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The phytochemical and pharmacological properties of *Cussonia spicata* species

Cussonia spicata, known as umsenge, belongs to the Araliaceae or ginseng family, and species of this family have been associated with numerous pharmacological properties, which include anti-aging, antiapoptotic, anticancer, antidiabetic, anti-inflammatory, antiobesity, antioxidant, antiviral, immunomodulatory, immunostimulant, and neuroprotective. This study aims to investigate the phytochemical constituents and pharmacological properties of *C. spicata* to support its traditional applications. Phytochemical screening, FTIR, antioxidants, and antimicrobial assays, were conducted using standard assays. Whereas the anti-inflammatory and anticancer activity were conducted using MTT assay. The phytochemical analysis showed the presence of flavonoids, terpenoids, steroids, and alkaloids. The FTIR reveals the presence of OH, C-C, PO₃, and C-CL bonds. The methanol extract demonstrated significant antioxidant, antimicrobial, anti-inflammatory, and anticancer activities, followed by ethanol and aqueous extract. All the extracts demonstrated a dose-dependent antioxidant, anti-inflammatory and anticancer activity. These findings suggest that *Cussonia spicata* possesses significant antimicrobial, antioxidant, anti-inflammatory, and analgesic properties, supporting its potential use as a source of natural bioactive compounds for developing therapeutic agents.

Keywords

Cussonia spicata; Pharmacological properties, phytochemical properties; Antioxidant; Antimicrobial; Anti-inflammatory

Biography

Mzuyanda Vela is an experienced Research Outputs Manager at the University of Fort Hare with over five years of expertise in research administration, currently pursuing a PhD. Skilled in managing scholarly publications, research data, and institutional outputs, Mzuyanda has contributed to developing systems that support accurate reporting, compliance, and strategic decision-making. Passionate about research excellence and innovation, he collaborates with academics, stakeholders, and policymakers to strengthen accurate research outputs reporting. With a strong background in research management, he is committed to advancing the number of research outputs produced