acid, Ethyl Iso-allocholate, 4,4,6A,6B,8A,11,11,14B-Octamethyl-1,4,4A,5,6,6A,6B,7,8,8A,9,10,11,12,12A,14,14A, 14B-Octadecahydro-2, Stigmasterol, Sulfurous acid, Pentadecyl 2-propyl ester 2-methyl-3-(3-methylbut- 2-enyl)-2-(4-methyl-pent-3-enyl)-, Stigmasteryl Tosylate, 9,19-cyclolanost-24-en- 3-ol, acetate, (3.beta.)-, 4,22-Stigmastadiene-3-one. Investigation of Ethanolic extract whole plant of *Cocculus pendulus* has added a great deal in the field of phytochemistry with regard to its availability of complex phytochemical components, and hypocholesterolemic, antieczemic, antioxidant and anticancer, Flavourings Agents and Anti-atherogenic activity.

CONCLUSION

In the present exploration, 16 phytoconstituents have been scrutinize by GC-MS analysis. The presence of discrete phytocomponents in ethanolic extract of *Cocculus pendulus* was authenticated.Therefore, it is endorsed as a plant of phytopharmaceutical priority.

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