Abstract

Charles University
Faculty of Pharmacy in Hradec Králové
Department of Pharmacology & Toxicology
Student: Tereza Kalinová
Supervisor: Assoc. Prof. Přemysl Mladěnka, Pharm.D., Ph.D.
Mentor: Assoc. Prof. Jana Hroudová, Pharm.D., Ph.D.
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Cholinesterase (ChE) inhibitors play an essential role in the treatment of Alzheimer's disease (AD). They effect positively cognitive, functional and behavior symptoms of AD. Up to date, donepezil, rivastigmine and galantamine represent the only ChE inhibitors approved for AD treatment. The first ChE inhibitor was tacrine, which was withdrawn from market due to its toxicity and adverse effects. Recently, novel tacrine and 7-methoxytacrine (7-MEOTA) derivatives were synthetized and extensively investigated to find less toxic compounds affecting pathological mechanisms associated with development of AD. There is less known about effects of these drugs on mitochondrial functions and cellular energy metabolism. The aim of this project is to examine *in vitro* effects of ChE inhibitors on energy metabolism and cellular respiration, specifically on mitochondrial electron transport chain complexes and an enzyme of the citric acid cycle – citrate synthase. Inhibitory effects on monoamine oxidase B (MAO-B) activity can be also expected. Inhibition of MAO-B is included in mechanisms of action of newly developed multitarget drugs. The results of this study identified one molecule that could become a potential candidate for further research of new drugs for therapy of AD.