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## Investigations of Chemical Compositions and Antioxidant Potential of Essential Oils Extracted from the Leaves of Seven Guava Varieties

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### ABSTRACT

*Psidium guajava* (Guava) is known to have diverse pharmacological properties and numerous varieties/cultivars of guava are widely available in Sri Lanka. However, no research on the chemical compositions (CCs) and antioxidant activities of leaf essential oils (EOs) based on their varieties have been reported so far. Especially, since antioxidants play a vital role in the prevention of degenerative diseases, it is important to explore the antioxidative potential of natural substances. Therefore, the purpose of this study was to investigate the antioxidant activities and the CCs of EOs extracted from the leaves of seven guava varieties grown in Sri Lanka, namely two wild varieties (Getta-pera and Embul-pera), Common-guava, Apple-guava and three introduced varieties (Kanthi, Pubudu, and Costorican). The EOs were obtained by hydro-distillation, and their CCs were investigated using GC-MS analysis. The hydro-distillation yielded EOs of 0.44-0.04 percent (v/w). Each guava EO has a high concentration of pharmacologically significant components, the amount of which varies according to the variety. Nerolidol (7.9-70.2 %), D-Limonene (14.1-30.3 %), (-)-Globulol (7.0-21.0 %), Caryophyllene (1.4-20.4 %), Eucalyptol (0.3-10.6 %),  $\alpha$ -Pinene (0.2-8.0 %),  $\alpha$ -Cubebene (0.7-6.1 %) are some of the prominent compounds found in EOs. Nerolidol levels in Embul-pera were shown to be high. D-Limonene and Eucalyptol were discovered to be rich in Kanthi. Getta-pera has high levels of caryophyllene and  $\alpha$ -Cubebene. (-)-Globulol was discovered to be abundant in Apple-guava, whereas  $\alpha$ -Pinene was abundant in Costorican. Most noteworthy, 28 compounds which include Isodurene, Cadinadiene-1,4, Allylbenzene, E,E-Farnesal, Epiglobulol,  $\beta$ -Maaliene, Espatulenol were suggested for the first time in guava leaves' EOs. EOs have antioxidant capacities ranging from  $329.56 \pm 2.01$  to  $85.70 \pm 2.01$   $\mu$ L Trolox Eq/L where *P. guineense* exhibited stronger antioxidative ability than others. In a conclusion, the CCs and anti-oxidative properties of guava varieties differ based on variety and 28 CCs were detected for the first time in the EO of guava varieties cultivated in Sri Lanka.

**Keywords:** Antioxidants, chemical compositions, essential oil, guava varieties, GC-MS.

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