EVALUATION OF THE GENOTOXIC POTENTIAL OF *CUPHEA GLUTINOSA*

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INTRODUCTION: The species *Cuphea glutinosa* Cham. & Schlecht is a sub-shrub belonging to the Lythraceae family, with synonyms including *C. thymoides* Grisebach, *C. hyssopifolia* Grisebach, and *C. ingrata*. It is popularly known as "sete-sangrias" or "guanchuma-vermelha", used to treat stomach disorders, arteriosclerosis, high blood pressure, and cardiac arrhythmias. OBJECTIVE: To evaluate the potential of *Cuphea glutinosa* Cham. & Schlecht to cause damage to DNA molecules. MATERIALS AND METHODS: The plant species *Cuphea glutinosa* Cham. & Schlecht was collected in December 2024, in the municipality of Santana do Livramento, RS, Brazil. The essential oil was extracted through steam distillation using a modified "Clevenger" apparatus. After each extraction, hexane was added, and the organic phase was separated from the aqueous phase using a separation funnel. The organic phase was dried with Na_2SO_4, and the solvent was evaporated under a nitrogen stream, yielding the essential oil. For the genotoxicity study, 300 ng of the pCMUT plasmid were incubated with concentrations of 0.7 and 50 mg/mL of the compound. As a negative control (NC), only the pCMUT plasmid was used. Single-strand DNA breaks (SSBs) were quantitatively analyzed in triplicate after 1 hour of incubation at room temperature. Following this, electrophoresis was performed on 0.8% (w/v) agarose gel in TBE buffer (44.5 mM Tris-borate, pH 8.4, and 1 mM EDTA) at 100 V for 2 hours at room temperature. The relative number of FI and FII forms was quantified to estimate the average number of DNA lesions induced by the extract. A transilluminator L-Pix Touch (Loccus®) was used with GelRed stain (Uniscience®) under UV light for gel analysis. RESULTS/CONCLUSION: Genotoxicity refers to the ability of a chemical substance to alter a cell's genetic code, causing changes that may eventually result in cancer. Regarding the genotoxicity assay, the obtained extract did not show significant formation of SSBs in the plasmid DNA analyzed, demonstrating its safety at the molecular level.

Keywords: DNA; Essential Oil; Toxicity