ABSTRACT

Hrstka V.: Neurotropic and antioxidative aktivity of some selected species of monocotyledonous alkaloidal plants *in vitro* IV, Diploma thesis, Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany and Ecology, Hradec Králové 2013, 69 p.

The objective of this thesis was to prepare ethanolic and alcaloidal extracts from six Daffodil's species of *Amaryllidaceae* family. In addition, measuring of inhibitory activity to human cholinesterases (HuAChE and HuBuChE) was included. According to results of particular extracts, identification of alcaloidal spectrum of each extract was performed using GC/MS analysis in order to evaluate inhibitory activities that had been measured. All plants described within the work were scrutinized by complete GC/MS analysis for the first time. A pure alkaloid homolycorine was isolated from the species *Narcissus* Sir Winston Churchilli. Its structure was identified according to its NMR spectrum and MS study. Inhibitory activity to HuAChE and HuBuChE of this alkaloid in pure form was also tested.

The strongest inhibitory activity against HuAChE was detected in extract from *Narcissus* Flower Record with value IC_{50} = 5,6 ± 2,1 µg/ml. The most significant activity to both esterases had extract from *Narcissus poeticus var. recurvus* with results IC_{50} = 6,0 ± 0,1 µg/ml for HuAChE and IC_{50} = 23,0 ± 1,0 µg/ml for HuBuChE.

Isolated alkaloid homolycorine showed inhibitory activity to HuAChE IC_{50} = 20,1 ± 1,4 µg/ml and to HuBuChE IC_{50} = 47,6 ± 4,8 µg/ml.

Keywords: Alzheimer's disease, alkaloids, *Amaryllidaceae*, *Narcissus sp*. *poeticus*, Jack Snipe, Katie Heath, Dutch Master, Flower record, Sir W. Churchilli, GC/MS, acetylcholinesterase, butyrylcholinesterase, homolycorine.