



## ANTIDEPRESSIVE-LIKE AND ANTI-INFLAMMATORY EFFECT OF *Centella asiatica* IN RATS SUBJECTED TO EARLY LIFE STRESS

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### **INTRODUCTION**

Major depressive disorder (MDD) is one of the most prevalent forms of mental illness. Among the most relevant factors underlying MDD is childhood stress. In rodents, maternal deprivation (MD) is a behavioral model that mimics traumas early in people's lives. In individuals with MDD, some studies have observed an increase in the release of inflammatory cytokines in the central nervous system. The medicinal species *Centella asiatica* (*C. asiatica*) has been studied for its potential neuroprotective and antidepressant effects.

### **MATERIAL AND METHODS**

This research was approved by the Animal Ethics Committee (AEC) from UNOCHAPECÓ, SC, under protocol 002/CEUA/2021. The animals were divided into five groups (N = 10 each group): Control without stress + vehicle; MD + vehicle; MD + Escitalopram 10 mg/kg; MD + *C. asiatica* extract 30 mg/kg; MD + madecassic acid 10 mg/kg, *C. asiatica* active compound. The animals were submitted to MD 10 days after the first day of birth. At sixty days of age, the animals were submitted to chronic treatment for 14 (fourteen) days. At the end of the treatment, the animals were submitted to protocols of behavioral tests. After the last test, the animals were euthanized, and the hippocampus was removed and stored at a temperature of approximately -70°C for

later analysis of the activity of inflammatory cytokines.

### **RESULTS**

The MD protocol induced depressive-like behaviors and impairments in biological functions, such as increased inflammatory cytokines in the hippocampus. The *C. asiatica* extract and active compound reversed or reduced depressive-like behaviors and inflammation in the hippocampus.

### **CONCLUSIONS**

The results strongly suggest that the medicinal species *C. asiatica* and its active compound have antidepressant potential and that the reduction of hippocampal neuroinflammation is a mechanism involved in the antidepressant-like effect of the species.

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