

Investigating Selected Traditional African Medicinal Plants for Anti-fibrotic Potential: Identification and Characterization of Bioactive Compounds Through Fourier-Transform Infrared Spectroscopy and Gas Chromatography-Mass Spectrometry Analysis

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Abstract : Uterine fibroids, also known as leiomyomas or myomas, are non-cancerous growths that develop in the muscular wall of the uterus during the reproductive years. The cause of uterine fibroids includes hormonal, genetic, growth factors, and extracellular matrix factors. Common symptoms of uterine fibroids include heavy and prolonged menstrual bleeding which can lead to a high risk of anemia, lower abdominal pains, pelvic pressure, infertility, and pregnancy loss. The growth of this tumor is a concern because of its negative impact on women's health and the increase in their economic burden. Traditional medicinal plants have long been used in Africa for their potential therapeutic effects against various ailments. In this study, we aimed to identify and characterize bioactive compounds from selected African medicinal plants with potential anti-fibrotic properties using Fourier-transform infrared spectroscopy (FTIR) and gas chromatography-mass spectrometry (GCMS) analysis. Two medicinal plant species known for their traditional use in fibrosis-related conditions were selected for investigation. Aqueous extracts were prepared from the plant materials, and FTIR analysis was conducted to determine the functional groups present in the extracts. GCMS analysis was performed to identify the chemical constituents of the extracts. The FTIR analysis revealed the presence of various functional groups, such as phenols, flavonoids, terpenoids, and alkaloids, known for their potential therapeutic activities. These functional groups are associated with antioxidant, anti-inflammatory, and anti-fibrotic properties. The GCMS analysis identified several bioactive compounds, including flavonoids, alkaloids, terpenoids, and phenolic compounds, which are known for their pharmacological activities. The discovery of bioactive compounds in African medicinal plants that exhibit anti-fibrotic effects, opens up promising avenues for further research and development of potential treatments for fibrosis. This suggests the potential of these plants as a valuable source of novel therapeutic agents for treating fibrosis-related conditions. In conclusion, our study identified and characterized bioactive compounds from selected African medicinal plants using FTIR and GCMS analysis. The presence of compounds with known antifibrotic properties suggests that these plants hold promise as a potential source of natural products for the development of novel anti-fibrotic therapies.

Keywords : uterine fibroids, african medicinal plants, bioactive compounds, identify and characterized

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