ABSTRACT

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Title of diploma thesis: Evaluation of cytotoxicity of newly synthesized phenoxytacrine derivatives as potential therapeutics of Alzheimer's dementia.

The increasing prevalence of Alzheimer's disease and the availability of mainly symptomatic treatment as opposed to causal therapy require the development of new drugs that affect the complex pathogenesis of this condition. Recently, the prevailing effort to create compounds with a multimodal effect and lower toxicity compared to Tacrine has led to the synthesis of phenoxytacrine and its derivatives. These substances, due to their targeting of multiple targets simultaneously, appear to be suitable candidates for the treatment of Alzheimer's disease.

The subject of this thesis is the determination of the cytotoxicity of phenoxytacrine derivatives and the evaluation of its relationship to the structure of the studied compounds. Cytotoxicity studies are an important aspect of drug development, determining the effect of a specific chemical compound on living cells. This type of study is crucial for understanding the potential toxicity of new chemical compounds and obtaining information about their safety for use in veterinary or human medicine.

The cytotoxicity of new phenoxytacrine derivatives was tested in this work using an *in vitro* cellular model utilizing the CHO-K1 cell line and the MTT assay. The results are represented by the corresponding IC_{50} toxicological index values. These values determine the concentration at which a given compound or drug achieves half of the maximum inhibitory effect on the tested cells or organisms.

Significant toxicity was observed for most of the studied compounds. However, 9 out of a total of 30 studied compounds exhibited toxicity comparable to standard compounds such as 7-methoxytacrine (7-MEOTA) and Imipramine.

The potential of the least toxic compounds requires further investigation through additional testing.