

Action of Bnsp-6 Phospholipase A2 from *Bothrops pauloensis* on Human Breast Cancer Cells

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Introduction: Cancer is a multifactorial disease characterized mainly by uncontrolled cell division invasion, escape of apoptosis, angiogenesis and metastasis. Breast cancer is one of the most common malignant disease and most violent women type. Although many advances have been made in cancer therapy, the search for new drugs from natural resources is one important topic of biomedical research. **Objective:** In the present study, we showed the antitumor effect of BnSP-6, on human breast cancer cell (MDA-MB-231). **Methods:** The viability and adhesion of MDA-MB-231 cells was evaluated by MTT assay after treatment with BnSP-6 (3.126, 6.25, 12.5, 25, 50µg / ml). Cell migration was examined by wound-healing assay. Apoptosis was studied by Annexin V/Propidium Iodide Apoptosis assay. In addition we evaluated expression of different genes related to cancer pathway by real time PCR. **Results:** BnSP-6 was able to inhibit the viability of MDA-MB-231 cells in a time-dependent manner, and this toxin (50µg/mL) blocked migration of MDA-MB-231 by wound healing assay and adhesion in almost 80% when compared to control. Late apoptosis of MDA-MB-231 was observed in 65.3% of cells after treatment with BnSP-6 (50µg/mL) and this effect was also confirmed by down regulation of different genes related to apoptosis pathway, such as BAD, BAX, BIRC5 and BCL2 while TNF, TNFR and CASP8 were up-regulated. **Conclusion:** These data showed the antitumor effect of BnSP-6 cells MDA-MB-231 and identified some target signaling pathways that can be exploited to improve the efficacy of anticancer treatments.

Keywords: snake venom, breast cancer, PLA2, *Bothrops pauloensis*.

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