EFFECT OF LYCOPENE ON CELL CYCLE, PROLIFERATION AND APOPTOSIS IN HUMAN PROSTATE CANCER CELLS

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Prostate cancer is the most common malignancy in men and the second leading cause of cancer-related mortality in men in the Western world. Among the substances with potential chemopreventive, lycopene has received great attention due to its possible potential to prevent cancer and cardiovascular disease. In this study we evaluated the influence of lycopene on cell viability, cell cycle and apoptosis of human prostate cancer cells (PCa) and benign hyperplastic cells (BPH). Cells were cultivated with DMEM supplemented with 10% fetal bovine serum under an atmosphere of 5% CO2 at 37°C and incubated with different concentrations of lycopene for 48 and 96 hours. Using MTT assay, it was showed an important decrease of cell viability (PCa), about 30% after treatment. By flow citometry, the cell cycle analysis revealed that lycopene increased the proportion of the cells in G0/G1 phase and decreased in S and G2/M phases after 48 and 96 hours of treatment. The number of cells that had a subdiploid DNA content was measured as apoptotic cells. Using the annexin V-fluorescein isothiocyanate apoptosis detection kit I, it was demonstrated that lycopene (10uM) induced apoptosis, about 67% of prostate cancer cells. Since benign prostatic hyperplasia cells no effect was observed. In this regard, lycopene has proved to be a potent inhibitor of cell growth, arrest cell cycle and increase the apoptosis in PCa cells, suggesting an effect in the modulation of human prostate cancer cells activity.