Comparative Study on the Phytochemical Composition of Medicinally Important Three *Ocimum* Species Available in Sri Lanka.

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Ocimum species have been used as an important medicinal herb, since ancient times but no recorded scientific evidence on morphological variations and phytochemical composition in Sri Lanka. Hence this study was conducted to determine the variation of morphological characteristics, total polyphenol content, antioxidant activity, and essential oil composition of three different *Ocimum* species namely; *Ocimum sanctum*, *Ocimum gratissimum* and *Ocimum americanum*. Healthy and fresh leaves of *Ocimum* plants were collected from Badulla and Welimada area. Morphological differences in leaves, flowers, roots, stem, and seeds of three *Ocimum* species were compared visually and recorded. Methanol extraction was performed using dried and powdered leaf samples and analysed total polyphenol content and antioxidant activity for three species using the Folin Ciocalteu reagent method and standard 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity respectively. Hydro distillation was done to extract essential oils from *Ocimum sanctum* and *Ocimum gratissimum* and analysed by using Gas Chromatography – Mass Spectrometry method. There were differences and similarities between morphological characteristics among three species. The maximum polyphenol content was recorded in *Ocimum americanum* and the minimum was recorded in *Ocimum sanctum*. In determination of antioxidant activity, the highest half maximal inhibitory concentration was recorded in *Ocimum americanum* and the lowest was recorded in *Ocimum gratissimum*. There were differences in essential oil composition between *Ocimum sanctum* and *Ocimum gratissimum*. It can be concluded that there is a significant variation in morphological characteristics and phytochemical composition of three different *Ocimum* species available in Sri Lanka.

Keywords: Antioxidant, Chromatography, Polyphenol, Scavenging, Spectrometry.