GC/MS determination of Bioactive Components of *Bulbophyllum kaitense.* Reichib Leaves Estern Ghats in India.

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Abstract: In the bioactive components of Bulbophyllum kaitense leaves were evaluated by using Perkin- Elmer Gas Chromatography – Mass Spectrometry, The mass spectra of the compounds in the extract was matched with the National Institute of standards and Technology (NIST) library. The GC/MS analysis of ethanol extract of Bulbophyllum kaitense revealed that the existence of glycerin (29.52%) cis-z-a- Bisabolene epoxide (23.96%) 3,3, 4, 4, Tetra- methoxystibene (3.69%) 6,10-Dodecadien – 1- yn – 3 – 01, 3, 7, 11- trim ethyl. (3.29%), 3 – tert lox methyl) hex -5-ene -1, 2 – diol.(3.13%), 2h – Pyran, 2- (7- heptade lynyloxy) tetra hydro (2.63%) 1- Heptatrucitabik. (2.16%) Phenol, 2- methoxy -4- propyl (1.90%), 3- (Adamantan- 2- yliden - methoxymethyl)- Phenol(1.66%) Cyclohexane, 1,3,5- trim ethyl – 2- octadegcy (1.36%) Tetradecanoic acid (1.30%) 3,9 – Epoxy – pregnance – 11a, 20 – diol, 3a – methoxy – 18- [N-methyl –N- (2;4 epoxy ethyl) amino]. (1.10%). The identification of bioactive components in leaf parts of Bulbophyllum kaitense. Rechib by GC-MS is the first report.
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Key words: *Bulbophyllum kaitense,* leaves, Phytochemicals, GC-MS Analysis.

1. Introduction

Orchids are the largest and most diverse group among the angiosperms. They are cultivated for beautiful flowers. They are widely known for their economic importance but less for their medicinal value. Some plants like Dendrobium crumenative, Eulopia campestris, Orchis latifolia, Vanda roxburghii and vanda tessellate have been documented for their medicinal value. Phytochemical alkaloids, triterpenoids, flavonoids and stilbenoids, triterpenoids, flavonoids and stilbenoids. Ashtavarga (group of eight medicinal plants) is vital part of ayuredic formulations like chyvanprasha and four plants viz, Riddhi, Vriddhi, Jivaka and Rishbhaka have been discussed as possible members of family Orchidaceae. Recently there has been tremendous progress in medicinal plants research; however orchids have not been exploited fully for their medicinal application. The article reviews medicinally important orchids along with recent pharmacological investigation. The plants traditional Chinese medicine widely utilizes orchids in medicines. In India work has been carried out on chemical analysis of some medically useful orchids Dendrobium macraei is another important orchid from ayur vedic point of view as it is reported to be source of Jivanti cypripedium Parviflora is widely used as aphrodiaiac and nervine tonic in Western hervalism (Amritpal singh.2009) Recent works have reported isolation of anthocynanis, stikbnoids and triterpenoids, orchids, orchinal, hircinol, cyperpedinl, jibantine, nidemin and lorogcossin Gymopusin in Bulbophyllum gumpous are some important phytochemicals reported from orchids. Vanda tessellate plants leaf juice is used for the treatment of certain an alkyl perulate and B sistosero D-glucoside. The dried whole herb also contains long chain alkanes and alkanol sistosterol. Resin, saponin, tanmins fatly acids, colouring agents. (P.K.Suresh kumar et al 2000).

Bulbophyllum kaitense this as an epiphytic family orchidaceous. Endemic to south India. The plant is not very common in South India. The plant is dense mats on trees and rock. It is native of India occurs in the forest of Estenghats from Kolhi hills. Above 1300m. Sympodial epiphytes with uninodal pseudo bulbs on the rhizome. Terminating the pseudo bulbs. Inflorescence umbellate scape. Pseudo bulbs greenish. Subfusiform not angled 2cm long 4.5 cm part on the zone leaves 9-13cm long flowers with outmentum. The sepal unequal petals shorter then lateral sepals. The plants have been used in the indigenous medicine such as Ayurveda and local traditional medicine practices the leaf is used for the treatment of certain antioxidant, anticancer, anti inflammatory and to sexhormone activity, the leaves property in curring of different diseases this part was selected for the study, hence the present investigation was carried out to determine the possible chemical components from Bulbophyllum kaitense.

