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Comparative study on essential oil content and composition of two varieties of Cymbopogan nardus populations in Sri Lanka

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Cymbopogon nardus (L.) Rendle, (Family: Poaceae), popularly known as citronella, is widely distributed in subtropical and tropical regions of the world. The Essential oil (EO) extracted from leaves of *C.nardus* is known as citronella oil and it has been traditionally used as mosquito repellent, fragrance agents in the food commodities, and cosmetics. The quality of the products based on essential oils mainly depend on the presence of compounds in them. Even though there are many available citronella populations growing Sri Lanka, information on their essential oil content and composition is scattered. Therefore, the present study was undertaken to compare oil content and composition of oils extracted from different parts of two citronella populations grown in Sri Lanka. Different parts (leaf, sheath, flower, and roots) of two authenticated, 4 months old, citronella populations (*Heen pangiri* and *Maha pangiri*) were hydro distilled using Clevenger type apparatus for 4 hours and essential oils were separated. Oil composition was determined by GCMS analysis. Data were collected, analyzed, and presented as average of triplicates ± standard error.The results demonstrated that all 4 parts tested contained essential oils. The higher oil content was reported from *Heen pangiri* leaves (1.36 ± 0.32 fresh weight basis) compared with *Maha pangiri* leaves (0.63 ± 0.08 fresh weight basis) respectively. Order of essential oil content was in leaves > sheaths > flowers > roots. Citral was only the common constituent found in both populations. The main constituents present in *Heen pangiri* were geranial acetate, geraniol, camphene and limonene respectively. In contrast,the compounds in essential oil extracted from *Maha pangiri* were geraniol, citral, camphene and limonene. The presence of highest percentage of monoterpenic compounds (83.92%)is reported from *Heen pangiri* leaves and highest sesquiterpenic compounds (83.55%) is identified from *Heen pangiri* roots. According to the results, it could be concluded that the *Heen pangiri* population has a higher essential oil content and higher total geraniol content, which determine the commercial potential of large scale cultivation of *Heen pangiri* as an industry in Sri Lanka.

Keywords: Cymbopogon nardus, essential oil, Poaceae, steam distillation.

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