In vitro antileukemic activity of Mimosa caesalpinifolia ethanolic extract

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Introdução: The human chronic myelogenous leukemia is a clonal disease characterized by a mieloproliferation, and it represents 20% of all leukemia, and it is more frequently in adults with an average age of 55 years. It affects both sexes, but it is most prevalent in the male gender. Due to the degree of mutation, the tumor cells exhibit resistance to chemotherapy. However, the natural compounds and their synthetic derivatives have been used as most selective therapies to tumor cells, providing minor assault to the body. Given this, the present study investigated the cytotoxicity of ethanolic extract of Mimosa caesalpinifolia Benth, on line of human chronic myelogenous leukemia (K562). Materiais e Métodos: The ethanolic extract (EtOH) was obtained from the bark of M. caesalpinifolia and it was ceded by Prof. Dr. Antônia M. das Graças (Lago/DQ/UFPI). The cells of the K562 were acquired by the National Cancer Institute (INCA), and cultivated in cell culture flasks with the means RPMI 1640, supplemented with 10% SBF (fetal bovine serum) and 1 % of antibiotics (penicillin/streptomycin). The cells were kept in the incubator with 5% CO2 at 37 ºC and the culture media changed every 48 hours. The cytotoxicity was evaluated by means of the MTT test, through the incubation of the cells in 96-well plates, at a density of 5x10^5 cells/well, in the presence of concentrations between 0.1 to 500 µg/mL of EtOH during 24 hours (5% CO2; 37ºC). Etoposide (50 µM) that was used as positive control. After incubation, the supernatant was partially removed, followed by the addition of the MTT (5 mg/ml). After 4 hours, was added DMSO (100 %) and then the plates were read in an ELISA type spectrophotometer at 570 nm. In all, three experiments were performed (n=3) in triplicate for each tested group. The data were expressed as mean e.p.m and analyzed by one-way ANOVA, followed by the Dunnet test. The level of significance was considered when p<0.05. Resultados e Discussão: According to the results of cytotoxicity, we observed a decrease in cell viability of 88.3±8.8% (control) to 51.8±3.0 % and 20.7±2,3 %, after incubation for 24 h of EtOH 50 and 500 µg/mL, respectively (p<0.05). However, EtOH 0,1 µg/mL not induced cytotoxic effect under the same conditions. As expected, the positive control etoposide (ETO) at 50 µM reduced the viability for 55±9.9 % (p<0.05). Additionally, it was observed that DMSO 0,1 % was not able to produce any toxic effect on K562. The results demonstrate that the EtOH affects the activity oxi-reduction of the mitochondria, causing cellular death in K562, an indication of apoptosis through the intrinsic...
pathway. The effect obtained was exclusive of the Compound EtOH and not of DMSO diluted.
Conclusão: According to the study, it was demonstrated that the EtOH may represent a potential
candidate of drugs for the treatment of acute myeloid leukemia, in virtue of its significant cytotoxic
effect.