2. Materials and Methods

The plant material Bulbophyllum kaitense. Rechib were collected from Eastern ghats of kollihills

in Namakkal District of TamilNadu, India. The plant identification was confirmed by Ret, Dr. S.John Britto, The Director, The Rapinat Herbarium and centre for molecular systematic, St.Joseph's college (Campus) Tiruchirappalli-620020. TamilNadu, India.The plant voucher number: RHT.872.

2. Plant sample Extraction

20 gm powdered plant material is soaked in 50 ml of absolute ethanol over night and then filtered through what mann filter paper No.41 along with 2gm Sodium Sulfate to remove the sediments and traces of water in the filtrate. Before filtering, the filter paper along with Sodium Sulphate is wetted with ethanol the filtrate is then concentrated by bubbling nitrogen gas into the solution and reduces the volume to 1ml the extract contains both polar and non-polar phytocomponents.

3. GC-MS Analysis

GC-MS analysis was carried out on a GC clarus 500 perkin Elmer system comprising a AOC-20i autosampler and gas chromatograph interfaced to a mass spectrometer (GC-MS) instrument employing the following conditions. Column Elite-5MS fused Silica capillary column (30mmX0.25mmX0.25µmdf, composed of 5% Diphenyl / 95% Dimethyl polySiloxane),operating in electron impact mode at 7oev; Helium(99.999%)was used as carrier gas at a constant flow of 0.1ml min and an injection volume of 2 µl was employed (split ratio of 10:1)injector temperature 250°C;lon- source temperature 280°C. The over temperature was programmed from 110°C (isothermal for 2min), with an increase of 10°C/min, to 200°C, then 5°C/min to 280°C, ending with a 9min isothermal at 280°C mass spectra were taken at 70ev; a scan interval of 0.2 seconds and fragments from 40 to 450 Da. Total GC running time is 36 min.

4. Identification of Components

Interpretation 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 compared with the spectrum of the known compounds stored in the NIST library. The name, molecular weight and structure of the components of the test materials were ascertained.

5. Results and Discussion

Eighteen compounds were identified I Bulbophyllum Kaitense Rechib. leaves by Gc-MS analysis the active principles with their retention time (RT), molecular formula molecular weight (MW) and concentration (%) are presented in (table 1 and fig 1) the prevailing compounds were Glycerin(29.52%) cis- I-a Bisabolene eposide (23.96%)3,3,4,4, - tetra methoxy stilbene (3.69%) 6, 10- Dodecadien -1-yn-3-01,3,7,11-trimethyl (3.29%), 3 –tetra-bulyl-4-hydroxy anisole (3.16%) 3- (Benzytoxycynyloxy) tetrahydro (2.63%),1- hepatricotanol. (2.16%) phenol,2-methoxy -4- propyl (1.90%) 3-adamantan – 2-yliden- methoxymethyl) – phenol(1.665) cyclohexane, 1,3,5- trimethyl -2- octadaecyl- (1.361) Tetradecanoic acid (1.305) 3,9- Epoxypregnance -11-a,20-diokl, 3-a-methoxy -18- [N-methyl- N- (2,14-epocythyl) amino] – (1.10%).

