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EVALUATION OF IN VITRO ACETYLCHOLINESTERASE INHIBITION OF EXTRACTS FROM *ESENBECKIA* spp.

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Abstract: The Alzheimer's disease (AD) is related to age and is characterized by a progressive neurodegeneration associated with a deficiency in cholinergic transmission, affecting the CNS, which impairs memory and cognitive function [1, 2]. Several studies have been made in the search for new bioactive natural products that can act as inhibitors of the acetylcholinesterase enzyme (AChE) [2]. In this work, we evaluated the anticholinesterase inhibition of different extracts of leaves and stems of *Esenbeckia* spp. (Rutaceae) using the microplate assay [3]. The extracts were obtained by exhaustive percolation with different solvents and were evaluated at 1 mg/mL. Physostigmine was employed as a positive standard at 0,03 mg/mL. The eight fractions of *Esenbeckia* spp. showed differences in the percentage of inhibition (%I) as presented in Table 1. The dicholoromethane and ethanol fractions of leaves as well as the dicholoromethane fraction of stems exhibited the highest level of AChE inhibition percentage (78,41%, 62,48% and 56,55%, respectively) and were selected for further investigation.

Table 1: In vitro acetylcholinesterase inhibition of extracts from *Esenbeckia* spp.

Samples	Fraction	%I (mean ± SD)
Leaves	Hexane	13,26 ± 2,99
	Dicholoromethane	78,41 ± 2,68
	Ethyl acetate	12,81 ± 3,67
	Ethanol	62,48 ± 1,77
Stems	Hexane	18,01 ± 7,53
	Dicholoromethane	56,55 ± 2,08
	Ethyl acetate	21,45 ± 4,97
	Ethanol	29,80 ± 6,20
Physostigmine	---	88,79 ± 2,35

Legend: SD (Standard deviation); %I (Percentage of inhibition).

Promising acetylcholinesterase inhibition was detected for the *Esenbeckia* spp. extracts. This inhibition could be correlated to the presence of alkaloids reported previously [4]. Phytochemical studies will be conducted aiming for the isolation of bioactive substances which can be used in the development of new therapies for the treatment of neurodegenerative diseases such as AD.

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