Cytotoxicity evaluation and free radical scavenging activity of ethanolic extract and β-carboline alkaloid harmane from Bauhinia ungulata L.

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Introduction: Studies suggest antioxidant effect and cytotoxicity of β-carboline alkaloids. It’s known that the alkaloid β-carboline, harmane (HA), is found in the ethanolic extract of Bauhinia ungulata (EEBU). The aim of the present study was a comparative evaluation to elucidate the contribution of HA for these activities in EEBU.

Methods: The evaluation of the cytotoxicity of test drugs, EEBU and HA, was made using the MTT (3[4,5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide) assay. The human liver cancer cells (HepG2) were exposed to EEBU (25, 50, 100, 200 and 400 µg/mL) and HA (25, 50, 100, 250 and 500 µg/mL). The MTT (1 mg/mL) was added and the reading was made (λ=560nm) discounting the background absorbance (λ=690nm). The antioxidant activity of EEBU and HA were evaluated by the SOD (superoxide dismutase) assay, measuring their ability to inhibit the photochemical reduction of nitro blue tetrazolium (NBT). The absorbance of the samples (lit and unlit) was measured on a spectrophotometer (λ=560nm) and the difference between them was used to determine the SOD activity.

Results/Discussion: The results showed that the HA (100, 250 and 500 µg/mL) reduced the cell viability (19.00±0.57; 4.46±0.27 and 4.40±0.30%) when compared to negative control, NC (102.30±1.45%). The EEBU (200 and 400 µg/mL) showed cytotoxicity (70.01±3.74 and 25.81±1.92%) when related to NC (100.0±10.22%). In the NBT assay, the exposure of riboflavin at the presence of light generated the formation of superoxide radical (NC: 9.66±3.21; ascorbic acid, standard drug: 99.99±3.94%), that was significantly (p<0.05, ANOVA Tukey) eliminated for EEBU 400 µg/mL (39.77±9.80%).

Conclusion: The EEBU and HA didn’t show significant citotoxicity at low concentrations. The EEBU (400 µg/mL) showed a scavenging activity in superoxide radical.

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