

ABSTRACT

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Title of diploma thesis: Alkaloids of *Zephyranthes candida* (Lindl.) Herb. (Amaryllidaceae): isolation structural identification, biological activity.

Key words: *Zephyranthes candida*, Amaryllidaceae alkaloids, isolation, biological activity

The focus of this diploma thesis is the isolation of alkaloids from a selected fraction, their structural characterization, and the evaluation of their biological activities. The chosen chloroform fraction (2.25 g) originates from the initial crude ethanolic extract prepared from 52.63 kg of fresh bulbs of *Zephyranthes candida* (Lindl.) Herb., which was obtained and fractionated by Jesús García Díaz, Ph.D.

The experimental part involves the primary separation of the fraction by flash chromatography into 14 subfractions and the subsequent isolation of alkaloids using preparative thin-layer chromatography. Additionally, this section provides an overview of general methods employed for the identification and biological evaluation of the isolated compounds.

In total, ten alkaloids and one mixture of the two isomers of a known alkaloid were obtained. All substances were identified using GC-MS, NMR spectroscopy, measurement of optical rotation, and comparison with data available in the literature. The identified alkaloids belonged to the ismine-type (ismine), galanthamine-type (11-hydroxygalanthamine, 11-hydroxylycoramine and lycoramine), homolycorine-type (7-methoxy-*O*-methyllycoramine), crinine-type (aulicine, hippeastidine and a mixture of zephyranthine F isomers) and pretazettine-type (3-epimacronine, 6-*O*-methylpretazettine and tazettine).

Selected alkaloids that had not previously been tested within the department were subjected to in vitro Evaluation of their inhibitory activity against human cholinesterases (AChE

and BuChE) using a modified Ellman's method. However, none of the tested samples exhibited any inhibitory effect.