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Short Communication

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E-mail: bjsir07@gmail.com

Essential oil composition from fresh and dried leaves of *C. tamala*

J. U. Chowdhury[1]*, G. C. Shaha[1], F. Begum[1], M. N. H. Bhuiyan[2] and M. Rahim[2]

[1]*BCSIR Laboratories, Dhanmondi, Dhaka-1205, Bangladesh*

[2]*Institute of Food Science and Technology, BCSIR, Dhaka-1205, Bangladesh*

Abstract

The essential oil of *Cinnamomum tamala* Nees grown at laboratory campus of BCSIR, Dhaka was obtained from its fresh and dried leaves by hydrodistillation. The oils were analyzed by GC-MS. The major components in the fresh leaf oil were eugenol (75.28%) followed by spathulenol (10.06%), eugenyl acetate (9.82%) and in the dried leaf oil were eugenol (68.02%), spathulenol (12.73%), methyl eugenol(6.42%), β-humulene (4.35%) & caryophyllene (3.58%).

Keywords: Eugenol; Spathulenol; Methyl Eugenol; β-Humulene; Caryophyllene

Introduction

Cinnamomum tamala Nees (Lauraceae) leaves is the source of 'Tejpata' spice of commerce. It is an evergreen, aromatic tree distributed in tropical and subtropical Himalayas and in North-Eastern districts of Bangladesh. Besides flavoring agent, the leaves are reported to be stimulant, carminative, diuretic, diaphoretic, lactagogue, and hypoglycemic used in the treatment of colic, diarrhoea, anorexia, skin diseases, sore throat, coughs, colds and in scorpion sting (Chopra *et. al.*, 1956; Yusuf *et. al.,*1994). Oil of *C. tamala* is medicinally used as hypoglycaemic and hypolipidemic properties (Sharma *et. al.*, 1996). Various chemical types exist in nature (Sobti and Bordu, 1988; Husain *et. al*., 1988). Essential oil of *C. tamala* leaves native to different geographical locations has been investigated for its composition (Sood *et. al.*, 1979; Gulati, 1982; Nath *et. al.*, 1994; Showkat *et. al.*, 2004). However in Bangladesh there is no report available about the composition of leaf oil of C. tamala.

The leaves of *Cinamomum tamala* were collected from a tree of the laboratory campus of BCSIR, Dhaka. Fresh and dried leaves were subjected to hydrodistillation in Clevenger apparatus. Leaves of the same tree were shade dried for three days. The oil thus obtained was dried over anhydrous sodium sulfate and stored in sealed glass vials under refrigeration prior to analysis.

The analysis was carried out by GC-MS electron impact ionization (EI) method on GCMS-2010 mass spectrometer (Shimadzu), fused silica capillary column, length 30m, internal diameter (ID) 0.25 mm, inner surface coated with Rtx-5, film thickness 0.25 µm, column temperature 40^{o}C to 250^{o}C at the rate of 4^{o}C/min., carrier gas, helium at constant pressure of 50KPa, acquisition parameter full scan, scan range 40-350 amu. The compounds were identified using the NIST 05, NIST 127 and Wiley 7 library data.

Results and discussions

The leaf oils, obtained from fresh and dried leaves of *C. tamala* were analyzed by GC-MS and the components identified presented in Table I. Eugenol (75.28%) followed by spathulenol (10.06%), & eugenol acetate (9.82%) are the major components in the fresh leaf oil. Whereas the dry leaf oil contains eugenol accetate (68.02%), spathulenol (12.73%), methyl eugenol (6.42%), β-humulene (4.35%) & caryophyllene (3.58%) as major constituents. It is observed that dried leaf oil contains methyleugenol, β-humulene, caryophyllene & bulnesol are absent in fresh oil. On the other hand fresh leaves oil contains eugenol acetate & globulol found absent in the dried leaf oil. Showkat *et. al.* (2004) reported the presence of trans-sabinene hydrate (29.8%), β-ocimene (17.6%), germacrene A (11.3%) as major constituents in the oil from India.

*Corresponding author. e-mail: jasimchowdhury3@gmail.com

Table I. Composition of the essential oils from fresh and dried leaves of *C. tamala*

Sl.No.	Compounds	RI	%	
			Fresh	Dried
1	4-Carene	919	0.38	1.35
2	Propanal,2-methyl-3-phenyl	1216	--	0.30
3	Copaene	1221	--	0.28
4	Geranyl vinyl ether	1250	0.23	--
5	Ethylamine,2-(adamantan-1-yl)-1-methyl	1332	--	0.04
6	Methyleugenol	1361	--	6.42
7	Eugenol	1392	75.28	68.02
8	Propenylguaethol	1392	0.47	--
9	Patchoulene	1432	--	0.65
10	Caryophyllene	1494	--	3.58
11	Globulol	1530	1.16	--
12	Spathulenol	1536	10.06	12.73
13	Benzeneethanamine,2,5-dimethoxy-α-methyl	1550	0.55	--
14	Eugenol acetate	1552	9.82	--
15	β-Humulene	1574	--	4.35
16	1,4,7-Cycloundecatriene,1,5,9,9-tetramethyl	1579	--	0.20
17	Bulnesol	1614	--	1.19
18	1-93,5-Dimethyl-1-adamantanoyl)semicarbazide	2208	0.12	--
19	Columbin	2716	1.92	0.42
20	Cycloartenol acetate	2956	--	0.46

Ahmed *et. al.* (2000) reported from Pakstani oil β-caryophyllene (25.3%), linalool (18.4%) & caryophyllene oxide (10.3%) as major constituents. The prominent compounds detected in the present study were not found in the Indian and Pakistani tejpata leaves.

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