Antioxidant and Antimicrobial Activities of Phenolic Extracts of Endemic Plants Marrubium deserti and Ammodaucus leucotrichus from Algeria

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Abstract: The Marrubium deserti and Ammodaucus leucotrichus L. an Algerian endemic species, has several applications in traditional medicine for example as a remedy for asthma and diabetes, and was found to have antibacterial properties. In this work, an antioxidant and antimicrobial activities was performed on phenolic extracts of Marrubium deserti, Ammodaucus leucotrichus plants. The yield of methanol maceration of these plants is 12.4% and 20.4% respectively. The content of total polyphenols, flavonoids and anthocyanin in methanolic extracts, are varied between 19.52 ± 1.88 and 59.24 ± 3.45 mg/g gallic acid equivalent, and 2.08 ± 0.29 to 1.46 ± 0.39 mg/g quercetin equivalent, and 0.395 to 1.934μ mol/g respectively. The total chlorophylls and carotenoids were be ranged from 0.149 ± 0.20 to 1.537 ± 0.20 g/ml and 1.537 ± 0.20 to 0.149 ± 0.20 to 0.149 ± 0.20 g/ml, respectively. According to DPPH and FRAP test, the values of EC50 was shows a higher activity of Marrubium deserti than Ammodaucus leucotrichus with EC50 values (DPPH) were $34.53\pm0.71~\mu$ g/mL and 258.60 ± 15.67 mg/ml respectively. The TEAC values of FRAP test was a highly superior for Marrubium deserti 209.66 ± 0.26 mg Equivalent Trolox/g dry residue than Ammodaucus leucotrichus 45.88 ± 2.93 mg Trolox Equivalent/g dry residue. The antimicrobial activity against nine strains of bacteria (Staphylococcus aureus(+), Staphylococcus aureus (-), Bacillus cereus, Enterococcus faecalis, Escherichia coli, Pseudomonas aeruginosa, Klebsiella pneumoniae and Salmonella typhi), was showed that the tested extracts are a significant antibacterial activity with inhibition zones ranging from 10 to 50 mm. the value of CMI were ranging from 0.89 to 14.29 mg/ml.

Keywords: phenolic extract, antioxidant activity, antimicrobial activity, Marrubium deserti, Ammodaucus leucotrichus

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