SOLVENT-FREE MICROWAVE EXTRACTION OF ESSENTIAL OIL FROM BARK OF *Cinnamomum zeylanicum* BLUME

RAGN Ranatunga, HDSM Perera, VS Bandara and R Samarasekara[#]

Herbal Technology Section, Industrial Technology Institute, Colombo 07, Sri Lanka

[#]*radhika@iti.lk*

Cinnamomum zeylanicum Blume (Lauraceae), locally known as "Kurundu" is an endemic Cinnamon cultivar to Sri Lanka. Solvent Free Microwave Extraction (SFME) is a green extraction technique presently used to extract essential oils from medicinal plants. In this study the essential oil from bark of *C. zeylanicum* was extracted by using SFME and hydro distillation (HD) techniques. Extracted *C. zeylanicum oil* was characterized by using Gas Chromatography (GC) and Gas Chromatography - Mass Spectrometry (GC-MS) and the constituents in essential oils obtained with the two techniques were compared along with their efficiency. The dried bark of *C. zeylanicum* was subjected to SFME (Microwave power: 700 W for 10 minutes and 500 W for 50 minutes) and HD to extract the essential oil. The essential oils were analyzed using GC and GC-MS. The extraction time for SFME was found to be less (1.0 h) in comparison to that of HD method (6.0 h) to obtain comparable yield of oil (SFME: 1.13% and HD: 1.00%). The GC-MS analysis enabled the identification of 41 compounds from the extracted essential oil using both techniques. Trans-cinnamaldehyde, the predominant compound was detected higher in the oil obtained from SFME (75.37±0.56%) over that of, HD (55.21±0.02%). In the bark oils obtained from both extraction methods, phenylpropanoids were found to be the most abundant group of compounds followed by monoterpenes and sesquiterpenes. The results indicate that SFME is an efficient method for extraction of essential oils over HD in terms of yield, extraction time and trans-cinnamaldehyde content.

Keywords: *Cinnamomum zeylanicum* Blume, Essential oil, Solvent free microwave extraction