INTERNATIONAL JOURNAL OF INSTITUTIONAL PHARMACY AND LIFE SCIENCES

Life Sciences

Short Communication…!!!

Received; accepted

CHEMICAL COMPOSITION AND ANTIMICROBIAL PROPERTIES OF ESSENTIAL OIL OF *AGONIS FLEXUOSA*

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Keywords:

Agonis flexuosa, essential oil, chemical composition, gc , gc ms, antibacterial, antifungal

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ABSTRACT

The essential oil of *Agonis flexuosa* is extracted by hydro distillation and tested against two bacteria and two fungi showed wide spectrum of antibacterial and antifungal activities. The essential oil showed the presence of myrcene, α- thujene and limonene as the major constituents.

INTRODUCTION

Agonis flexuosa Schau., peppermint willow myrtle, (Myrtaceae) is a small tree mainly confined to Southwestern Australia cultivated in Govt.Botanical Gardens, Ootty, Tamilnadu, India (Bentham and Mueller 1866, Smith,1936 and Saj 2003). The aerial parts collected in November- December and authenticated at the Herbarium of Botany Department, University of Calicut where the voucher specimen (CU 88001) is deposited. Cultivated for fragrant flowers , leaves with peppermint smell , herbal medicine, non toxic, certain dye extracted .Previously isolated classes of constituents include terpenoids, phenolic compounds etc.(Saj 2003).

Essential oil with pale yellow colour (yeild 4.62% of shade dried leaves) obtained on hydro distillation by Clevenger apparatus (Clevenger 1928). 17 constituents and certain trace chemicals were identified on GLC ,of which the main constituents are myrcene (45.84%), α–thujene (12.53%), limonene (9.05%), γ-terpinene (7.66%), germacrene (5.43%), sabinyl acetate (5.38%), α- phellandrene (3.47%) and isocaryophyllene (2.53%), (Table 1)

Antibacterial and antifungal activity by filter paper disk diffusion method (Benson 1990, Deena and Thoppil 2000). The used micro organisms were:

Bacteria: *Bacillus subtilis* and *Staphylococcus aureus.*

Fungi: *Aspergillus niger* and *Rhizopus oryzae*

(pure samples from MTCC gene bank institute of Microbial Technology, Chandigarh,160036,India). Results were reported in Table 2

The essential oil of *Agonis flexuosa* remarkably inhibited the growth of the tested species of bacteria (*Bacillus subtilis* and *Staphylococcus aureus*) and fungi (*Aspergillus niger* and *Rhizopus oryzae*).

Table : 1 Details of the GC analysis of leaf essential oil of *Agonis flexuosa*

No.	Name of the compound	Class	Percentage yield
1	α – thujene	Monoterpenoid	12.53
2	α – phellandrene	’’	3.47
3	myrcene	’’	45.84
4	limonene	’’	9.05
5	α – terpinene	’’	1.84
6	β – terpinene	’’	0.42
7	sabinyl acetate	’’	5.38
8	γ - terpinene	’’	7.66
9	citriodorol	Sesquiterpenoid	0.36
10	α – thujone	Monoterpenoid	0.35
11	methyl eugenol	Phenolic compound	0.32
12	iso eugenol	’’	1.02
13	eugenyl acetate	’’	0.31
14	β – elemene	Sesquiterpenoid	0.42
15	aromadendrene	’’	0.13
16	germacrene	’’	5.43
17	iso caryophyllene	’’	2.53

Table 2 Antimicrobial activity of *Agonis flexuosa* essential oil[a]

Micro organisms	Zone of inhibition(mm)			Standards	
	Dilution of the essential oil (*Agonis flexuosa*) in acetone			Gentamycin Sulphate (40 mg/ml)	Nystatin (50IU)
	1:0	1:1	1:2		
Bacteria					
Bacillus subtilis	36	32	28	51	
Staphylococcus aureus	23	19	17	40	
Fungi					
Aspergillus niger	28	26	21		43
Rhizopus oryzae	32	27	24		48

[a] Zone of inhibition including the diameter of the filter paper disk(16mm); mean value of three independent experiments.

