Abstract

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Title of diploma thesis: Development of method for *in vitro* testing of potential drugs Alzheimer disease

Alzheimer's disease (AD) is a neurodegenerative disease with increasing incidence. Although many decades have passed since the disease was discovered, there is no causal therapy yet. Currently available therapy consists in treatment with central acetylcholinesterase inhibitors and memantine, improving the patient's quality of life. The aim of this study was to develop a simple colorimetric method for the determination of prolyl oligopeptidase (POP) and beta secretase (BACE) activity, important enzymes associated with AD pathogenesis, and to use this method for screening of potential AD drugs and to determine their antioxidant and antiradical activity. Results showed that tested substances were weak inhibitors of POP compared to standard inhibitor Z- Gly-Pro- prolinal. Standard cholinesterase inhibitors used in AD therapy showed no ability to inhibit POP. The method for determination of BACE activity has not been implemented. All the newly synthesized compounds showed very low antioxidant activity. Standard inhibitors rivastigmine, donepezil, galantamine, and huperzine showed comparable or higher values antioxidant activity compared to vitamin C. This novel method developed for POP evaluation will be further used for screening of new substances.

Keywords: Alzheimer's disease, prolyl oligopeptidase, beta secretase, antioxidant, inhibitors