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Der Pharmacia Lettre

Abstract

[Phenolic profile, antioxidant, and antibacterial effects of ethanol](#)

[and aqueous extracts of Rheum ribes L. roots](#)

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Rheum ribes is a traditional medicinal plant collected from mountainous areas in northern Iraq and widely used to treat various ailments. The antioxidant potential of the ethanol and aqueous root extracts of this plant were examined using 2,2-diphenyl-1-picrylhydrazyl radical scavenging activity assay. The antibacterial activity of the extracts on selected Gram-positive (*Staphylococcus aureus*) and Gram-negative (*Escherichia coli*, *Proteus mirabilis*, and *Pseudomonas aeruginosa*) bacterial species was also evaluated. Ten individual phenolics compounds (emodin, aloe-emodin, physcion, chrysophanol, rhein, chlorogenic acid, gallic acid, tannic acid, kaempferol, and rutin) were also determined by HPLC. The contents of phenolic compounds were significantly higher in ethanol than aqueous root extracts. Both root extracts exhibited antioxidant and antibacterial activities. The highest antioxidant activity (IC₅₀) was found with ethanol extract ($4.73 \pm 0.21 \mu\text{g/mL}$), which was closer to that of vitamin C ($0.046 \pm 0.05 \mu\text{g/mL}$) than that of aqueous extract ($25.62 \pm 0.85 \mu\text{g/mL}$). The ethanol extract of roots exhibited the highest antibacterial effect against all bacterial species assayed compared with standard drugs. The high content of phenolic compounds in *R. ribes* root extracts were found to be responsible for the high antioxidant and antibacterial activities against the tested microorganisms. Thus, *R. ribes* root extracts can be used as a therapeutic agent against various ailments, which confirms the use of this plant in traditional medicine

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