PURIFICATION OF BOWMAN-BIRK PROTEASE INHIBITORS FROM *VIGNA UNGUICULATA* SEEDS AND THEIR EFFECTS ON BREAST CANCER CELLS, *IN VITRO*.

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Cancer is the leading cause of death in the Western World. Breast cancer is one of the most frequent cancer types in the world, and has the highest mortality rate among women in Brazil. Protease inhibitors (PIs) have been described as potent anticarcinogenic agents. PIs from the Bowman-Birk family have been described to affect proliferation and metabolic pathways in breast cancer cells. In the present work, two PIs from *Vigna unguiculata* seeds were purified by ion-exchange chromatography and their effects on proliferation and viability of breast cancer cells were evaluated. Both PIs have low molecular mass and show inhibitory activity against trypsin and chymotrypsin, which are characteristics of Bowman-Birk family members. Breast cancer cells (MCF-7) were incubated for three days with different mM concentrations of the two purified PIs, independently. One of the PIs tested (BTCI) decreased proliferation rate in 50% and the viability in 25% of breast cancer cells. This study suggests that BTCI is a potent anticarcinogenic agent. Furthermore it addresses, further investigations to evaluate the use of BTCI in *in vivo* systems facing its application as an alternative agent to conventional breast cancer treatments as radiotherapy and surgery.

Keywords: cancer, cell, proliferation, protease inhibitor, viability
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