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Comparative Study on Chemical Compositions of Bark and Leaf Essential Oils of Sri Wijeya and Sri Gemunu Cinnamon Varieties (*Cinnamomum Zeylanicum* Blume) Developed in Sri Lanka

Lokuge C.M.^{1*}, Weerathunge H.D.², Abeysekera W.P.K.M.², Premakumara G.A.S.², Chandrathilake G.G.T.¹, Samaraweera D.N.³

¹*Department of Forestry and Environmental Science, University of Sri Jayewardenepura, Nugegoda, Sri Lanka*

²*Herbal Technology Section, Modern Research and Development Complex, Industrial Technology Institute, Malabe, Sri Lanka*

³*National Cinnamon Research and Training Center, Department of Export Agriculture, Thihagoda, Sri Lanka*

**chamimlokuge2212@gmail.com*

Abstract

The bark oil and leaf oil obtained by hydro-distillation of Sri Wijeya and Sri Gemunu varieties of *Cinnamomum zeylanicum* Blume were investigated by Gas chromatography-Flame Ionisation Detector (GC-FID) and Gas chromatography-Mass Spectrometry (GC-MS). The main constituent in both bark oils was cinnamaldehyde, which is 50.2% and 76.1% in Sri Wijeya and Sri Gemunu respectively. Thirty eight compounds were quantified in the bark oil of Sri Wijeya with other major chemical components including eugenol (14.9%), cinnamyl acetate (10.3%), benzyl benzoate (9.8%), β -linalool (2.6%), β -phellandrene (2.4%) and caryophellene (1.7%). The principal other components in bark oil of Sri Gemunu were β -linalool (5.2%), cinnamyl acetate (3.6%), β -phellandrene (3.6%), eugenol (1.9%), α -terpinene (1.4%) and caryophellene (0.7%) among forty one compounds. Twenty nine compounds were identified and quantified in each leaf oil of Sri Wijeya and Sri Gemunu. However, the predominant components in cinnamon leaf oil of Sri Wijeya variety were eugenol (92.4%) and cinnamaldehyde (3.3%). Also the major compounds in leaf oil of Sri Gemunu variety were eugenol (91.0%), caryophellene (2.6%) and linalool (1.6%). Sri Gemunu variety showed the highest mean bark oil yield (3.4%, v/w) and leaf oil yield (2.4%, v/w). Ceylon cinnamon is an aromatic, spice crop having wide applications in perfumery, medicine flavorings and beverages Industries. Ceylon cinnamon bark oil and leaf oil make considerable contribution towards the export income generated from agricultural plant products in Sri Lanka. Hence, high yield and Quality commercial cinnamon cultivars are required. Cinnamon varieties that used to analyze here are still in experimental level. This study confirms that Sri Gemunu variety has much better yield in bark oil as well as leaf oil compare to Sri Wijeya and commercial variety of Ceylon cinnamon. Also high level of cinnamaldehyde in Sri Gemunu cinnamon can leads to high demand and high value cinnamon bark oil in to international market.

Keywords: *Cinnamomum zeylanicum*, Cinnamaldehyde, Eugenol, Bark oil, Leaf oil, GC-MS, GC-FID analysis.