



***Tithonia diversifolia* (Helms) extract attenuates cognitive dysfunction, in animals submitted to a murine model of sporadic Alzheimer's induced by streptozotocin partially inhibiting tau hyperphosphorylation and β -amyloid protein deposition.**

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INTRODUCTION:

The aim of this study was to evaluate the effects of the ethanolic extract obtained from *Tithonia diversifolia* (Helms) (EETD) on the memory of animals subjected to an experimental model of Alzheimer's induced by streptozotocin, as well as to evaluate the effects of the extract on the neuroinflammation hyperphosphorylation of tau and the formation of β -amyloid peptide deposits. *T. diversifolia* (Helms.) A. popularly known in Brazil as "margaridão" or "mão-de-Deus" has been used in the folk medicine as anti-inflammatory and against other illnesses in several countries.

MATERIAL AND METHODS

The procedures followed standards of Ethics Committee on the Use of Animals (CEUA), protocol number 022/17) and the extracts of *T. diversifolia* (SisGEN/ A613C64). The animals were subjected to Alzheimer's induction by bilateral i.c.v. infusion of streptozotocin (STZ/2mg/mL/3 μ L) and treated for 24 days with extract (EETD, 0.1, 1.0, and 3.0 mg/kg, p.o), vehicle and rivastigmine (0.6 mg/kg. i.p), being evaluated in two memory tests, the inhibitory avoidance (IAT) and the object recognition test (ORT) as described by Gonçalves et al (2021). The effects of EETD on neuroinflammation, tau hyperphosphorylation, and A β production were determined through in vitro assays using BV2, HT22, and APP-CHO cell lines, respectively

RESULTS :The treatments with EETD reversed the aversive memory and spatial memory deficits induced by STZ in animals evaluated in the IAT and ROT when compared with controls. In vitro, in the neuroinflammation assay, EETD significantly reduced LPS-induced NO production in a dose-dependent manner compared to the LPS-treated group. Also treatment with EETD partially altered tau hyperphosphorylation levels. Finally, as observed, EETD have effects on A β production, although the changes were not statistically significant.

CONCLUSIONS: In summary, the results together demonstrate the neuroprotective capacity of *T. diversifolia* against STZ-induced cognitive loss in animals when evaluated in memory tests. decorrentes da capacidade do EETD inibir aspectos da neuroinflamação como a produção de NO, além da inibição da tau hyperphosphorylation and beta amyloid deposition. The results together suggest that the plant exhibits therapeutic relevance in Alzheimer's disease (AD). However, studies are needed to identify the phytoconstituents responsible for such effects.

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