

Juniperus phoenicea L. Phytochemical Profiling and Exploring their Biological Activities

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Abstract : Algerian Phoenician juniper was selected for this study to isolate phytochemicals and examine certain biological activities. The results of our phytochemical analyses indicated that the decoction extract (AQE-JP) contained substantial levels of phenolics, flavonoids, and condensed tannins, quantified as (374 ± 0.10 mg GA Eq/g DE), (174.02 ± 2.79 mg Qr Eq/DE), and (160.50 ± 3.60 mg Catechin Eq/DE), respectively. Our results indicated that these aqueous decoctions exhibited remarkable antioxidant potential across multiple tests, including the DPPH radical scavenging test ($IC_{50}=71.034 \pm 0.340$ μ g/ml), Ferric Reducing Power assay ($EC_{50}=23.67 \pm 4.86$ μ g/ml), and Total Antioxidant Capacity assay (232.09 ± 1.02 mg Eq AA/g DE). Furthermore, it demonstrated robust antioxidant action by inhibiting the color change of β -carotene in the BCB assay ($IC_{50} = 206.04 \pm 4.36$ μ g/ml). AQE-JP exhibited hemo-compatibility and successfully inhibited egg albumin denaturation ($IC_{50}=0.566 \pm 0.004$ mg/ml). The AQE-JP was evaluated for its antibacterial efficacy against six bacterial strains using the Agar diffusion method. The results indicated that the aqueous decoction (100 mg/ml) was effective, producing inhibition zones measuring 18.3 ± 0.14 , 14.66 ± 0.04 , 15.13 ± 0.04 , 15.03 ± 0.04 , 13.46 ± 0.04 , and 14.86 ± 0.04 for Bacillus subtilis, Listeria innocua, Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus, and Salmonella typhimurium, respectively. The aqueous decoction of Juniperus phoenicea L. leaves is identified as a valuable source of natural antioxidants, anti-inflammatories, and antibacterials. These findings warrant further inquiry to explore the therapeutic potential of this plant.

Keywords : juniperus phoenicea L. antioxidant, anti-inflammatory, antibacterial

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