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GC–MS analysis of ethanolic leaf extract of *Capparis divaricata* Lam.

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ABSTRACT

Planet earth is rich in plant-based medicine. Unfortunately, most of the medicinal plants are not in lime light for their optimal utilisation by the mankind mostly, because of unknown medicinally important phytochemicals present in them. *Capparis divaricata* Lam. is one of the medicinally important plants widely distributed in Arthagiri Hills of Chittoor Dist., Andhra Pradesh. The plant is ethnobotanically used for different ailments especially cancer. In the present study, Gas Chromatography and Mass Spectrometry (GC-MS) analysis of leaf ethanolic extract of *Capparis divaricate* is reported. Octasilaxone, Hexadecamethyl; Acetoxymethyl – Trimethyl; Octamethyl were identified as the major compounds. Further, these compounds may act as anti-cancerous agents by efficient pharmacological studies.

KEYWORDS: *Capparis divaricata*, ethanolic extract, ethnobotanical, GC-MS studies, phytochemicals.

INTRODUCTION

Medicinal plants are having high quantities of compounds of pharmaceutical intermediates useful in the synthetic drug production apart from the presence of neutraceuticals and other secondary metabolites [1]. *Capparis divaricata* Lam. (Capparidaceae) is commonly found in Deccan Peninsular region and also commonly distributed throughout India.[2]. Habit wise *C. divaricata* is a tree with elliptic to lanceolate spiny stipulate leaves and axillary solitary creamy white flowers [3]. Nearly 80 species of *Capparis* genus is known to the world [4]. Species of *Capparis* are showing different pharmacological activities like antirheumatic, tonic, expectorant, antispasmodic analgesic and antipyretic effects etc. due to their bioactive compounds like tannins, alkaloids, flavonoids, and phenolic acids, glycosides, tannins and saponins etc [5], [6].

C. divaricata is medicinally important used in traditional medicine. Leaf extract is used for treating Cancer [7]. Analgesic and antipyretic properties also established due to presence significant compounds [8].

The present work, GC-MS analysis of *C. divaricata* was initiated due to its presence of significant phytochemicals like tannins, alkaloids, flavonoids, and phenolic acids, glycosides, tannins and saponins, and GC-MS studies of ethanolic extracts [9].

MATERIALS AND METHODS

C. divaricata leaf material was collected from Arthagiri hills, a sacred grove of Chittoor Dist., A.P. and herbarium specimen was identified (No. 447) and deposited in the Dept. of Botany, S.V. University, Tirupati. The leaves are shade dried, powdered and then ethanolic extract is prepared through Soxhelt apparatus, followed by filtration, and evaporation by using roto vapour.

GC-MS analysis

The final sample is subjected to GC-MS analysis. The GC-MS acquisition parameters are oven initial temperature is 60°C for 2 minutes, ramp 10°C/min to 300°C, hold 6 minutes, Injection auto is 260°C, split 10:1, Carrier gas is Helium, Solvent delay is 2.50 minutes, transfer temperature is 240°C, source temperature is 240°C, scan is from 40 to 600 Da. Column is 30.0 X 250 mm. [10]

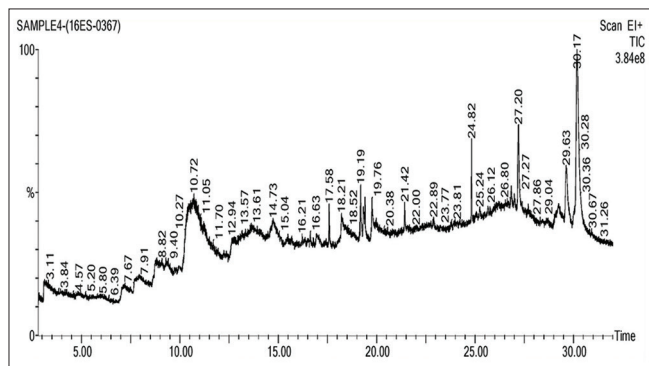
RESULTS AND DISCUSSION

The Ethanolic extract of *C. divaricata* is subjected to Gas Chromatography and Mass Spectroscopy analysis resulted 10 major compounds and identified. The chemical structures of the compounds are also represented. The main compounds that identified are 2-Pyrrolidinemethanol, 1-Methyl-; 3-Azabicyclo[3.3.1] Nonan-9-Ol, 3-Methyl-, Syn-

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Table 1: GC-MS analysis of *Capparis divaricata* ethanolic leaf extract

S.No.	RT	COMPOUND	AREA %
1	10.717	2-PYRROLIDINEMETHANOL, 1-METHYL-	31.431
2	12.772	3-AZABICYCLO[3.3.1]NONAN-9-OL, 3-METHYL-, SYN-	2.303
3	13.613	3-PIPERIDINOL, 1,4-DIMETHYL-, CIS-	16.354
4	14.733	5-ISOXAZOLIDINECARBOXYLIC ACID, 3,5-DIMETHYL-, METHYL ESTER, (3S-TRANS)	8.229
5	18.210	EICOSANOIC ACID, 2,3-BIS[(TRIMETHYLSILYL)OXY]PROPYL ESTER	7.503
6	21.421	1,16-DIBROMOHEXADECANE	2.296
7	27.203	2H-1-BENZOPYRAN-6-OL, 3,4-DIHYDRO-2,5,7,8-TETRAMETHYL-2-(4,8,12-TRIMETHYL	4.231
8	29.239	OCTASILOXANE, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-HEXADECAMETHYL	4.423
9	29.629	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	5.809
10	30.174	2R-ACETOXYMETHYL-1,3,3-TRIMETHYL-4T-(3-METHYL-2-BUTEN-1-YL)-1T-CYCLOH	17.420

**Figure 1: GC MS analysis of Ethanolic Extract of Leaf of *Capparis divaricata* Lam**

3-Piperidinol, 1,4-Dimethyl-, Cis-; 5-Isoxazolidinecarboxylic Acid, 3,5-Dimethyl-, Methyl Ester, (3s-Trans); Eicosanoic Acid, 2,3-Bis[(Trimethylsilyl)Oxy] Propyl Ester; 1,16-Dibromohexadecane; 2h-1-Benzopyran-6-Ol, 3,4-Dihydro-2,5,7,8-Tetramethyl-2-(4,8,12-Trimethyl); Octasil oxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-Hexadecamethyl; 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; 2r-Acetoxyethyl-1,3,3-Trimethyl-4t-(3-Methyl-2-Buten-1-yl)-1t-Cyclohexane. The chromatogram Details of the chromatogram are presented (Table-1: & Figure -1)

Due to the presence of bioactive compounds *C. divaricata* is established as a medicinal plant pharmacologically and in the fields of traditional medicine like Ayurveda and Ethnomedicine [11]. Mainly Ethanolic extract of *C. divaricata* like shows the presence of Octasiloxane, 1,1,3,3,5,5,7,7,9,9,11,11,13,13,15,15-Hexadecamethyl also present in *Ipomea sepiaria* may be responsible for the antimicrobial activity [12]. From the GC-MS analysis results,

it was stated that *Capparis divaricata* contains many bioactive compounds and it justifies the use of the plant against ailments as stated in the traditional systems of medicine. Evaluation of pharmacological activity against anti cancerous is recommended in future studies.

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