BIO CHEMICAL INVESTIGATION OF B*ulbophyllum kaitense* RECHIB. ROOT BY GC-MS. ESTERN GHATS OF INDIA.

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Abstract: In the present investigation Bulbophyllum kaitense Rechib. root (Orchidaceae) property is curing different diseases to determine the possible thirteen bioactive constitutents in ethanolic extract were identified by Gaschromatography- Mass spectrometry (GC-MS) analysis. Squalene (23.22%) Methtl 3 – bromo-1 – adamantaneacetate (13.03%) Didodecyl phthalate (3.52%) 1,2- Benzenedicarboxylic acid, butyl 2 – methylpropyl ester (3.45%) Nonane, 1-iodo-(2.77%) 3,4- Hexanediol 2.5 – dimethyl –p (2.10%) 3- Buten – 2-01- (1.12A%) 2,4 – Dimethyl Cyclopentanol (1.05%) This is the first report of identification of Bio active constituents from Root parts fo Bulbophyllum Kaitense Rechib. By GC-MS.
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Key words: *Bulbophyllum Kaitense,* GC-MS, Bioactive constituents, Extract.

1. Introduction

Orchids are the largest and most diverse groups 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, Eulophia Campestris, Orchis latifolia, Vanda roxburghil and Vanda tessellate have been documented for their medicinal value. The phytochemically some orchids, triterpenoids, flavonoids and stilbenoids. Ashtavargas group fo eight medicinal plants is vital part of Ayurvedic formulations like chyvanprasha and four platns viz, Riddhi, Vriddhi, Jivaka Rishbhaka Bulbophyllum kaitense have been discussed as possible members of family Orchidacear. Recently there has been tremendous progress in medicinal plant research. The article reviews medicinally important orchids along with recent pharmacological investigations. Recent studies have reported isolation of phenanthrene from Bulbophyllum gymopus. Bulpophyllum kaitense this as an opiphytic family orchidacear. Endemic to south india. The plant is not very common is south India. The plant is dense mats on tress and rock. It is native of India occurs in the forest of Estern ghats from kolli hills above 1300 m. Sympodial epiphytes with uninodal pseudo-bulbs. On the rhizome terminating the Pseudo-bulbs. Inflorescence umbellate not angled 2cm long 4-5 cm past on the zone. Leaves 9-13 cm long flowers with out mentum. Sepal unequal petals shorter then lateral sepals. The plants have been used in the indigenous medicine such as ayurveda and local traditional medicinal practices the root is used for the treatment of certain Anticancer, Antioxidant, Anti fouling Anti- tumor, pesticide and Antimicrobial activity. The root of Bullbophyllum kaitense property is curing of different diseases. Hence the present investigation was carried out to determine the possible bioactive chemical constituents of Bulbophyllum kaitense. by GC-MS.

2. Materials and Methods

The plant material Bulbophyllum kaitense. Rechib were collected from Eastern ghats of Kollihills in Namakkal District of TamilNadu, India. The Botancial identify of the plant 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.

3. Plant sample Extraction

20 gm powdered plant material is soaked in 50ml 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.

4. GC-MS Analysis

GC-MS analysis was carried out on a GC clarus 500 perkin Elmer system comprising a AOC-20i auto sampler 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 2µl 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 9 min 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 36min

5. 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.

6. Results and Discussion

Thirteen bioactive constituents in ethanolic extract were identified in Bulbophyllum Kaitense Rechib. Root by GC-Ms analysis. The active principles with their rentention time (RT). Molecular formula, Molecular weight (MW), and Concentration (%) are presented in (Table 1, and Figure1) squalene (23.22%) Methyl 3- bromo- 1- adamantaneacetate (13.03%) 1, 2 –Benzone dicarboxyic acid, butyl 2-methyl prophyl ester (3.45%) Nonane, 1- iodo- (2.77%) 3, 4 – Hexanediol, 2,5 –dimethyl – (2.10%) 3- Buten -2- 01 (1.12%) 2,4- Dimethyl cyclopentanol (1.05%),

Table1. Activity of Phyto-Components identified in *the ethanolic extract of Bullbophyllum kaitense Root* [GC MS study]

