Neuroprotective effects of catuaba (Trichilia catigua) against hydrogen peroxide, sodium nitroprusside and nitropropionic acid-mediated toxicity in rat hippocampus slices.

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Introduction: Catuaba (Trichilia catigua) is a medicinal plant popularly known in Brazil as aphrodisiac and neurostimulant. It has been reported to possess a variety of pharmacological properties. However, considering that alterations in learning and memory function are a common consequence of a wide variety of toxic insults and disease states and that no work has ever been carried out to evaluate the effect of T. catigua on toxic agents, this study was designed to determine whether T. catigua offered neuroprotection against oxidative stress induced by H₂O₂, Sodium nitroprusside (SNP) and 3-Nitropropionic acid (3-NPA) in rat hippocampus slices.

Materials and Methods: Hippocampus slices were pre-treated with catuaba (10-100 µg/ml) for 30 min before exposure to neurotoxic agents (150 µM) for 1h. Mitochondrial viability was determined using the tetrazolium dye colorimetric test (MTT test) and intracellular reactive oxygen species (ROS) formation was measured in the incubation medium using a fluorescent probe 2,7-dichlorhydrofluoroscein diacetate (H2DCFDA).

Results: Our results showed that under basal condition, catuaba did not have any effect on cellular viability and that at 40 µg/ml, catuaba reduced significantly ROS production. H₂O₂, like SNP and 3-NPA, significantly reduced cell viability and increased ROS formation when compared to control (untreated slices). However, when the slices were pre-treated with catuaba, cytotoxicity induced by H₂O₂/SNP/3-NPA was attenuated. Moreover, catuaba (10-100 µg/ml) significantly prevented the H₂O₂/SNP/3-NPA-induced overproduction of intracellular ROS.

Conclusion: Overall, the results suggest that H₂O₂/SNP/3-NPA-induced neurotoxicity is associated with oxidative stress. The ability of catuaba to prevent H₂O₂/SNP/3-NPA-induced oxidative stress is at least in part, mediated through attenuation of cell death and ROS production.

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