Abstract

Adamcová, M.: Study of biological activity of alkaloids isolated from *Argemone grandiflora* (Papaveraceae) I. Diploma thesis, Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology, Hradec Králové 2015.

The aim of this study was isolation of substances from total diethyl ether alkaloid extract of *Argemone grandiflora* Sweet, their identification and assessment of their inhibition activity towards acetylcholinesterase, butyrylcholinesterase and prolyl oligopeptidase. Using common chromatografic methods, four alkaloids were isolated, that was identified as (+)-laudanosine, protopine, (–)-argemonine a (–)-platycerine.

These substances was tested for their inhibition activity IC50: (+)-laudanosine (IC50 AChE = 617,00 ± 46,55 μM, IC50 BuChE = 644,77 ± 55,52 μM, IC50 POP = not mesured yet); protopine (IC50 AChE = 229,98 ± 21,02 μM, IC50 BuChE = 208,87 ± 17,67 μM, IC50 POP > 1000 μM); (–)-argemonine (IC50 AChE = 4677,75 ± 1241,08 μM, IC50 BuChE = 885,45 ± 119,50 μM, IC50 POP = 337 ± 83,1 μM); (–)-platycerine (IC50 AChE = 223,65 ± 19,61 μM, IC50 BuChE = 1651,25 ± 327,7 μM, IC50 POP = 687 ± 74 μM). In comparison with the standards galanthamine (IC50 AChE = 1,710 ± 0,065 μM, IC50 BuChE = 42,30 ± 1,30 μM) and huperzine A (IC50 AChE = 0,033 ± 0,001 μM, IC50 BuChE > 1000 μM), none of the substances showed better inhibition activity towards AChE and BuChE. Only (–)-argemonine showed better inhibition activity towards POP, then baikaline, used as a standard.

Key words: *Argemone grandiflora*, Papaveraceae, isoquinoline alkaloids, isolation, in vitro biological activity, acetylcholinesterase, butyrylcholinesterase, prolyl oligopeptidase, Alzheimer's disease