



GC-MS Analysis and Biological activity of Essential Oil of
Ocimum L. (Basil) grown in Jordan.

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against *S. aureus*. Anti-oxidant activity was also investigated using different methods. The DPPH free radical scavenging activity showed a moderate EO activity with IC₅₀ value of 75.1±1.6 µg/ml. The IC₅₀ value for ferrous ion-chelating activity and beta-carotene bleaching (BCB) assay were 351.5±7.5 and 450.1±5.5 µg/ml, respectively. Despite the moderate activity shown previously, the EO was unable to scavenge free radical of nitric oxide.

Abstract

The aerial parts of *O. basilicum* L. grown in Jordan were collected and subjected to hydro-distillation for collection of essential oil (EO). The chemical composition of seven samples was studied to evaluate the differences in chemical composition between them during time; from December till September, biological activity of essential oil was also evaluated. Analysis of oil was carried out by GC-MS to identify and estimate the relative percent of chemical constituents. The average yield of hydro-distilled oils was $0.40 \pm 0.15\%$. The results showed that the percentage of compounds that were identified by GC-MS were ranging between 69.2% and 82.9%. The oil constituents were varying mainly quantitatively according the harvesting month, this is due to the change in weather conditions between seasons. All the oil samples shared the same main constituent, which is (E)-methyl cinnamate, ranged from 64.35 to 24.1%. The other constituents were (Z)-methyl cinnamate (0.61-14.04%), linalool (0.01-18.9%), 1,8-cinole (1.0-5.12%), methyl eugenol (0.13-3.3%), (E)-caryophyllene (1.0-1.7%) and γ -muurolene (2.0-4.2%). The percentage of trans-anethol was 16.3% in February which was declined to 13.4% in April. The presence of aromatic phenyl propanoids was distinct, in addition to presence of oxygenated compounds and hydrocarbons belonged to both monoterpenes and sesquiterpenes.

The *in vitro* antibacterial activity of the hydro-distilled oils were evaluated using agar diffusion method against 3 strains of bacteria; one Gram-positive bacteria: *Staphylococcus aureus* (*S. aureus*), two Gram-negative bacteria: *Escherichia coli* (*E. coli*) and *Klebsiella pneumonia* (*K. pneumoniae*). The results showed that EO from aerial parts of plant showed weak activity against *E. coli* and *K. pneumonia* with no activity