

**Analysis of Volatile Constituents of Pakistani
Coleus aromaticus Plant Oil by Capillary Gas
Chromatography/Mass Spectrometry**

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Summary: Thymol 79.6%, has been shown to be the principal compound among fifteen components detected in the essential oil of the Coleus aromaticus plant material.

Introduction

Coleus aromaticus (N.O.Labiatae), a small grassy plant is found or cultivated in Pakistan, Sri Lanka and India [1]. It is used for ornamental purposes. In addition, various parts of the plant find use in medicinal preparations made locally. It smells much like thyme [2]. There is little definitive information available regarding the constituents making up its essential oil [3]. This investigation describes results of the quantitative analysis of the Coleus aromaticus plant oil.

injector. Collected data were processed by Perkin-Elmer sigma 1 data station. 30 m long fused silica capillary, 0.2 mm ID, coated with OV-1701 was the column used for gas chromatography. Other operating conditions were : injection temperature 270°C; detector temperature 260°C; column initial temperature 70°C; initial time 2 min; column final temperature 240°C;

Table-I: Analysis of oil from Coleus aromaticus.

Peak No.	Compound (molecular weight)	% age
1	p-Cymene	1.00
2	1 - Octene-3-ol	0.8
3	Ocimene	0.2
4	Terpinolene	0.7
5	Terpinene-4-ol	2.9
6	Borneol	0.2
7	α -Terpineol	0.1
8	Cumyl Alcohol	0.1
9	Caryophyllene	1.8
10	Thymol	79.6
11	Verbenone	1.3
12	t-Butyl Anisole	1.3
13	Oxygenated Sesquiterpene, $C_{15}H_{24}O$ (220)	0.9
14	-do-	2.1
15	Oxygenated Sesquiterpene, $C_{15}H_{22}O$ (218)	4.5

Experimental

Sample:

Coleus aromaticus plant material consisting of fresh stalks and leaves was obtained from nurseries in Lahore.

Isolation of the Oil:

Dry steam distillation [4] of the plant material gave the oil in about 0.1% yield.

Gas chromatography:

Analysis was performed on a Perkin-Elmer sigma 1B gas chromatograph equipped with a flame ionization detector (FID) and split/splitless

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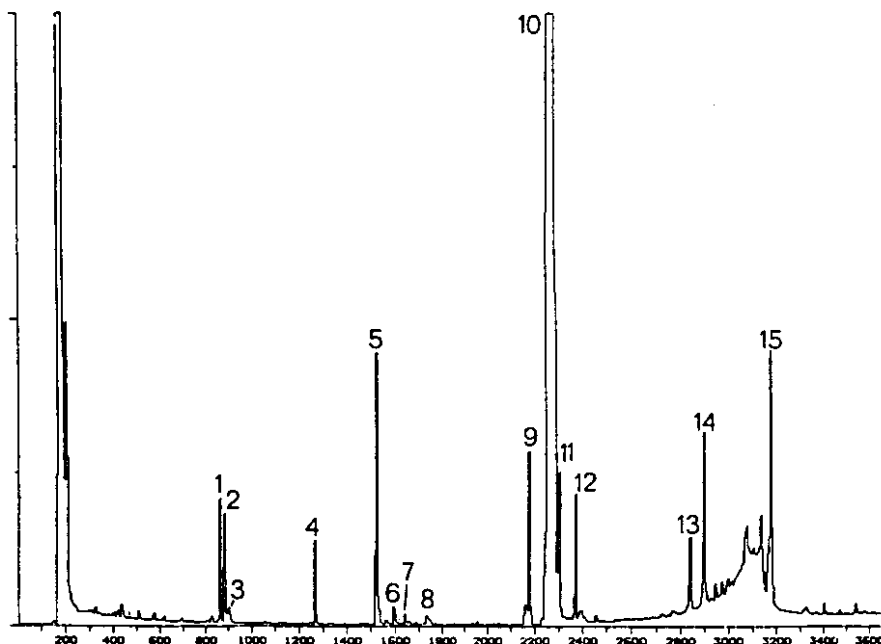


Figure-I: Chromatogram of essential oil of Coleus aromaticus. Numbering corresponds with that in Table I.

program rate 2°C/min; final time 5 min. The carrier gas with flow rate 2 ml/min; split ratio 1:40; volume injected 1 micro-litre; other experimental details are given elsewhere [5].

GC-Mass spectrometry:

Analysis was carried out on a NERMAG R1010 quadrupole instrument. All spectra were obtained at 70 eV in electron impact (EI) mode. Data acquired on a PDP 11/23 computer were processed using SIDAR software.

Results and Discussion

Light yellow essential oil with an aromatic odour showed physicochemical characteristics comparable to those reported in literature [3]. In all fifteen components as listed in Table I were detected representing 97.5% of the oil. Positive identification of the compounds was made by coinjecting authentic samples. Column 1 in Table I gives the peak numbers which correspond

to those given in the chromatogram shown as Figure 1. Thymol was found to be the major component, 79.6%. Among the compounds identified are monoterpene hydrocarbon, sesquiterpene hydrocarbon, oxygenated terpenoids, alcohols, ketone, and phenolics. Three oxygenated sesquiterpenes, with total percentage 7.5% remain unidentified. Several components in the essential oil of Coleus aromaticus plant are being reported for the first time.

References

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