PHYTOCHEMICAL CHARACTERIZATION AND CYTOTOXIC EVALUATION OF THE AQUEOUS LEAF EXTRACT OF *Piper mikanianum* IN HepG2 CELLS

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INTRODUCTION: The Piperaceae family includes over 2,000 species distributed across eight genera, predominantly occurring in tropical and subtropical climates in both hemispheres. In Brazil, approximately 500 species of the *Piper* genus have been described, primarily in the Atlantic Forest. Traditionally, in southern and southeastern regions of the country, the species *Piper mikanianum* is widely used and, consequently, has been the subject of studies evaluating its chemical composition and biological activities. **OBJECTIVE:** To characterize the phytochemical profile and to evaluate the *in vitro* cytotoxicity of the aqueous extract from *P. mikanianum* leaves at different time points. **MATERIALS AND METHODS:** Leaves of *P. mikanianum* were dried at a temperature below 40°C, triturated, and extracted by infusion in water. Its phytochemical characterization was performed by ultra-performance liquid chromatography with a diode array detector (UPLC-DAD) following a previously established methodology. Briefly, the mobile phase consisted of acidified acetonitrile (phase A) and 0.1% formic acid (phase B) in a gradient system, using a CORTECS UPLC T3 column (2.1 x 100 mm, 1.6 μm). Cytotoxicity was evaluated in HepG2 cells (human liver cancer cell line) using the MTT assay. Cells were exposed to different concentrations of the aqueous extract (0.25 – 6 mg/mL) for 24, 48, and 72 hours. **RESULTS AND CONCLUSIONS:** The aqueous extract from *P. mikanianum* leaves exhibited low *in vitro* toxicity in HEPG2 cells, maintaining mitochondrial activity above 85% at all tested concentrations and time points. Notably, at 48 h of exposure, specific concentrations induced a mild but consistent enhancement in cell viability, indicating a possible stimulatory or cytoprotective effect. Phytochemical characterization revealed the presence of vitexin, a flavonoid known for its antioxidant and anti-inflammatory activities. These results suggest that the aqueous extract from *P. mikanianum* leaves is biocompatible with HepG2 under the tested conditions and highlights its potential for future studies about its bioactive properties.

Keywords: *In vitro* toxicity; Flavonoid; Natural products; UPLC-DAD.

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