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COMPOSITION OF ESSENTIAL OIL AND ANTIMICROBIAL ACTIVITY OF *Cinnamommum travancoricum* FROM INDIA

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The genus *Cinnamomum* comprises several hundred species. These are evergreen trees and shrubs, and most of the species are aromatic [1]. Twelve *Cinnamomum* species are endemic to Peninsular India, of which nine are endemic to Southwestern Ghats, one of the megacenters of endemism in India. C*innamomum travancoricum* (Lauraceae) Gamble is an endemic plant, which is widely distributed in the higher elevation of Southern Western Ghats, South India, and the leaves and barks are used as aroma and flavor additives to food.

Cinnamomum travancoricum (Lauraceae) barks were collected from Inchikuzhi, Karaiyar region, Kalakad Mundanthurai Tiger Reserve Forest, Tirunelveli District, Tamil Nadu, South India. Voucher specimens of the taxa (XCH 18632, 12930) were examined at the St. Xavier′s College (Autonomous), Palayamkottai-627 002, South India.

Fresh barks (250 g) were cut into small pieces and hydrodistilled separately in a Clevenger apparatus (condenser at 5°C) for 5h. The barks of *C. travancoricum* yielded about 1.2 % essential oils, which were analyzed by GC/ MS using a Shimadzu – GC 17. A system with OV-I column (30 m/0.25mm; 0.25 μm film thickness). Mass spectra were taken at 70 eV. Mass range was from *m/z* 35–350 amu. The column temperatures were programmed from 70–250°C at 4°C/min; helium carrier gas (1 mL/min); injection of 1 mL of a 1% solution of whole essential oil in chloroform, split 1:50, scan range 35–350 amu, and scan time 1.0 sec. Identification of components in the oil was based on retention indices (RI) relative to *n*-alkanes and computer matching with the Wiley 275.L library, as well as by comparison of the fragmentation pattern of the mass spectra with data published in the literature [2]. The essential oil constituents and percentage composition of the samples were computed from the GC peak areas (Table 1).

TABLE 1. Chemical Composition of *C. travancoricum* Essential Oil

Compound	RRI	%	Compound	RRI	%
Terpinen-4-ol	1177	1.63	Germacrene D	1641	13.76
β-Cedrene	1417	5.77	Sabinene	1698	1.73
α-Bisabolol	1536	77.12	Total		100

TABLE 2. Antimicrobial Activity of the Essential Oils of *C. travancoricum barks*

Tested organisms	20 μL/disc	Ampicillin (1 mg/mL)	Tested organisms	20 μL/disc	Ampicillin (1 mg/mL)
Bacillus subtilis	22	23	*Escherichia coli*	29	28
Staphylococcus aureus	26	24	*Candida albicans*	16	16
Pseudomonas aeruginosa	29	28	*Aspergillus niger*	21	22

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A total of five compounds were identified, accounting for 1.63 to 77.12% of the constituents of *C. travancoricum* bark essential oil. The major components were found to be α-bisabolol (77.12%) and germacrene D (13.76%). The antimicrobial activity was investigated by both disc diffusion and broth dilution method [3, 4]. The essential oils found to be active at 20 µL/disc against *Bacillus subtilis, Staphylococcus aureus, Pseudomonas aeruginosa, Escherichia coli, Candida albicans*, and *Aspergillus niger* are presented in Table 2. These results suggest that the essential oil of *C. travancoricum* bark is beneficial to human health, having the potential to be used for medical purposes.

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