

## Phytochemical Composition and Biological Activities of the Vegetal Extracts of Six Aromatic and Medicinal Plants of Algerian Flora and Their Uses in Food and Pharmaceutical Industries

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**Abstract :** The vegetal extracts of aromatic and medicinal plants start to have much of interest like potential sources of natural bioactive molecules. Many features are conferred by the nature of the chemical function of their major constituents (phenol, alcohol, aldehyde, cetone). This biopotential lets us to focalize on the study of three main biological activities, the antioxidant, antibiotic and insecticidal activities of six Algerian aromatic plants in the aim of making in evidence by the chromatographic analysis (CPG and CG/SM) the phytochemical compounds implicating in this effects. The contents of Oxygenated monoterpenes represented the most prominent group of constituents in the majority of plants. However, the  $\alpha$ -Terpineol (28,3%), Carvacrol (47,3%), pulégone (39,5%), Chrysanthenone (27,4%), Thymol 23,9%,  $\gamma$ -Terpinene 23,9% and 2-Undecanone(94%) were the main components. The antioxyding activity of the Essential oils and no-volatils extracts was evaluated in vitro using four tests: inhibition of free radical 2,2-diphenyl-1-picrylhydrazyl (DPPH) and the 2,2-Azino-bis (3-ethylbenzthiazoline-6-sulphonic acid) radical-scavenging activity (ABTS•+), the thiobarbituric acid reactive substances (TBARS) assays and the reducing power. The measures of the IC50 of these natural compounds revealed potent activity (between 254.64-462.76mg.l-1), almost similar to that of BHT, BHA, Tocopherol and Ascorbic acid (126,4-369,1 mg.l-1) and so far than the Trolox one (IC50= 2,82mg.l-1). Furthermore, three ethanol extracts were found to be remarkably effective toward DPPH and ABTS inhibition, compared to chemical antioxidant BHA and BHT (IC =  $9.8 \pm 0.1$  and  $28 \pm 0.7$  mg.l-1, respectively); for reducing power test it has also exhibited high activity. The study on the insecticidal activity effect by contact, inhalation, fecundity and fertility of *Callosobruchus maculatus* and *Tribolium confusum* showed a strong potential biocide reaching 95-100% mortality only after 24 hours. The antibiotic activity of our essential oils were evaluated by a qualitative study (aromatogramme) and quantitative (MIC, MBC and CML) on four bacteria (Gram+ and Gram-) and one strain of pathogenic yeast, the results of these tests showed very interesting action than that induced by the same reference antibiotics (Gentamycin, and Nystatin Ceftatidine) such that the inhibition diameters and MIC values for tested microorganisms were in the range of 23-58 mm and 0.015-0.25%(v/v) respectively.

**Keywords :** aromatic plants, essential oils, no-volatils extracts, bioactive molecules, antioxidant activity, insecticidal activity, antibiotic activity

**Conference Title :** ICPPNP 2014 : International Conference on Pharmacognosy, Phytochemistry and Natural Products

**Conference Location :** Istanbul, Türkiye

**Conference Dates :** November 28-29, 2014