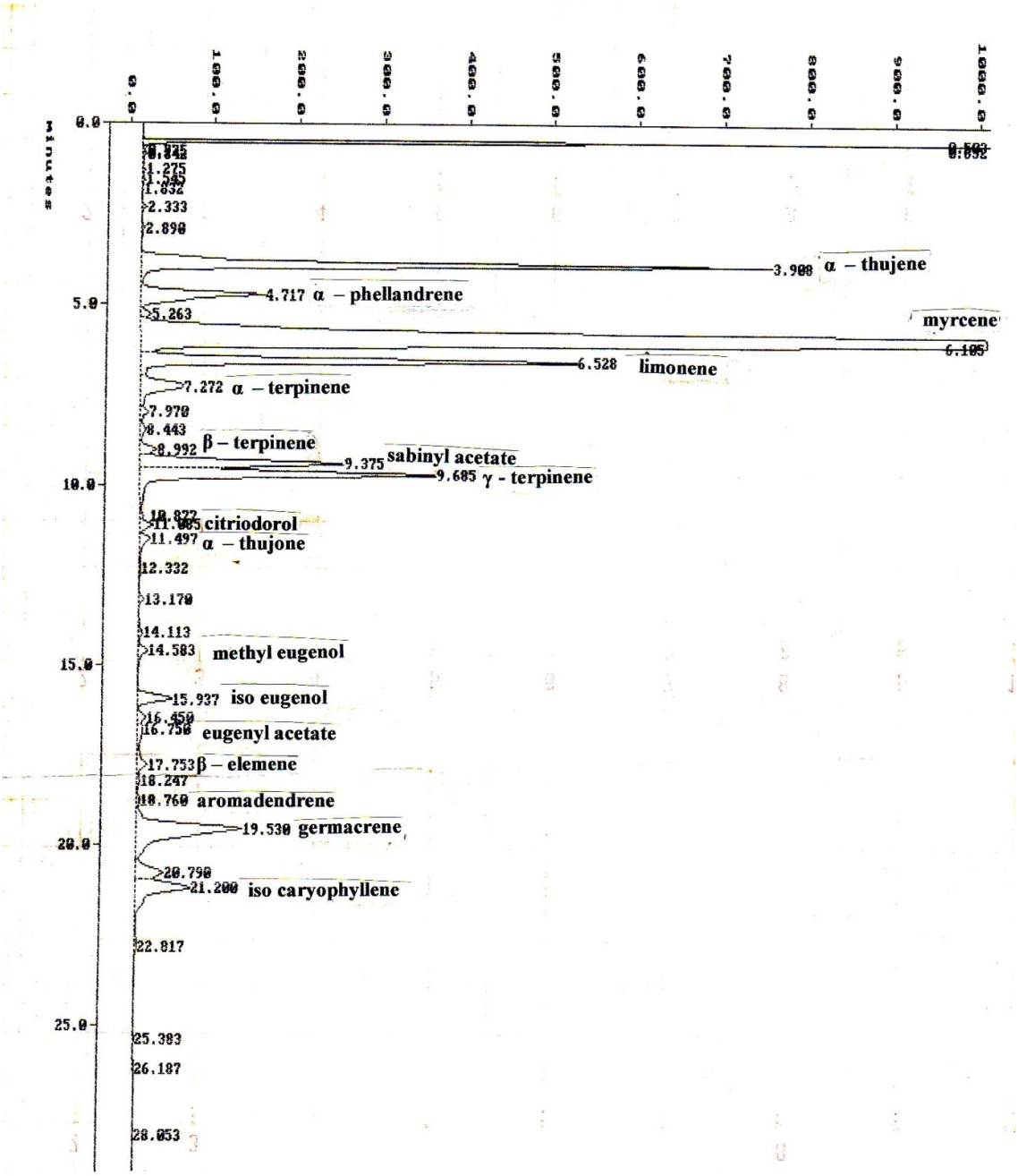

Fig. 134 Gas Liquid Chromatogram of the essential oil of *Agonis flexuosa*

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