EFFECT OF A BOWMAN-BIRK INHIBITOR IN THE PROTEASOME COMPLEX FROM BREAST CANCER CELLS

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Proteasome is the essential machinery in eukaryotic cells playing a major role in the regulation of several physiological processes and has been recently pointed as a target for cancer therapy. As recently reported, the anticarcinogenic action of the Bowman-Birk inhibitors (BBI) has been associated with their inhibitory action on proteasome complex. Ours recently results indicated that a BBI from *Vigna unguiculata* seeds, named BTCI, alters significantly the proliferation and viability of breast cancer cells and its action takes place at cytoplasm and nuclei. In the present work the effect of BTCI on proteasome complex from breast cancer cells (MCF-7) was evaluated. The proteasome complex was purified through ultracentrifugation in 15 to 34% w/w sucrose density gradient and its purity was evaluated by SDS-PAGE. The enzymatic activity was performed using the proteasomes specific substrates and the BTCI (10 to 20 µM). The synthetic proteasomal inhibitor, MG 132, was used as a control. BTCI (10 µM) inhibits approximately 32%, 33% and 67% of peptidyl-glutamyl peptide-hydrolyzing, trypsin-like and chymotrypsin-like activities, respectively. The decrease of proteolytic activity of proteassoma is associated to changes in cell cycle, which can lead to cell death. Our data indicates that BTCI can inhibit proteasome activity, mainly through the chymotrypsin-like activity, and this result provides new insights into molecular action of BTCI in breast cancer cells.

Keywords: *Vigna unguiculata*, Bowman-Birk Inhibitor, Proteasome, Breast Cancer.
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