

Antioxidant Activity of the Methanolic Extract and Antimicrobial Activity of the Essential Oil of *Rosmarinus officinalis* L. Grown in Algeria

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Abstract : Objective: To evaluate the antioxidant activity of the methanolic extract along with the antimicrobial activity of the essential oil of the aerial parts of *Rosmarinus officinalis* L. collected in the region of Bejaia (northern center of Algeria). Materials and methods: The polyphenols and flavonoids contents of the methanolic extract were measured. The antioxidant activity was evaluated using two methods: the ABTS method and DPPH assay. The antimicrobial activity was studied by the agar diffusion method against five bacterial strains (Three Gram positive strains and two Gram negative strains) and one fungus. Results: The total polyphenol and flavonoid content was about 43.8 mg gallic acid equivalent per gram (GA Eq/g) and 7.04 mg quercetin equivalent per gram (Q Eq/g), respectively. In the ABTS assay, the rosemary extract has shown an inhibition of 98.02% at the concentration of 500ug/ml with a half maximal inhibitory concentration value (IC50) of 194.92ug/ml. The results of DPPH assay have shown that the rosemary extract has an inhibition of 94.67 % with an IC50 value of 17.87ug/ml, which is lower than that of Butylhydroxyanisol (BHA) about 6.03ug/ml and ascorbic acid about 1.24µg/ml. The yield in essential oil of rosemary obtained by hydrodistillation was 1.42%. Based on the determination of the diameter of inhibition, different antimicrobial activity of the essential oil was revealed against the six tested microbes. *Escherichia coli* from the University Hospital (UH), *Streptococcus aureus* (UH) and *Pseudomonas aeruginosa* ATCC have a minimum inhibitory concentration value (MIC) of 62.5µl/ml. However, *Bacillus* sp (UH) and *Staphylococcus aureus* ATCC have an MIC value of 125µl/ml. The inhibition zone against *Candida* sp was about 24 mm. The aromato grams showed that the essential oil of rosemary exercises an antifungal activity more important than the antibacterial one.

Keywords : *Rosmarinus officinalis* L., maceration, essential oil, antioxidant, antimicrobial activity

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