

عنوان مقاله:

Dracocephalum kotschy: Inhibition of critical enzyme relevant to type-2 diabetes, essential oil composition, bactericidal and anti-oxidant activity

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خلاصه مقاله:

Dracocephalum kotschy, an endemic medicinal plant in Iran, has long been used in folk medicine to treat various disorders. This study aimed to determine the phytochemical composition and biological activities of various extracts of leaves and flowers of *D. kotschy*. Different solvent extracts (aqueous solution of acetone, methanol, ethanol, and a mixture of acetone and methanol) of *D. kotschy* were screened for anti-amylase activity, antioxidant potential, and antibacterial efficiency. Antioxidant effects were elucidated by the methods such as DPPH and FRAP. The inhibitory potential of the extracts against amylase, a key enzyme involved in diabetes, was investigated by the Bernfeld method. The total phenolic, flavonoid, and anthocyanin contents of these extracts were also calculated. Disc diffusion, MIC, and MBC methods were applied to analyze the antibacterial efficiency of the extracts. GC-MS analysis of the essential oil was performed. Additionally, the HPLC method was used for the identification and quantification of caffeic acid. Based on antioxidant assays, the acetonic extract showed the highest antioxidant ability, due to its highest total antioxidant content. Also, the acetonic extract strongly inhibited α -amylase activity. Various extracts of *D. kotschy* displayed inhibitory effects against both Gram-positive and Gram-negative bacteria. Analyzing the essential oils of the leaves and flowers of *D. kotschy* by GC-MS led to identifying 6 and 19 compounds, respectively. These results suggest that *D. kotschy* can be considered a promising source of natural antioxidant, antimicrobial, and anti-amylase agents for managing oxidative damage, as well as pharmaceutical and food purposes.

کلمات کلیدی:

Dracocephalum kotschy, Chemical composition, Anti-amylase, Antioxidant, Antibacterial

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