

EVALUATION OF ANTI-CANCER PROPERTIES OF THE *SCHINUS MOLLE* FRUIT ISOLATES.

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BACKGROUND AND OBJECTIVES: Cervical cancer remains a leading cause of morbidity and mortality, particularly in South Africa, highlighting the need for novel plant-based therapeutics with minimal side effects. *Schinus molle* L. (peppertree) is traditionally used in African and South American medicine for treating infections and inflammation. Although its phytochemical content, including flavonoids, phenolic acids and essential oils, suggests potential anticancer activity, scientific evaluation remains limited. This study investigated the phytochemical composition, cytotoxic, antioxidant and anti-inflammatory activities of *S. molle* fruit extracts.

METHODS: Dried fruits were subjected to serial exhaustive extraction using solvents of increasing polarity (hexane, dichloromethane, acetone, methanol and water). Phytochemical identification was performed using gas chromatography-mass spectrometry (GC-MS). Cytotoxic activity was assessed using the Alamar Blue assay against ME-180 cervical cancer cells and MRC-5 normal fibroblasts. Antioxidant activity was evaluated using the DPPH radical scavenging assay, while anti-inflammatory activity was determined using the protein denaturation assay. IC₅₀ values were calculated from dose–response curves.

RESULTS: GC-MS analysis revealed diverse terpenoids, sterols and phenolic acids, varying across solvent fractions. Cytotoxicity assays showed dose-dependent inhibition of ME-180 cell viability, with the acetone extract as the most active fraction. All extracts exhibited lower toxicity toward MRC-5 cells, suggesting selective activity. Moderate antioxidant and anti-inflammatory effects were observed, with polar extracts outperforming non-polar fractions, although less potent than reference drugs (doxorubicin and indomethacin).

CONCLUSION: *S. molle* fruit extracts demonstrated moderate cytotoxic activity against cervical cancer cells, alongside antioxidant and anti-inflammatory properties. These findings support the plant's medicinal relevance and highlight its potential as a source of bioactive compounds for further isolation, mechanistic studies and anticancer drug development.

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