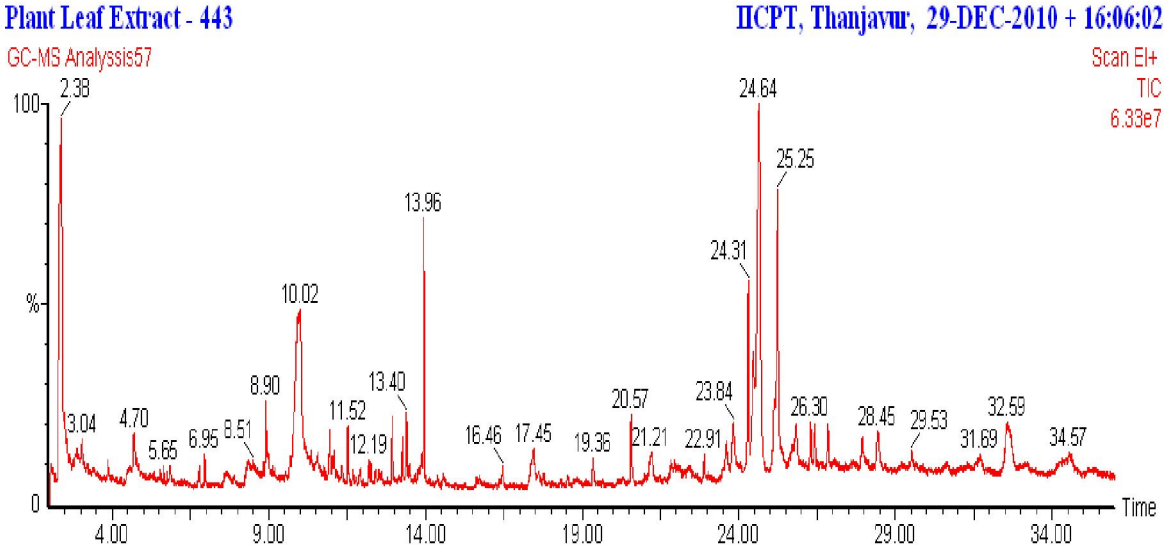

Figure.1 GC-MS Chromatogram of ethanolic extract of Bullbophyllum kaitense. Leaves

Table 1. Activity of phyto-components identified in the ethanolic extracts of Bullbophyllum kaitense Leaves by GC-MS

S.No	RT	Name of the compound	Molecular Formula	MW	Peak Area %	Compound Nature	**Activity
1	2.38	Glycerin	$C_3H_8O_3$	92	29.52	Alcohol	Antimicrobial Preservative
2	4.70	7-Methylenebicyclo[3.2.0]hept-3-en-2-one	C_8H_8O	120	1.83	Ketone compound	No activity reported
3	6.95	Benzaldehyde, 3-hydroxy-4-methoxy-	$C_8H_8O_3$	152	0.63	Isovanillin	Antioxidant Antimicrobial Antiinflammatory Fragrance compound
4	8.90	3-tert-Butyl-4-hydroxyanisole	$C_{11}H_{16}O_2$	180	3.16	Phenolic compound	Antimicrobial Antioxidant
5	12.94	Cyclohexane, 1,3,5-trimethyl-2-octadecyl-	$C_{27}H_{54}$	378	1.36	Aromatic compound	No activity reported
6	13.40	Tetradecanoic acid	$C_{14}H_{28}O_2$	228	1.30	Myristic acid	Antioxidant Cancer preventive Cosmetic Nematicide Lubricant Hypercholesterolemic
7	13.96	Oxacyclotetradeca-4,11-diyne	$C_{13}H_{18}O$	190	4.76	Ether compound	No activity reported
8	17.45	3-(Benzyloxymethyl)hex-5-ene-1,2-diol	$C_{14}H_{20}O_3$	236	3.13	Alcoholic compound	Antimicrobial
9	19.36	Cyclohexanone, 2-(2-nitro-2-propenyl)-	$C_9H_{13}NO_3$	183	0.70	Ketone compound	No activity reported
10	20.57	Phenol, 2-methoxy-4-propyl-	$C_{10}H_{14}O_2$	166	1.90	Phenolic compound	Antimicrobial Antiinflammatory Antioxidant
11	23.84	6,10-Dodecadien-1-yn-3-ol, 3,7,11-trimethyl-	$C_{15}H_{24}O$	220	3.29	Sesquiterpenoid	Antimicrobial Antiinflammatory Anticancer
12	24.31	3,3',4,4'-Tetramethoxystilbene	$C_{18}H_{20}O_4$	300	3.69	Resveratrol analogue	Anticancer compound
13	24.64	cis-Z-à-Bisabolene epoxide	$C_{15}H_{24}O$	220	23.96	Sex pheromone compound	To increase sex hormone activity
14	25.25	S-Indacene-1,7-dione, 2,3,5,6-tetrahydro-3,3,4,5,5,8-hexamethyl-	$C_{18}H_{22}O_2$	270	13.21	Ketone compound	No activity reported
15	25.83	2H-Pyran, 2-(7-heptadecynyloxy)tetrahydro-	$C_{22}H_{40}O_2$	336	2.63	Flavonoid fraction	Antimicrobial Antiinflammatory Antioxidant
16	26.86	3,9-Epoxypregnane-11á,20-diol, 3à-methoxy-18-[N-methyl-N-(2',14-epoxyethyl)amino]-	$C_{25}H_{41}NO_5$	435	1.10	Antiinflammatory steroid	Antimicrobial Antiinflammatory
17	27.94	3-(Adamantan-2-yliden-methoxymethyl)-phenol	$C_{18}H_{22}O_2$	270	1.66	Phenolic compound	Antimicrobial Antioxidant Antiinflammatory
18	28.45	1-Heptatriacotanol	$C_{37}H_{76}O$	536	2.16	Alcoholic compound	Antimicrobial

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