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Variation of Volatile Oil Production of *Cymbopogon nardus* (L.) Rendle

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Abstract

Essential oil extracted from *Cymbopogon nardus* (L.) Rendle (Citronella) herb which is commonly known as Ceylon Citronella bears the properties of antimicrobial, antiparasitic, anti-inflammatory, antioxidant activities and insect repellence. The average diameter of a mature *C. nardus* clump was about 50 cm containing about 30 bushes. The average green weight of a single bush is 120 g which comprised of 50 g of leaves and 70 g of stems. According to the Indian literature, the volatile oil content of *C. nardus* varies with different geographical regions. Since this plant is cultivated in the dry and intermediate zones of Sri Lanka, the present research is aimed at identifying the impact of geographical variations on its leaf oil contents and its composition to find out the best regions for commercial cultivation establishment. Volatile oil of *C. nardus* was extracted from mature leaves collected from nine different agro-ecological regions of dry, intermediate and wet zones. Samples were collected as bushes from the selected locations. The leaves were first air dried under shade for 24 hours and then 100 g was subjected to hydro distillation for 4 hours to extract oil with three replicates. Particle size of the material was kept to 1 cm with 1:5 water ratio. Extracted oils were transferred to amber colour vials and stored in the refrigerator at 4° C after removing the excess water using anhydrous sodium sulphate. According to the results, the highest leaf oil content (0.96%) was recorded from Vitharandeniya (0.97%) of DL1 followed by Dehiattakandiya (0.95%) of DL1b, Pitabeddara (0.95%) of IL1, Welikanda (0.95%) of DL2b, Katuwana (0.93%) of IL1, Badulla (0.65%) of IM1 and Warakapola (0.63%) of WL3. Morwaka (0.19%) of WL2 and Gampaha (0.15%) of WL1 recorded the lowest oil contents. The above results confirmed that the oil contents are comparatively low in the wet zone of the country. Further studies on chemical constituents and morphological differences are underway to identify the different cultivars for further improvement.

Keywords: *Cymbopogon nardus*, Leaf oil, Oil content, Essential oil, Agro ecological region