

## ABSTRACT

Charles University in Prague, Faculty of Pharmacy in Hradec Králové

Department of Pharmaceutical Botany and Ecology

Candidate: Mgr. Zdenka Kittlerová, roz. Horcicková

Supervisor: Doc. Ing. Lucie Cahlíková, Ph.D.

Title of Rigorous Thesis: Biologically active metabolites of plants VI. Alkaloids from *Eschscholtzia californica* Cham. and their inhibiting activity to acetylcholinesterase.

Keywords: *Eschscholtzia californica*, O-methylcaryachine, argemonine, secondary plant metabolites, alkaloids, acetylcholinesterase, prolyl oligopeptidase, Alzheimer's disease.

Within the screening of plants that contains alkaloids inhibiting the activity of the human erythrocytic acetylcholinesterase and human serum butyrylcholinesterase *Eschscholtzia californica* Cham. (Papaveraceae) was studied. This work connects to my diploma thesis (2011).

The aim was to process subfractions 36 and 39-45 obtained within the thesis. With chromatographic methods were isolated two alkaloids, which were based on MS and NMR studies identified as O-methylcaryachine and argemonine.

Both the isolated alkaloids were subjected to study for inhibitory activity against human erythrocyte AChE and BuChE serum. IC<sub>50</sub> values were O-methylcaryachine for AChE 498.00 ± 7.10 μM and BuChE was greater than 1000 μM. IC<sub>50</sub> values were argemonine for AChE and BuChE to greater than 1000 μM. Obtained values were significantly higher than the IC<sub>50</sub> standards (galanthamine, eserine). Based on the IC<sub>50</sub> values can not be isolated substances considered as potential inhibitors of AChE or BuChE.

Further antioxidant study was conducted, using the DPPH assay. Determine EC<sub>50</sub> values for both alkaloids was greater than 1000 μM, it follows that these compounds exhibit no antioxidant activity.

The assay was performed for inhibitory activity against prolyl oligopeptidases isolated compounds. POP IC<sub>50</sub> value O-methylcaryachine was higher than 1000 μM and POP IC<sub>50</sub> value argemonine was 337.20 ± 23.40 μM. In comparison to the standards, in

particular with standard baicalin exhibits significant activity against argemonin POP. At O-methylkaryachine showed no antioxidative activity against POP.