ABSTRACT

Benešová N.: Neurotropic and antioxidative activity *in vitro* of monocotyledonous alkaloidal plants II. Diploma thesis, Charles University in Prague, Faculty of Pharmacy in Hradec Králové, Departement of Pharmaceutical Botany and Ecology, Hradec Králové 2012, 72 p.

The aim of this diploma thesis was to analyse alkaloidal extracts of six selected plants from Amaryllidaceae family (*Nerine filifolia*, *Nerine undulata*, *Nerine filamentosa*, *Scadoxus multiflorus*, *Sprekelia formosissima*, *Sternbergia lutea*) and test their biological activity to human cholinesterases (HuAChE, HuBuChE) using Ellman's method and antioxidative activity measured by DPPH test. Thanks to GC/MS analysis was identified a huge range of alkaloids of Amaryllidaceae family that belongs to various structural types. Some of them have not been determined yet due to unavailability of their spectras in commercial libraries and literature.

The best inhibitory activity against human blood acetylcholinesterase was described in alkaloidal extracts of *Nerine undulata* (IC_{50} 14,30 ± 1,20 μg/ml) and *Nerine filifolia* (IC_{50} 18,54 ± 0,79 μg/ml) and against human plasma butyrylcholinesterase in extracts of *Sternbergia lutea* (IC_{50} 3,07 ± 0,05 μM) and *Nerine filamentosa* (IC_{50} 13,00 ± 0,71 μg/ml). Antioxidative activity of alkaloidal extracts from the bulbs of these plants was higher then 1 μg/ml, which is not interesting for further therapeutical use.

Keywords: acetylcholinesterase, alkaloids, Alzheimer's disease, Amaryllidaceae, antioxidative activity, butyrylcholinesterase, *Nerine filifolia*, *Nerine undulata*, *Nerine filamentosa*, *Scadoxus multiflorus*, *Sprekelia formosissima*, *Sternbergia lutea*.