No.	RT	Name of the compound	Molecular Formula	MW	Peak Area %	Nature of compound	**Activity
1.	2.84	Propane, 1,1-diethoxy-	$C_7H_{16}O_2$	132	28.69	Ether compound	No activity reported
2.	12.16	Cyclopentane, (2-methylbutyl)-	$C_{10}H_{20}$	140	4.19	Hydrocarbon	No activity reported
3.	13.08	1,2-Benzenedicarboxylic acid, butyl 2-methylpropyl ester	$C_{16}H_{22}O_4$	278	3.45	Plasticizer compound	Antimicrobial Antifouling
4.	14.91	2-Nonanone, 9-hydroxy-	$C_9H_{18}O_2$	158	1.57	Ketone compound	No activity reported
5.	14.99	2,4-Dimethylcyclopentanol	$C_7H_{14}O$	114	1.05	Aromatic alcoholic compound	Antimicrobial
6.	17.55	3-Buten-2-ol	C_4H_8O	72	1.12	Alcoholic compound	Antimicrobial
7.	20.38	Nonane, 1-iodo-	$C_9H_{19}I$	254	2.77	Iodo compound	Antimicrobial
8.	20.86	Didodecyl phthalate	$C_{32}H_{54}O_4$	502	3.52	Plasticizer compound	Antimicrobial Antifouling
9.	23.17	3,4-Hexanediol, 2,5-dimethyl-	$C_8H_{18}O_2$	146	2.10	Alcoholic compound	Antimicrobial
10.	23.88	Fluorenone, 2,3,4,7-tetramethoxy-	$C_{17}H_{16}O_5$	300	5.54	Ketone compound	No activity reported
11.	24.71	Squalene	$C_{30}H_{50}$	410	23.22	Triterpene	Anticancer Antimicrobial Antioxidant Chemo preventive Pesticide Anti- tumor Sunscreen
12.	31.14	Methyl 3-bromo-1-adamantaneacetate	$C_{13}H_{19}BrO_2$	286	13.03	Bromo compound	Antimicrobial
13.	32.41	1,3-Bis(trimethylsilyl)benzene	$C_{12}H_{22}Si_2$	222	9.74	Aromatic compound	No activity reported

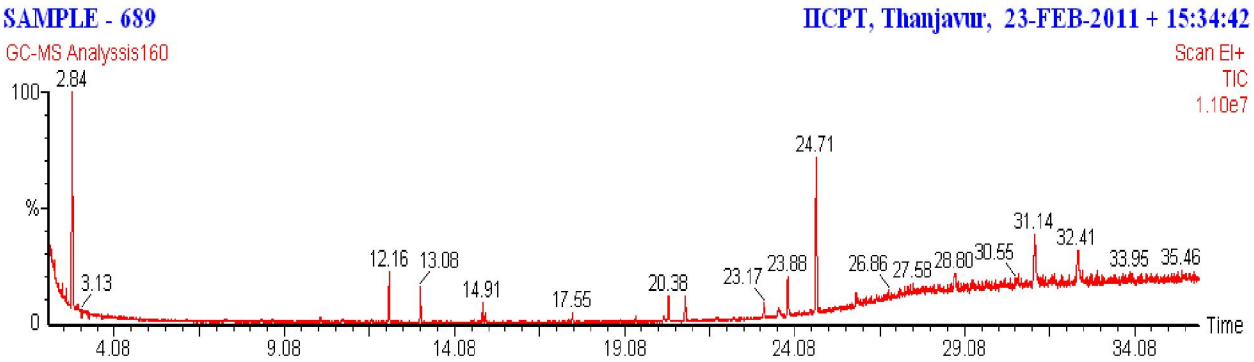

Figure 1. GC-MS Chromatogram of ethanolic extract of Bullbophyllum kaitense. Root

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References

1. S.M. Khasin, P.R.Mohana Rao Medical importance of orchids The Botanica. 49:86-91 (1999).
2. Majumder, P.L.Banerjee, S.Sen,S.Three stilbenoids from the orchid Agrostrophyllum callosum phytochemistry,39(1):58-61 (2006).
3. Ghanaksh, A. and P.Kaushik (1999). Antibacterial effect of Aerides multiflora Roxb. A study invitro, Journ orchid soc. India 13, 65 - 68 (1999).
4. P.L.Majumder, S.Sen, S.Banerjee agrostophyllol and isoagrostophyllol, two novel diastereomeric 9, 10-Dihydrophenan thropyran Derivatives from the orchid Agrostophyllum Callosum. Tetrahedron, 55(21):13(1999).
5. Fossen T, Ovstedal Do Anthocyanins from flowers of orchids Dracula chimacra and Dracula cordobae. Phytochem 63(7):783-7(2003).
6. S.Kumar, A.subramoniam, P.Pushpangadan, Aphrodisiac activity of Vanda tesellata extract in mice. Indian Journal of Pharmacol.32:300-304 (2000).
7. K.Basu et al. Anti-inflammatory principles of vanda roxburghil curr sci. 4-86 (1971).
8. D.N.Prasad, G.achari. A study of anti-arthritic action of vanda roxburghil in albino rats,K.JIndian med assoc. 46(5):234-7(1966).
9. F.Ahmed, et al. Antimicrobial activity of extracts and a Glycoside form vanda roxburghil R.Br. Pakistan Journal of Biological Sciences.5 (2):189-191 (2002).
10. P.L Majumder et al. Structure of moscatibn – a new derivative from orchid Dendrobium moscatunm Indian Chem.Sec B, 26 B1:18(1987).
11. P.L.Majumder, S.Banerjee Revised structure of gymopusin a ring – B.Oxygenated phenanthrene derivative isolated from Bulbophyllum gymopus (J.) Indian J.Chem sec B 28(12):1085-88 (1987).

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