ABSTRACT

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Title of thesis: Isolation of alkaloids from Narcissus poeticus recurvus and its semi-synthetic derivatives

Key words: Amaryllidaceae, galanthin, semi-synthetic derivatives, Alzheimer's disease, acetylcholinesterase, butyrylcholinesterase, cytotoxicity.

As part of the thesis, two alkaloid substances (galanthin and cherylline) were isolated from the bulbs of the mother plant Narcissus poeticus recurvus using preparative TLV chromatography. The obtained galanthin was subsequently used for the preparation of 6 derivatives of this alkaloid, namely esters. Galanthine esters were prepared by acylation of the hydroxyl group. The derivatives were identified by NMR, HMRS and the optical rotation was measured. In the end, only 5 of the prepared substances were recovered in sufficient quantity and purity. Derivative G2 could not be retained. In the case of G1, G4 and G6, the yield of the reaction was higher than 50%, whereas for G3 it was 49.55%, G2 19.23% and G5 39.79%.

All prepared derivatives except G2 were tested for inhibitory activity against cholinesterases by the Ellman method using recombinant enzymes. Unfortunately, according to the IC50 values of the tested derivatives, it did not show any inhibitory attitude towards AChE or BuChE.

In addition to the inhibitory effects on cholinesterases, cytotoxic activity was tested on 1 tumor cell line of liver cancer (HepG2). Bohuel also did not show a potential cytotoxic activity for use in the treatment of cancerous liver diseases, but on the contrary, it is significant that the derivatives do not significantly damage liver cells and it can therefore be concluded that they are non-toxic to human cells.