ABSTRACT

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Title of diploma thesis: Alkaloids of *Narcissus pseudonarcissus* cv. Carlton (Amaryllidaceae): isolation, structural identification, biological activity.

Key words: *Narcissus*, Amaryllidaceae, alkaloids, isolation, biological aktivity

In this thesis, an alkaloid extract from *Narcissus pseudonarcissus* cv. Carlton was processed with the aim of isolating at least two alkaloids in pure form. Using methods of preparative TLC and HPLC, three alkaloid compounds were isolated. These compounds were subsequently identified by GC-MS, HPLC-MS and NMR analyses as alkaloids of the homolycorine structural type – homolycorine and lycorenine and of the lycorine structural type – galanthine.

In biological activity assays, the isolated alkaloids homolycorine and galanthine were tested for their inhibitory activity against enzymes associated with AD, specifically AChE, BuChE, POP, and GSK-3β. For comparison of inhibitory activity against AChE and BuChE, galanthamine (IC_{50} 1.7 ± 0.1 μM) and huperzine A (IC_{50} 0.033 ± 0.001 μM) were used as standards. Z-Pro-prolinal (IC_{50} 2.75×10^{-3} μM) and berberine (IC_{50} 142 ± 21 μM) were used as standards for comparison of inhibitory activity against POP.

Among the isolated alkaloids tested for biological activity, homolycorine showed the most interesting results, particularly against POP, with IC_{50} values of 173 ± 41 μM.

The cytotoxic activity of the isolated alkaloids was tested on nine cancer cell lines, specifically Jurkat, MOLT-4, A549, HT-29, PANC-1, A2780, HeLa, MCF-7, and SAOS-2, with the healthy cell line MRC-5 used as a control. None of the isolated alkaloids exhibited significant cytotoxic activity.