Effects of 3–butenyl isothiocyanate on phenotypically different prostate cancer cells

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Isothiocyanates (ITCs) have gained growing attention since they have been attributed the merits for the beneficial potential of cruciferous vegetable dietary consumption on cancer. The aim of the present study is to determine the cytotoxic effects of 3–butenyl isothiocyanate (3BI) on prostate cancer cells under in vitro conditions. Two human prostate cancer cell lines, PC3 and DU–145 were assayed. Cells were cultured under the presence of growing concentrations of 3BI (5, 10, 30 and 50 μM) in absence or presence of the chemotherapeutic drug docetaxel (1, 2 nM). The cytotoxic effects of this compound were analyzed using the MTT (reduction of 3–(4,5–dimethylthiazol–2–yl)–2,5–diphenyltetrazolium bromide) colorimetric method at times 24, 48 and 72 h. Apoptosis and migration assays were also performed. Our results show that 3BI induced a dose–dependent cytotoxic effect on androgen–resistant PC3 cells at 24, 48 and 72 h. These effects were significantly higher than those found with docetaxel at 72 h of culture. Moreover, 3BI also potentiated the effects of docetaxel in a dose–dependent manner. Apoptosis were significantly higher in 3BI–docetaxel treated cells in comparison to docetaxel. Additionally, 3BI showed inhibition of migration of PC3. Nevertheless, 3BI was not effective on the androgen–insensitive DU145 prostate cancer cell line. Although the results of further studies (some of them are already being performed by our group) should be added, our results at present show a promising role of this compound as chemotherapeutic drug and/or co–adjuvant agent in docetaxel–based therapy in some types of prostate cancer.