ABSTRACT

Kassemová D.: Biologically active metabolites of plants. 9. Alkaloids of *Fumaria officinalis* L. and their biological activity. Diploma thesis, Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology. Hradec Králové 2013, p. 61.

The aim of this diploma work was to chromatografically analyze the total alkaloid extract of the plant *Fumaria officinalis* L. (Fumariaceae). Using common chromatografic methods, four alkaloids were isolated in clean form. These substances were identified as protopine, kryptopine, (-)-fumaricine and (+)-bicuculine by structural analysis (MS, NMR).

All obtained alkaloids were tested for their inhibitory activity against human erythrocyte acetylcholinesterase (HuAChE) and human plasma butyrylcholinestrase (HuBuChE) by Ellman`s method. The results were represented as IC_{50} (protopine: IC_{50} HuAChE = 345.4 ± 6.9 μM, IC_{50} HuBuChE = 239.6 ± 7.2 μM; cryptopine: IC_{50} HuAChE = 477.7 ± 47.3 μM, IC_{50} HuBuChE= 270.8 ± 39.1 μM; (–)-fumaricine: IC_{50} HuAChE a IC_{50} HuBuChE > 1000 μM,; (+)-bicuculline: IC_{50} HuAChE = 626.1 ± 122.7 μM, IC_{50} HuBuChE = 329.0 ± 90.02 μM). None of the isolated alkaloids showed better inhibition activity against HuAChE and HuBuChE in comparison with the standard galanthamine and huperzine A. In conclusion, the isolated alkaloids can´t be perspective for treatment Alzheimer´s disease as cholinesterases inhibitors.

Key words: acetylcholinesterase, Alzheimer´s disease, butyrylcholinesterase, *Fumaria officinalis* L.