

ABSTRACT

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Cancer is the most common cause of premature death and therefore there is an urgent need for appropriate and effective treatment. One promising strategy seems to be the use of chemopreventive compounds which are often naturally occurring. The present thesis addresses biological effects of α -tomatine in selected tumor lines *in vitro*. α -tomatine is a steroidal alkaloid found in tomatoes with demonstrated antimicrobial, antifungal and anti-inflammatory properties as well as anti-proliferative activity in some cancer cell lines. Aim of this study was to characterize the antitumor activity of α -tomatine on three human cancer cell lines derived from colon adenocarcinoma with metastases in the lymph nodes (SW 620), cervical carcinoma (HEP-2 USA) and human skin melanoma (BOWES). The proliferation, viability, changes in cellular morphology, cell cycle distribution as well as cell death were studied using WST-1 test (proliferation and viability), flow cytometry (cell cycle), time-lapse videomicroscopy (morphology of the cells) and fluorescence microscopy (morphology of the nucleus). While 3 μ M α -tomatine did not significantly affect cell viability, proliferation, motility and cell cycle distribution of any of the studied cancer cell lines, its concentrations of 6 μ M and higher inhibited growth, motility and proliferative activity of cells with significant and rapid changes in the morphology of the cells and cell nuclei with maximum peak within 24 hours after treatment. The cells died by necrosis.