



ANTICHOLINESTERASE ACTIVITY AND CHEMICAL PROFILE OF ALKALOID FRACTIONS OF RUBIACEAE FAMILY SPECIES

Stefany, dos S. Morais^{1*}, *Juliana B. Cypriani*^{1*}, *Otto Mauricio S. Gerlach*^{2,3}, *Guilherme M. Gerhardt, Tania, M. B. Bresolin*^{1,2,3}, *Luiz, C. Klein-Junior*^{2,3}

¹Curso de Biomedicina, ²Núcleo de Investigações Químico-Farmacêuticas Universidade do Vale do Itajaí, ³Programa de Pós-graduação em Ciências Farmacêuticas Universidade do Vale do Itajaí, Brasil. *stefanymorais.univali@gmail.com *julianabaixo15@gmail.com

INTRODUCTION

Plants of the Rubiaceae family are characterized by containing an expressive number of compounds with potential pharmacological activity, especially alkaloids. Some of these metabolites act as modulators in the central nervous system and perform inhibitory activity in the enzyme Acetylcholinesterase (AChE), responsible for the hydrolysis of Acetylcholine (ACh), a neurotransmitter which if reduced implies cognitive and functional deficits. Given the applicability of AChE inhibitors, and the reduced therapeutic arsenal for Alzheimer's disease (AD) this research made it possible to contribute to the investigation for new therapeutic alternatives from plants.

MATERIAL AND METHODS

Alkaloid fractions (AF) were obtained by solid phase extraction from leaves of *Bathysa australis*, *Galianthe palustris*, *Hexasepalum radula*, *Palicourea mamillaris*, *Palicourea sessilis*, *Psychotria brachyceras*, *Psychotria hastisepala*, *Psychotria laciniata*, *Psychotria leiocarpa* and *Rudgea recurva* (SisGen - AA26CBC), and were submitted to *in vitro* anticholinesterase evaluation, using Ellman's reagent (DTNB) and acetylthiocholine iodide, with negative (DMSO) and positive (tacrine) controls. After the addition of the enzyme AChE, the absorbances were monitored.

The AFs with inhibition > 50% (100 µg/mL) were analyzed by High Performance Liquid Chromatography (HPLC), by reverse phase, using a gradient system.

RESULTS

The highest rates of inhibition of the enzyme activity were expressed by *Psychotria laciniata* and *Psychotria brachyceras* fractions, indicating IC₅₀ of 36.8 and 21.8 µg/mL, respectively. The other fractions were not able to significantly inhibit AChE activity. The HPLC analysis showed characteristic profiles of monoterpene indole alkaloids (MIAs), with UV profiles suggestive of the presence of brachycerin and lialoside in the AF of *Psychotria brachyceras* and *Psychotria laciniata*, respectively.

CONCLUSIONS

The results emphasize the alkaloid relevance in the modulation of the AChE, and especially the *Psychotria* genus proved to be promising for its multifunctional characteristic evidenced in the literature, particularity of interest in the search for substances with pharmacological potential for dementia, considering its multifactorial nature.

ACKNOWLEDGMENTS

Financial support of Universal-CNPq (grant 483577/2013-8).

