Introduction: *Erythrina velutina* Wild. (Leguminoseae) is a common tree in Brazilian Northeast. Studies with non-standardized extracts showed its antinociceptive, anticonvulsant and anxiolytic effects. The aim of the present work was to investigate a possible cytotoxic effect and evaluate the cytoprotective action of standardized the ethanolic extract of *E. velutina* (EEEV) in experimental models (in vitro).

Experimental procedures: EEEV was standardized by spectrophotometric (polyphenols: 155 ± 3.3 µg/mg) and chromatographic analysis by HPLC/DAD which allowed to identify five phenolic compounds: hesperidin, abissinin, homoesperidin, rizonic acid (RA) and sigmoidin C. Cytotoxicity was investigated in human neutrophil through the LDH release, following the manufacturer’s instructions (kit LDH-Labtest, Brazil), and MTT assays. Polymorphonuclear leukocytes, especially neutrophils (80 – 90%), were isolated from “buffy coat” (Center of Hematology and Hematology of the State of Ceara) as described by Lucisano and Mantovani (1984). Neutrophils (2.5x10^6 cells/mL) with viability around 95% (trypan blue exclusion test of cell viability) were exposed to the presence of increasing concentrations of EEEV (0.1; 1; 10; 100; 200 µg/mL), HBSS (negative control), vehicle (1% DMSO, control) or Triton (0.2%, standard). The effect of EEEV and AR on neurotoxicity induced by neurotoxin 6-OHDA (25 µM) was investigated through the cell viability (MTT assay) in SHSY5Y cell line (0.7 x 10^5 cells/mL; medium: DMEM/F12 [1:1], 10% fetal bovine serum and 1% antibiotics).

Results/Discussion: EEEV (100; 200 µg/mL) promoted a significant increase in LDH activity (97.64 ± 10.86, 108.10 ± 10.41 U/L) as compared to control (44.56 ± 8.31 U/L). EEEV in all concentrations did not reduce cell viability evaluated by MTT assay (89.08 ± 8.18; 96.01 ± 4.94; 99.98 ± 4.00; 94.12 ± 3.63 and 98.17 ± 4.41%) as compared to control (82.16 ± 8.13%). Neither EEEV (0.0025; 0.025; 0.25; 0.5; 1 µg/mL) nor RA (0.0025; 0.025; 0.25; 0.5 µg/mL) showed any toxic effect by themselves. The addition of 6-OHDA to the cell culture before test drugs decreased significantly the formazan reduction (MTT absorbance: control = 0.4241 ± 0.0204, 6-OHDA = 0.2268 ± 0.0172) and both test drugs partially reversed the 6-OHDA induced toxicity (MTT absorbance: EEEV 1 + 6-OHDA = 0.3854 ± 0.0268; RA 0.5 + 6-OHDA = 0.3571 ± 0.0401). Statistical analysis: p<0.05, ANOVA Tukey.

Conclusion: In human neutrophils was observed that the EEEV did not alter the metabolism of the cells however led to loss of membrane integrity in doses of 100 and 200 µg/mL. In SHSY5Y cell line, the results showed that EEEV and RA did not show any toxic effects and present a neuroprotective effect against 6-OHDA-induced toxicity in it cell line.

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