# TOXICOLOGICAL AND BEHAVIORAL EFFECTS OF HIDROALCOHOLIC EXTRAT OF *JUNCUS EFFUSUS* IN EARLY LIFE STAGE OF ZEBRAFISH (*DANIO RERIO*)

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**INTRODUCTION:** *Juncus effusus* is a perennial plant used in phytotherapy to treat anxiety and depression disorders in humans. Evaluating the safety of alternative therapies is essential to avoid toxic effects. However, there are currently only a few studies on this extract. This study investigated the toxicity of the hydroalcoholic extract of *Juncus effusus*. **OBJECTIVE:** To evaluate the toxicity, behavioral effects, and antioxidant activity of the hydroalcoholic extract of *J. effusus* during the embryolarval stage of zebrafish. **MATERIALS AND METHODS:** For the toxicity evaluation (LC50) during the embryo larval stage of zebrafish, 12 concentrations of the extract of *J. effusus* (Lua Crescente Ervas Medicinais) were used. So, embryos at 6 hours post-fertilization (hpf) were exposed, and hatching and mortality rates were monitored until 120 hours post-exposure (hpe). At 120 hpe, behavioral tests were performed (locomotor activity and landscape response to mechanical stimuli). Additionally, reactive oxygen species (ROS) and mitochondrial activity by fluorescence imaging was evaluated, as well as possible morphological malformations. The antioxidant potential was evaluated using the DPPH assay (absorbance at 517 nm) to determine the half maximal effective concentration (EC50). Statistical analyses were made using the softwares IBM SPSS Statistics 30.000, RStudio 2022.4.2.1, and ImageJ 1.54, considering significance above 95%. The study was approved by the Ethics Committee on Animal Use at UFABC (protocol 3881050724). **RESULTS AND CONCLUSION:** The LC50 was determined to be at the concentration of 0.553% of the extract ($p<0.05$). In relation to both behavioral tests, no differences were observed. Antioxidant activity was observed at the EC50 = 72,342% of the extract. Fluorescence imaging revealed minimal changes in ROS production and mitochondrial activity in qualitative analyses. Tail malformations were observed starting at 0.781% of the extract. According to these results, the *J. effusus* extract showed toxicity, behavioral, and metabolic injuries only in higher concentrations.

**Keywords:** Plant extract; *Juncus effusus*; Toxicity; Zebrafish; Animal behavior.

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