Antimicrobial and Antifungal Activity of Standardized Omani Frankincense Extract Powder

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ABSTRACT

Frankincense, the aromatic resin obtained from *Boswellia* species, has been traditionally valued for its medicinal and antimicrobial properties. A standardized extract of *Boswellia sacra* (Omani frankincense) was evaluated for its antimicrobial and antifungal properties. The chemical composition of the powder was analyzed using HPLC/MS, revealing a rich profile of bioactive triterpenoids including boswellic acids (AKBA, KBA, α-BA, β-BA, α-ABA, and β-ABA) and lupeolic acids (LA and ALA). Among these, β-ABA (86 µg/mg) and AKBA (50 µg/mg) were the most abundant. Antibacterial activity was assessed using minimum inhibitory concentration (MIC) assays, showing moderate inhibition of *Escherichia coli* (MIC: 512 mg/mL) and *Staphylococcus aureus* (MIC: 1024 mg/mL). Antifungal testing revealed stronger effects, with 38% inhibition of *Fusarium* sp. at 0.25 mg/mL after 5 days of incubation. However, the inhibition of *Alternaria alternata* at 0.5 mg/mL was 45%. These results support the potential of this standardized extract as a natural antimicrobial and antifungal agent and underscore the value of Omani frankincense in traditional and modern therapeutics.

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