Introduction: Alzheimer disease (AD) is the most common neurodegenerative disease and the most prevalent cause of dementia, which is currently implicated in approximately 70% of the overall cases. This irreversible neurological disorder is characterized by memory failure, cognitive dysfunction, behavioral disturbances, difficulties in the activities of daily living and disorientation of time and place. The “cholinergic hypothesis” states the degeneration of cholinergic neurons and the reduction in the concentration of the neurotransmitter acetylcholine (ACh), which is involved in the learning and memory processes in the central nervous system, contribute significantly to the cognitive decline associated with old age and AD. Acetylcholinesterase (AChE) enzymatic inhibition is an important target for the management of Alzheimer disease (AD) and AChE inhibitors are the mainstay drugs for its treatment. Psidium Guineense Swartz, popularly known “guava-field”, is used in traditional medicine as anti-diarrheal. Studies with leaves showed antibacterial activity the presence of tannins. Objectives: The present work has investigated the acetylcholinesterase activity "in vitro" of methanol extract from the leaves of P. guineense. Material and Methods: Dried leaves of Psidium Guineense were exhaustively extracted by maceration with methanol at room temperature. After filtration, evaporation of the solvent under vacuum furnished the methanol extract. The enzymatic activity of acetylcholinesterase was determined by the spectrophotometric method of Ellman et al. (1961) modified by Rhee et al. (2001) using male Wistar rats to obtain their brain structures (cortex and cerebellum). The protein was determined previously and adjusted for each structure: cortex (0.5 mg/ml) and cerebellum (0.5 mg/ml). Protein was measured by the Coomassie blue method according to Bradford (1976) using serum albumin as standard. The extract was evaluated in the concentrations of 0.5; 2.5 and 4.0 mg/mL in methanol. Results: The methanol extract of P. guineense showed in vitro inhibitory effect of the AchE activity in brain structures, cortex (0.5 mg/mL; 1.69 μmol Ach.h⁻¹.mg protein⁻¹, 2.5 mg/mL; 8.94 μmol Ach.h⁻¹.mg protein⁻¹ and 4.0 mg/mL; 13.30 μmol Ach.h⁻¹.mg protein⁻¹) and cerebellum (0.5 mg/mL; 4.01 μmol Ach.h⁻¹.mg protein⁻¹, 2.5 mg/mL; 19.44 μmol Ach.h⁻¹.mg protein⁻¹ and 4.0 mg/mL; 33.08 μmol Ach.h⁻¹.mg protein⁻¹), compared to the control. Discussion and Conclusion: P. guineense showed activity in enzyme acetylcholinesterase (AChE) in cerebellum structure tested “in vitro”. However, future studies in "ex vivo" models are necessary, serving as validation for the results found in this work.

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References

