An Introduction and Various Phytochemical Studies of Cinnamomum Malabatrum: A Brief Review

Mrs. Tirumala Duguta*, Dr. Binoy Varghese cheriyan

INTRODUCTION

Cinnamomum malabatrum is also called as wild cinnamon, country cinnamon and as malabathrum, it belongs to the family Lauraceae, that is endemic to western ghats of India. It can grow up to 15m (49ft) tall. It has aromatic leaves are used for culinary and medicinal purpose. It is thought to have been one of the major sources of the medicinal plant leaves known in classical and medieval times as malabathrum (or malobathrum).

Malabar is traditionally used to denote the west coast of southern India forms the present-day state of Kerala and adjoining areas.

The word mala or Malaya means -a mountain in the languages Tamil and Malayalam and Sanskrit. The word ’malabathrum’ is thought to have been derived from the Sanskrit tamālapattram, literally meaning “dark-tree leaves”. In figure 1 you can see the dark tree leaves of Cinnamomum malabatrum.

TAXONOMY

Scientific classification

Botanical name - Cinnamomum malabatrum

Family - Lauraceae
Genus – Cinnamomum
Species: C.malabatrum
Binomial name: Cinnamomum

SYNONYMS

Cinnamomum malabaricum Lukman
Cinnamomum ochraceum Blume
Cinnamomum rheedii Lukman

RELATED SPECIES

Cassia
Cinnamomumverum
Cinnamomumtamala
Cinnamon
Saigon cinnamon

VERNACULAR NAMES

English - Country Cinnamon
Hindi - JangliDalchini
Marathi – Dalchini\nTamil - Kattu-karuvappattai
Telugu - Adavilavangapatta
Sanskrit – Tejpatra
Persian - Sazaj-i-Hindi
Malayalam - Karuntoli

ABSTRACT

Context: The aim of this research is to find new anticancer drugs from indigenous plant which are potent nontoxic or minimal toxic and to investigate the anticancer activity of Cinnamomum malabatrum plant leaves. Objective: The objective of the present study is to identify selected medicinal plants which possess anticancer activity according to their traditional uses. Materials & Methods: Cinnamomum malabatrum leaves, extraction method. Results and Discussion: Cinnamon (Cinnamomum malabatrum), the eternal tree of medical science belongs to the Lauraceae family. Cinnamon is one in every of the foremost important spices used daily by people everywhere in the world. Cinnamon primarily contains vital oils and other chemical constituents like Cinnamaldehyde, Cinnamic acid, Cinnamate. These constituents are used in different kinds of diseases they also producing cardiovascular disease lowering compound, used as antioxidant, anti-inflammatory, anti-diabetic, antimicrobial, anticancer, lipid-lowering agent, and cardiovascular-disease-lowering compound, cinnamon has also been reported to have activities against cancer, like Parkinson’s and Alzheimer’s disease. Conclusion: This review illustrates the phytochemical studies prospective.
HABITAT

Tropical and the subtropical Himalayas, U.P., Eastern Bengal, the Khasia and so the Jaintia Hills, Burma and western ghats in south India.1-3

MORPHOLOGY

The Cinnamomum Malabatrum is moderate evergreen tree, the bark is smooth or slightly longitudinal cracked brown. Leaves are opposite or sub-opposite, elliptic to oblong, glabrous, Colour is in pink when young, 3-nerved from close above the underside almost to the apex. Flowers are long, pale yellowish and fruits ellipsoid.

METHODOLOGY

The current review was conducted employing an entire and arranged search of the available literature on the medicinal plant cinnamon from 1982 to 2019. The searches were performed using various databases, including Pub Med (http://www.ncbi.nlm.nih.gov/pubmed), Science Direct (http://www.sciencedirect.com/), Scopus (http://www.scopus.com/), Scirus (http://www.scirus.com/) and Google Scholar

TRADITIONAL USES

In addition to being employed as a spice and flavouring agent, cinnamon is additionally added to flavour chewing gums due to its mouth refreshing effects and skill to urge eliminate bad breath. Cinnamon can even improve the health of the colon, thereby reducing the prospect of carcinoma.2

MEDICINAL USES2,4-7

The essential oil obtained from the leaves has been shown to be antibacterial and antifungal. They are carminative. They are used in the treatment of colic and rheumatism. They are sweetish and heating, making them useful in vata, scabies, disease of the anus and rectum, tridosha, piles and heart troubles. An ethanol extraction of the leaves has shown significant anti-inflammatory activity and can be used in the treatment of acute inflammation.8

CHEMICAL CONSTITUENTS9

Cinnamomum malabatrum leaves contain chemical composition of cinnamic aldehyde, eugenol, β-caryophyllene, benzaldehyde, camphor, cadinene, α-terpinol, limonene, geraniol, eugenol acetate, ocimene, γ-terpinene, benzyl cinnamate, β-phellandrene and benzyl acetate. The oil from bark contains cinnamaldehydes (70-85%) as a big constituents. The plant also contain 3,4',5,7- tetra hydroxyl flavones, 3,3',4',5,7-penta hydroxy flavones, kaempferol-3-Osophoroside and quercetin 3-O- rutin.

