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Comparative analysis of the essential oils of two L. (Lamiaceae) morphotypes grown in Sri Lanka

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Ocimum sanctum is a therapeutically important widely used medicinal plant in Ayurveda and traditional systems of medicine for the treatment of an array of ailments for centuries all over the world. In the present study, the content and composition of essential oils of aerial parts of two *O. sanctum* morphotypes [purple (V1) and purple green (V2)], which were grown under same soil and climatic conditions were investigated by GC-MS.

Four month old *O. sanctum* aerial parts were hydro-distilled in a Clevenger-type apparatus for 4 h to obtain essential oils of each variety. GC-MS analysis was carried out on Hewlett-Packard 6890 gas chromatograph fitted with a fused silica HP-5MS capillary column (30 m × 0.25 mm; film thickness 0.25 µm). The gas chromatograph was coupled to a Hewlett-Packard 6890 mass selective detector and identification of components of volatile oils was carried out based on retention indices and fragmentation patterns of the mass spectra available in W9N08 Whily version 9 and Nist version 8 libraries. The entire experiment was carried out in triplicate.

The yield of the essential oils obtained from aerial parts of *O. sanctum* V1 and V2 were 0.51 ± 0.02% and 0.45 ± 0.01% (v/w), respectively. Fifty compounds were identified in both essential oils which encompassed over 98% of the oil constituents. The main constituents found in the oil of V1 were methyl eugenol (57.95 ± 0.96%), β-caryophyllene (17.53 ± 0.26%), germacrene D (7.55 ± 0.38%), β-elemene (4.46 ± 0.63%), α-copaene (2.48 ± 0.16%), β-bourbonene (1.84 ± 0.02%) and α-humulene (1.22 ± 0.09%). Methyl eugenol (57.79 ± 0.77%), β-caryophyllene (11.29 ± 0.52%), β-elemene (6.94 ± 0.68%), germacrene D (5.58 ± 0.13%), α- cubebene (2.48 ± 0.81%), β-elemene (1.98 ± 0.06%), β-bourbonene (1.77 ± 0.03%), borneol (1.76 ± 0.15%) and α-humulene (1.08 ± 0.21%) were the major components in the oil extracted from V2. The Germacrene D, β-elemene, α-cubebene, β-bourbonene and borneol contents of V1 and V2 were significantly different ($p < 0.05$). There was no significant difference ($p > 0.05$) in the major constituent (methyl eugenol) between the two morphotypes. Since methyl eugenol is the major constituent of both morphotypes, there is a strong commercial potential for extracting methyl eugenol from *O. sanctum* and using it as an alternative method for fruit fly control in the agriculture sector of Sri Lanka.

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