

# Chemical Composition of the Essential Oils of Variegated Pink-Fleshed Lemon (*Citrus x limon* L. Burm. f.) and their Anti-Inflammatory and Antimicrobial Activities

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The volatile secondary metabolites of essential oils from fruit peel and leaves of variegated pink-fleshed lemon (*Citrus x limon*) were investigated using GLC and GLC-MS (gas-liquid chromatography-mass spectroscopy). Altogether 141 compounds were identified and quantified, accounting for 99.59% and 96.33% of the total hydrodistilled peel and leaf oil, respectively. Limonene occurred in higher amounts in fruit peel (52.73%) than in leaf oil (29.13%). Neral (12.72%), neryl acetate (8.53%), -menth-1-en-7-al (4.63%), -pinene (6.35%), and nerol (4.42%) were the most abundant constituents in leaf oil, whereas -terpinene (9.88%), -pinene (7.67%), geranial (4.44%), and neral (3.64%) dominated in the fruit peel oil. The antioxidant, anti-inflammatory, antitrypanosomal, and antimicrobial activities of the fruit peel essential oil were evaluated. The oil had a low antioxidant activity with an  $IC_{50}$  value of  $(26.66 \pm 2.07)$  mg/ml as compared to the efficient antioxidant ascorbic acid [ $IC_{50}$   $(16.32 \pm 0.16)$   $\mu$ g/ml]. The oil moderately inhibited soybean 5-lipoxygenase (5-LOX) with an  $IC_{50}$  value of  $(32.05 \pm 3.91)$   $\mu$ g/ml and had moderate antitrypanosomal activity [ $IC_{50}$   $(60.90 \pm 0.91)$   $\mu$ g/ml]. In addition, moderate antimicrobial activities were detected against Gram-positive bacteria (*Bacillus subtilis*, *Staphylococcus capitis*, *Micrococcus luteus*), one Gram-negative bacterium (*Pseudomonas fluorescens*), and yeasts (*Saccharomyces cerevisiae*, *Candida parapsilosis*).

**Key words:** Pink Lemon, Essential Oil, Bioactivities