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Seed Oil Production of Plantation Grown *Santalum album* due to Selected Host and Agro Ecological Variations

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Abstract

Santalum album grown in Sri Lanka, India, and Indonesia, is subjected to over-exploitation for a long period due to its demand for stem oil. According to the previous findings of *Santalum spicatum*, (Australian sandalwood) seed oil is a rich source of natural and highly stable, acetylenic fatty acid and ximenynic acid. Those are useful as an anti-inflammatory agent to increase dermal micro-circulation, for varicose veins and cellulitis, and for the reduction of hair loss, fat deposition under skin and skin oiliness. All *Santalum* species are hemi-parasitic in nature and therefore they obtain certain nutrients from other species via root connections. According to the literature, sandalwood stem oil content and quality vary within local populations due to different host species. Therefore present study was initiated to identify the variation of plantation grown *S. album* seed oil quality and content due to the variations of host species and agro ecological conditions in Godigamuwa (WM3A), Moratuwawala (DL1A), Tangalle (IL1B) and Maho (IL3) of Sri Lanka. *S. album* seed samples were collected from the trees grown with different host species, viz., *Sesbania grandiflora*, *Leucaena leucocephala* and *Gliricidia sepium* in selected plantations in January 2018. Oil of 5.000 g of kernels of each seed sample was extracted by Soxhlet extraction method and gas chromatography was used to identify constituents present and their abundance. The significance of the oil contents were tested with One way ANOVA. Result showed that there is no any significant difference and in seed oil content due to different agro ecological zones ($F=1.90$, $p=0.149$) or due to different \ host species ($F=0.79$, $p=0.563$). However, seed oil yield of Maho plantation was the highest (0.81 ± 0.13 ml/g) followed by Godigamuwa and Moratuwawala which were similar (0.79 ± 0.17 ml/g and 0.75 ± 0.14 ml/g respectively). The lowest seed oil yield was recorded in Tangalle plantation (0.63 ± 0.23 ml/g). Palmitic acid, steric acid, stearolic acid, xymenic acid were found as key chemical constituents which were also present in Australian Sandalwood seed oil.

Keywords: *Santalum album*, Seed oil, Host species, Oil constituents

Acknowledgement: Central Instrument Facility, Faculty of Applied Sciences, University of Sri Jayewardenepura, Sri Lanka