ANTIPROLIFERATIVE EFFECT OF A SERINE PROTEASE INHIBITOR FROM *Enterolobium contortisiliquum* SEEDS (EcTI) IN LEUKEMIC CELL LINES

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**INTRODUCTION:** Protease inhibitors act on blood coagulation, digestive and inflammatory processes, tissue remodeling, proliferation, apoptosis and cell cycle. EcTI is a serine protease and metalloprotease inhibitor isolated from *Enterolobium contortisiliquum* seeds, belonging to the Kunitz family of plant inhibitors. It’s a polyspecific inhibitor showing activity also on chymotrypsin, human plasma kallikrein (HuPK), plasmin, human neutrophil elastase (HNE) and Factor XIIa.

**OBJECTIVES:** The aim of this work was to investigate the potential effects of EcTI in different leukemic cell lines.

**MATERIALS and METHODS:** EcTI purification process involves extraction with 50 mM Tris-HCl, pH 8.0, and three chromatography steps: DEAE-Sepharose, Trypsin-Sepharose, and molecular exclusion (FPLC system). Cell viability and antiproliferative effects were measured by MTT assay and BrdU incorporation, respectively, after cells treatment with different concentrations of EcTI (50-100 µM) for 24 or 48 h. The cell lines used were K-562, Jurkat, Kasumi-1 and HL-60, representatives of lymphoid and myeloid leukemias.

**RESULTS and DISCUSSION:** EcTI exhibited different effects on cell lines tested, since no significant effect was found in viability and cellular proliferation of K-562 and Jurkat cells. However, on Kasumi-1 and HL-60 cell lines, EcTI decreased cell viability 45% and 60%, respectively. Selective antiproliferative effects were also demonstrated in these cell lines since EcTI significantly reduced Kasumi-1 (41.5%) but not HL-60 cell line proliferation. All results reported were obtained after 48 h of EcTI treatment at 100 µM.

**CONCLUSION:** Thus, this study may contribute to the investigation of the functional activity of proteases and their involvement in the pathophysiological process of leukemia, initiating a new approach against this type of cancer.

**Keywords:** Cell viability, cell proliferation and protease inhibitor.

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