In vitro cytotoxic activity of *Euphorbia tirucalli* on Leukemia cell lines.

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**Introduction:** *E. tirucalli* popularly known as aveloz is considered an important plant in Brazilian folk medicine for treatment of several diseases, mainly cancer and by diverse reported bioactivities for its latex. In this study the *in vitro* anti-leukemia effects of the ethanolic extract, the latex and their fractions were evaluated.

**Methods:** The ethanolic extract and latex were fractionated by partition with hexane, dichloromethane, ethyl acetate and water. These samples were tested for *in vitro* effects (48 h) on the T-lymphoblastic leukemia (Jurkat) cells and the chronic myelogenous leukemia (K562) cells. The samples effects on normal lymphocytes were also investigated. Cytotoxicity was determined by MTT assay and the cell cycle and apoptosis (annexin V-FITC/PI) performed by flow cytometry. The hexane fraction was analyzed by gas chromatography coupled with mass detector.

**Results:** The plant extract, latex and hexane (HEX) and dichloromethane (DCM) fractions inhibited *in vitro* proliferation of leukemia cells in a concentration-dependent manner, the crude latex and their HEX and DCM fractions presenting higher cytotoxic effect than the ethanolic extract and fractions. The K562 cells were more sensitive than the Jurkat cells to HEX and DCM, the cell proliferation was inhibited 80.8 ±1.4% and 97.4 ± 1.4%, respectively. These fractions (25 \(\mu\)g/mL) inhibited (p<0.05) 49.2 ± 7.4% and 65.1 ± 15.8% of Jurkat cells proliferation, respectively. The crude latex inhibited 70.3 ± 2.8% of K562 cells proliferation. The K562 cell cycle was also inhibited (arrest in G1 phase) by latex treatment (25 \(\mu\)g/mL), increasing the cell population in G0/G1 phase and decreasing it in the S and G(2)/M phases. The percentage of K562 apoptotic cells was also increased (47.3%) after treatment with latex. The CG/MS analysis of hexane fraction showed palmitic acid as the major compound (19.4%).

**Conclusions:** The observed effects might be associated with induction of apoptosis, and cell cycle arrest of cancer cells. This suggests that aveloz have potential as a therapy for leukemia cells.

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