

## ABSTRACT

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Title of diploma thesis: Alkaloids of the genus *Narcissus* and their biological activity.

Key words: *Narcissus pseudonarcissus* L. cv. Dutch Master, Amaryllidaceae, alkaloids, AChE, BuChE, POP, GSK-3 $\beta$ , biological activity.

Alkaloid extract obtained from bulbs of *Narcissus pseudonarcissus* L. cv. Dutch Master was extracted by ethanol and was purified by liquid-liquid extraction and fractionated by column chromatography to individual fractions. At the end, were obtained 11 pooled fractions, which were used to isolate pure alkaloids. The ND 3-5 / 7 fraction was processed by preparative thin layer chromatography followed by crystallization of pure substances. In total, 5 alkaloid substances of ST1D2, ST1D3, ST2A, ST2B1 and ST3C were obtained from this fraction in various amounts. These substances were determined by GC-MS analysis, NMR analysis and optical rotation. Subsequently, the obtained data were compared with the NIST library spectra and the literature. Isolated substances have been identified as caranine, *O*-ethyllycorenine, narwedine, pluviine and *N*-demethylhomolycorine. The alkaloids obtained in sufficient amounts were subsequently subjected to tests to determine their biological activity against AChE, BuChE, GSK-3 $\beta$  and POP.

Cholinesterase inhibitory activity was determined *in vitro* by a modified Ellman spectrophotometric method. POP inhibition was determined using Z-Gly-Pro-p-nitroanilide as substrate. GSK-3 $\beta$  inhibitory activity was determined by using the *in vitro* luminescence method of Baki et al. (2007).

Most of the isolated substances did not show significant inhibitory activity in the bioassays performed compared to the standards.

The only interesting result was the inhibitory activity of caranine against GSK-3 $\beta$  ( $IC_{50} = 30,8 \pm 0,3 \mu M$ ).