

## Abstract

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The family Amaryllidaceae is irreplaceable in the natural kingdom. In folk medicine it is used to deal with simple ailments such as colds and infections. The plant species of this family are abundant in nature, the core of the action are secondary metabolites. The most important metabolites are Amaryllidaceae alkaloids, which can be categorized into groups according to their basic structure. Majority of alkaloids belonging to the Amaryllidaceae family have similar effects and are therefore intensively studied, the most promising representatives have anticancer, antibacterial, antifungal, antiviral and antimalarial activity. The abilities of alkaloids to inhibit human cholinesterases, which may have neuroprotective effects especially on cognitive decline, have also been analyzed. Assessing the biological activity and revealing the presence of new alkaloids in selected plants was the aim of this thesis.

The species examined were *Crinum erubescens*, *Hippeastrum puniceum*, *Hippeastrum striatum* and *Hymenocallis occidentalis*. Their bulbs were used to make total ethanol extracts, from which alkaloid extracts were obtained by liquid-liquid extraction with chloroform and ethyl acetate. The extracts were subjected to GC-MS analysis to identify some of the alkaloids present. The alkaloid extracts were further tested for their inhibitory activity against acetylcholinesterase and butyrylcholinesterase, which may be essential in the development of treatments for Alzheimer's disease. Extracts containing galanthamine were significantly more active against acetylcholinesterase. From a phytochemical point of view, most of the unknown compounds were found in the ethyl acetate extract of *Crinum erubescens* (AL-751).