ABSTRACT

Schickerová Julie: Alkaloids of *Narcissus pseudonarcissus* cv. Dutch Master: isolation, structural identification, preparation of analogues, biological activity. Diploma thesis, Charles University, Faculty of Pharmacy in Hradec Králové, Department of Pharmaceutical Botany, Hradec Králové, 2018, 73 p.

The purpose of this diploma thesis was to isolate the substances from the fraction ND 15-9, which was obtained by column chromatography of the alkaloid extract of Narcissus pseudonarcissus cv. Dutch Master. The method of preparative TLC was used to separate this fraction, and the three purified compounds were isolated in the pure state NDS1-NDS3. NMR, GC/MS and optical rotation were used to determine their structure. The obtained data were compared with data in the literature and further studies on their biological activity were performed.

Isolated substances were identified as epimaritidine, crinine and tetrahydromasonine. Their inhibitory activities ($IC_{50,\ AChE}$ > 1000 μM, $IC_{50,\ BuChE}$ > 1000 μM) versus human erythrocyte AChE and plasma BuChE were inactive compared to galanthamine standards ($IC_{50,\ AChE}$ = 1.71 ± 0.07 μM, $IC_{50,\ BuChE}$ = 42.30 ± 0.10 μM), huperzin A standards ($IC_{50,\ AChE}$ = 0.033 ± 0.001 μM, $IC_{50,\ BuChE}$ > 1000 μM) and berberin standards ($IC_{50,\ AChE}$ = 0.71 ± 0.01 μM, $IC_{50,\ BuChE}$ = 30.7 ± 3.5 μM). On the basis of the obtained data, it can be concluded that in terms of the inhibition of cholinesteras, these are substances potentially unusable in AD therapy. The results of POP inhibitory activities are negligible in the crinin, for epimaritidine the IC_{50} is 0.79 ± 0.37 mM and for tetrahydromasonine IC_{50} 0.75 ± 0.89 mM. Both alkaloids showed from a low POP inhibition compared to the berberin standard of IC_{50} 0.14 ± 0.02 mM.

Keywords: *Narcissus* cv. Dutch Master, Amaryllidaceae, alkaloids, cholinesterases, Alzheimer´s disease, cytotoxic activity