

ABSTRACT

Šebestová L.: Biologically active metabolites of plants. 3. Alkaloids from *Chelidonium majus* L. and their inhibiting activity to acetylcholinesterase. Diploma thesis, Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology, Hradec Králové 2010, 68 p.

The thesis aims to process the shake-out of benzophenanthridine alkaloids, of *Chelidonium majus*, to isolate at least one alkaloid in pure form; consequently the thesis aims to give exact figures for the anti-cholinesterase, anti-protozoal and antioxidant activity of the alkaloid.

The method of column chromatography was used to isolate the two alkaloids of the shake-out. The isolated substances were labelled LŠ1 and LŠ2 respectively. The identification of the substances as stylopin and chelidonine respectively, was based on NMR and MS studies.

Both isolated alkaloids were subjected to inhibition study with respect to human erythrocytal acetylcholinesterase and human serum butyrylcholinesterase. Stylopin showed the following set of results: IC_{50} (AChE) = $114 \pm 2.9 \mu\text{M}$, IC_{50} (BuChE) = $>1000 \mu\text{M}$. The results being considerably higher in comparison with the standard used, no further usage for the treatment of Alzheimer's disease is expected. Chelidonine showed the following set of results: IC_{50} (AChE) = $26.84 \pm 1.2 \mu\text{M}$, IC_{50} (BuChE) = $31.86 \pm 1.4 \mu\text{M}$. The activity of chelidonine with respect to BuChE, is of interest because it proved to be considerably better in comparison with the standard galanthamin.

Both alkaloids were subjected to a study concerning their antioxidant activity. Due to the fact that the results obtained for both substances proved to be higher than $1000 \mu\text{M}$. The alkaloids show no possible therapeutic utilization with respect to their antioxidant activity.

Keywords: acetylcholinesterase, Alzheimer's disease, benzophenanthridine alkaloids, butyrylcholinesterase, *Chelidonium majus*.