

Chemical Composition and Biological Activities of the Essential Oil of *Mentha suaveolens* Ehrh.

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Hydrodistilled oils of the fresh aerial parts of *Mentha suaveolens* Ehrh. cultivated in Egypt were prepared from samples collected along the four seasons. The percentage yields of these essential oils were 0.50%, 0.52%, 0.60%, and 0.47% of the dry weight for winter, spring, summer, and autumn samples. GC/MS analyses of all samples revealed a qualitative and quantitative variability in the oil composition. The total number of compounds identified was 46 among which 15 were common in all samples. The oxygenated compounds constituted about 45%, 46%, 63%, and 44% of the total composition of the oils for winter, spring, summer, and autumn samples, respectively. Carvone was the major constituent in spring, summer, and autumn samples (about 31%, 56%, and 35%, respectively), while limonene (ca. 26%) was the major constituent of the winter sample followed by carvone (ca. 25%). The essential oil of the highest yield (full-flowering summer sample), with the highest oxygenated constituents and carvone contents, was screened for certain biological activities. It exhibited analgesic and acute anti-inflammatory activities (75% and 82% relative to indomethacin). It also showed a potent *in vivo* antioxidant activity (96% relative to vitamin E). In addition, it exerted moderate cytotoxic, hepatoprotective, and *in vitro* antioxidant activities. Moreover, the oil had a potent antifungal activity against *Candida albicans* (MIC = 4 µg/ml), *Saccharomyces cerevisiae* (MIC = 5.2 µg/ml), and *Aspergillus niger* (MIC = 6.8 µg/ml).

Key words: *Mentha suaveolens*, Essential Oil, Seasonal Variations