

عنوان مقاله:

Isolation and characterization of p-Coumaric acid from Diospyros melanoxylon medicinal plant endemic to Western Ghats, India

محل انتشار:

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خلاصه مقاله:

Diospyros melanoxylon has been traditionally for the treatment of fistula, relieving arthritis, and skin care. The bark extracts of the plant have been investigated in terms of phytochemical and pharmacological potential, while the leaf extract has been untapped. The present study aimed to evaluate the methanol extract of D. melanoxylon (DMM) in terms of the antibacterial ($P < 0.05$), antioxidant (1.2-1.6-fold) and anti-inflammatory potential (IC₅₀: 80 $\mu\text{g/ml}$). DMM exhibited effective antibacterial, antioxidant, and anti-inflammatory activities at significantly higher levels than the standards. In addition, the HR-LCMS analysis of MBI revealed the presence of a few active compounds, which belonged to the class of phenolic acids and flavonoids at greater concentrations than other phytochemicals ($n > 20$). The activity-guided repeated fractionation of the methanol extract using silica gel column chromatography yielded a single compound, which exhibited remarkable antioxidant activity. The physicochemical and spectroscopic analyses (UV, IR, ¹H NMR, ¹³C NMR, and MS) indicated that the bioactive isolated compound was p-coumaric acid, the effect of which was on par with the standard antioxidant, antibacterial, and anti-inflammatory drugs. Conversely, the effects of the extract on these pharmacological attributes enhanced, confirming that the better activity observed in the study was mainly due to the synergistic effects exerted by various compounds in the extract. In-silico studies have also confirmed the potential of the compound in these effective antibacterial properties. Therefore, the D. melanoxylon .extract is a strong therapeutic agent with pharmacological potential

کلمات کلیدی:

Phenolic acids, p-Coumaric acid, Methanol extract, free radicals, anti-inflammatory

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