Introduction: Alzheimer’s disease (AD) is a neurodegenerative disease characterized by cognitive impairment and personality changes. The development of drugs for the treatment of the cognitive deficits of AD has focused on agents which counteract loss in cholinergic activities. These symptoms of AD have been successfully treated with acetylcholinesterase (AchE) inhibitors (eg. galanthamine). There is still great interest in finding better AchE inhibitors. Psychotria leiocarpa Cham. & Schlecht., popularly known as “grandiúva-de-anta” or “coffee-to-kill”, is a shrub native of Southern Brazil. Studies report the isolation of indole alkaloid (N,β-D-glucopyranosyl vincosamide) from the leaves of this species. Studies have demonstrated that the crude ethanolic extract of leaves of P. leiocarpa showed a nonspecific analgesic activity in the tail flick test. Thirty-three compounds were identified in the essential oil of P. leiocarpa, comprising 95.9% of total volatile of the leaves of this species. We use Ellmann’s microplate assay to evaluate the methanolic extract which was observed 87% inhibitors. The present study aim was to evaluate the effect of methanolic extract of P. leiocarpa on acetylcholinesterase in four brain structures. Material and Methods: P. leiocarpa leaves was collected in Dourados-MS, Brazil. Air-dried leaves were exhaustively extracted by maceration with methanol. The Wistar rats were deprived of food overnight and then euthanized by heart puncture. After that, the brain were carefully removed and the structures were gently removed and separated into cerebellum (CE), cerebral cortex (CC), striatum (ST) and hippocampus (HP). The four brain structures selected for the experiment (CE, CC, ST and HP) were maintained refrigerated in a solution of 10 mM Tris-HCl, pH 7.4, on ice. AchE activity was determined by a modification of the spectrophotometric method of Ellman et al. (1961). After pre-incubation, the reaction speed was measured by increasing absorbance to 412 nm. The enzyme activity was expressed in µmol AcSCh/h/mg protein. In all the enzyme preparations, protein was measured according to Bradford (1976) using bovine serum albumin as standard. For brain tissues, the protein was determined previously and adjusted for each structure: CE (0.5 mg/mL), CC (0.7 mg/mL), HP (0.8 mg/mL) and ST (0.4 mg/mL). The extract was evaluated in the concentrations of 0.5 and 2.5 mg/mL in methanol. Results: The methanolic extract of P. leiocarpa showed a value of AchE activity in CE (0.5; 16.47 and 2.5; 40.14), in CC: (0.5; 11.36 and 2.5; 38.93), in ST: (0.5; 24.48) and in HP (0.5; 19.85 and 2.5; 36.39) compared to the control. Discussion and Conclusion: The results suggest that methanolic extract of P. leiocarpa might be of interest for AchE inhibition and isolated alkaloids should be evaluated to find the responsible actives for activity.

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References


