

ANTIPROLIFERATIVE ACTIVITY OF THREE SESQUITERPENES ON HUMAN BLADDER CANCER CELL LINES

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Sesquiterpenes are C₁₅-terpenoids built from three isoprene units. These compounds are commonly found in higher plants, marine organisms and fungi. Naturally, they occur as hydrocarbons or in oxygenated forms including lactones, alcohols, acids, aldehydes, and ketones. Over the last decade, sesquiterpenes have attracted significant attention because of the roles they play in biological systems and their diverse biological activities, such as anti-inflammatory, antibacterial, antioxidant and anti-carcinogenic. The antiproliferative activity of three sesquiterpenes (thuyopsene, nerolidol and farnesol) was evaluated on three lines of human bladder cancer (T24, UM-UC-3, TCCSUP) using MTT assay. Thuyopsene is one of the major sesquiterpene constituents of cedarwood, while farnesol and nerolidol can be found in the essential oils of many types

of plants and flowers. The tested compounds showed different antiproliferative activity on the cancer cell lines. Farnesol showed the highest impact on T24 cells growth (52% growth inhibition) at concentration of 90 µM, while thuyopsene showed the strongest growth inhibition of 95% and 27% on UM-UC-3 and TCCSUP cell line at concentration of 65 and 611 µM, respectively. Generally, nerolidol showed the lowest antiproliferative potential on the cancer cells. In order to determine type of cell death induced by treatment, Annexin-V-FITC assay was used for the detection of apoptosis by flow cytometry. The results obtained for these three sesquiterpenes open a perspective for their use as antiproliferative agents.

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