ABSTRACT

Michal, Vojtěch: STUDY OF BIOLOGICAL ACTIVITY OF ISOLATED ALKALOIDS FROM *ARGEMONE GRANDIFLORA* (PAPAVERACEAE) II. Diploma thesis 2015. Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology. Supervisor: PharmDr. Jakub Chlebek, PhD.

Key words: *Argemone grandiflora* Sweet, *Papaveraceae*, alkaloids, isolation, acetylcholinesterase, butyrylcholinesterase, prolyloligopeptidase, Alzheimer's disease, *in vitro* assay.

Diethylether alkaloid extract obtained from stem and roots of *Argemone grandiflora* Sweet was chromatografically analyzed. Using common chromatografic methods, three alkaloids were isolated in clean form. These substances were identified as allocryptopine, (–)-munitagine and (–)-norargemonine by structural analysis (MS, NMR). These obtained alkaloids were tested for their inhibitory activity against human erythrocyte acetylcholinesterase (AChE) and human plasma butyrylcholinestrase (BuChE) by Ellman's method. The results were represented as IC_{50} values (allocryptopine: $IC_{50\ AChE}$ = 250,0 ± 2,52 μM, $IC_{50\ BuChE}$ = 530 ± 28,2 μM; (–)-munitagine: $IC_{50\ AChE}$ = 62,29 ± 5,81 μM, $IC_{50\ BuChE}$ = 837,4 ± 23,03 μM; (–)-norargemonine: $IC_{50\ AChE}$ = 205,17 ± 11,6 μM, $IC_{50\ BuChE}$ = 4158,20 ± 495,78 μM).

Inhibition against prolyloligopeptidase was tested for allocroptyopine and (–)-munitagenine. IC_{50} was > 1000 μM for allocryptopine, (–)-munitagine is still measured in the time of publication of this thesis.

None of the isolated alkaloids showed better inhibition activity against AChE and BuChE in comparison with the standard galanthamine, huperzine A and physostigmine. Similar results were found in inhibition against POP. On the base of obtained results, the isolated alkaloids can't be perspective for treatment Alzheimer´s disease as cholinesterase and POP inhibitors.