

# ABSTRACT

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Title of diploma thesis: Derivatives of Amaryllidaceae Alkaloids as Drugs

Plants of the family Amaryllidaceae belong to the widespread species. They contain a large amount of Amaryllidaceae alkaloids (AA) which are known for their biological activity. AA possess a broad spectrum of biological activities including an antiviral, antimalarial, antitumor, cholinesterase's inhibitory activity and others.

An interesting AA is ambelline which occurs mainly in plants of the genus *Crinum* and *Nerine*. So far the biological activity of this compound has been studied only marginally. In the studies conducted, this substance appears to be less interesting.

A series of aliphatic and aromatic derivatives of ambelline has been prepared in the framework of this thesis. Subsequently, their cholinesterase inhibitory activity and GSK-3 $\beta$  inhibitory activity were studied. Cytotoxic activity on a panel of selected tumor and resting cell lines was also screened.

Of the prepared derivatives, LC-125 (3-methoxybenzoylambellin) had an interesting biological activity. This substance showed a promising activity in all biological studies. GSK-3 $\beta$  inhibitory activity is characterized by an  $IC_{50} = 93.32 \mu\text{M}$ . In addition, LC-125 appears to be a selective butyrylcholinesterase inhibitor with an  $IC_{50} = 6.2 \pm 0.4 \mu\text{M}$ . This derivative also had a mild cytotoxic activity.

**Keywords:** ambelline, derivatives, Amaryllidaceae family, alkaloids, antitumor activity, Alzheimer's disease