The constituents of the essential oils of leaf, petiole, shoot and terminal shoot of Cinnamomum malabatrum were determined by GC and GC-MS.9

39 compounds, constituting 95% of the oil, were identified in the leaves. Major chemical constituents of the leaf oil were Caryophyllene (28.6%), Cinnamyl acetate (15.1%), Bicyclogermacrene (14.4%) and Benzyl benzoate (8.5%). 28 compounds, representing 98% and 97% of the oil, were identified in the petioles and shoots, respectively, whereas in the oil of the terminal shoots 34 compounds, accounting for 97%, were identified. The essential oils of the petiols, shoots and terminal shoots were dominated by linalool (77.8-79.4%). In the below figures from figure 2 to figure 14 different chemical constituents structures are given.
Figure 5: Thujene.

Figure 6: Caryophyllene.

Figure 7: Terpinolene.

Figure 8: Alpha terpineol.

Figure 9: Alpha cubebene.

Figure 10: Caryophyllene oxide.

Figure 11: Coumarin.

Yadav et al. studied the antidiarrhoeal activity of oil prepared in polyethylene glycol showed pronounced efficacy as herbal agent in cure of induced dermatomycosis of guinea pigs.

3. Ahmed et al. studied the oil constituents of the species Cinnamomum tamala. The water distilled oil of leaves was analyzed by GC-MS. 63 compounds, representing 94.3% of the oil were identified. Linalool (13.4%), caryophyllene oxide (10.3%) and B- caryophyllene (25.3%) were the foremost constituents.

4. Sorabh KA et al. (2013) reported the anticancer effect of Cinnamomum malabatrum on Daltons Lymphoma Ascites (DLA) cell lines. Aqueous and alcoholic extracts (625 mg/kg and 500 mg/kg b wt) were tested in DLA induced albino male rats. Parameters such as solid tumour volume, peritoneal cell count and body weights were measured. Both the extracts showed a significant reduction in decreasing the solid tumour volume, an increase in peritoneal cell count, and body cell weight. In conclusion, the Cinnamomum malabatrum bark shows good anticancer activity.

5. Pape Gowda et al. studied the structure of a new arabinoxylan from the bark of Cinnamomumumis. Two polysaccharide fractions, water- soluble (24%) composed of xylose and -arabinose, and alkali soluble (15%) composed of -arabinose, -xylose and -glucose, have been isolated from the delignified bark of Cinnamomumumisers. The water soluble fraction gave an arabinoxylan (60%) composed of -arabinose and -xylose in the molar ratio 1.45:1.100. Methylation analysis, together with the isolation of the oligosaccharide 3-0-alpha-xylopyranosyl -arabinose, 4- O- J- xylopyranosyl -xylose, and xylopyranosyl – (1→4)-O-β- xylose. After partial hydrolysis with acid, suggested that the polysaccharide contained a backbone of (1→4) linked B-xylosyl residues each of which was substituted both at O-2 and O-3 with -arabinofuranosyl groups. Very mild hydrolysis with acid gave a degraded polysaccharide, containing 10% of arabinose and 90% of -xylose, which was essentially a (1→) linked B-xylan carrying a limited number of branches at O-2 and O-3. These result together with those from periodate oxidation and Smith degradation studies support the proposed structure.


7. Koppala Narayana Sunil Kumar et al. - evaluated Chemical identity of C. Malabatrum was established in comparison with the official drug. Leaves of C. Malabatrum showed marked distinction in physico-chemical and volatile oil composition which will serve as markers to differentiate it from C. tamala; the official source of tamalapatra. Though Though physic chemical constants will serve the purpose of standardization, volatile oil composition was found to be a diagnostic test for the differentiation of was found to C. Malabatrum from C. Tamala.

REFERENCES


**ABOUT AUTHORS**

Duguta Tirumalai
she is a Research scholar of Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science, Technology and Advanced Studies, Pallavaram, Chennai – 600 117, Tamil Nadu, India. Research Areas of Interest Medicinal Chemistry, Phyto chemistry.
Dr. Binoy Varghese Cheriyan
He is a Professor of Department of Pharmaceutical Chemistry and Analysis, School of Pharmaceutical Sciences, Vels Institute of Science, Technology and Advanced Studies, Pallavaram, Chennai – 600 117, Tamil Nadu, India.