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NEUROPROTECTIVE EFFECTS OF *Tithonia diversifolia* IN A MURINE MODEL OF SPORADIC ALZHEIMER'S DISEASE INDUCED BY STREPTOZOTOCIN

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INTRODUCTION

Alzheimer's disease (AD) is a progressive and irreversible neurodegenerative disorder with increasing global prevalence. Current treatments offer limited efficacy, highlighting the need for new therapeutic approaches. *Tithonia diversifolia* extract (EETD) has shown acetylcholinesterase (AChE) inhibitory activity comparable to Rivastigmine. This study aims to investigate its potential neuroprotective effects in a murine model of sporadic AD induced by streptozotocin (STZ).

MATERIAL AND METHODS

Mice received intracerebroventricular injections of STZ 2.5 mg/mL to induce a sporadic model of Alzheimer's disease. They were then divided into six experimental groups: Sham, vehicle, Rivastigmine (0.6 mg/kg), and EETD at doses of 0.1, 1.0, and 3.0 mg/kg. After the induction period, treatments continued for 24 days. The animals were then euthanized, and their hippocamppus were collected for biochemical analysis of oxidative stress, AChE activity, and neuroinflammation. All procedures were conducted following the guidelines of the Ethics Committee on the Use of Animals (CEUA), under protocol number 022/17.

RESULTS

Biochemical analyses showed that EETD attenuates oxidative stress by enhancing the activity of catalase, superoxide dismutase, reduced glutathione, and glutathione peroxidase. Additionally, EETD significantly decreased the levels of malondialdehyde and nitrite induced by STZ. Acetylcholinesterase activity was also reduced in animals treated with EETD compared to group that received STZ and vehicle. Moreover, the rise in hippocampal cytokine levels caused by STZ, specifically tumor necrosis factor-alpha (TNF-α) and interleukin-6 (IL-6), was notably reduced by both EETD and rivastigmine treatments.

CONCLUSIONS

The results indicate the therapeutic relevance of Tithonia diversifolia in Alzheimer's disease (AD) by reducing neuroinflammation, oxidative stress, and elevated AChE activity. However, further studies are needed to identify the phytoconstituents responsible for these effects.

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