ABSTRACT

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Title of thesis: **Modulation of acetylcholinesterase activity using different organic compounds**

Acetylcholinesterase is a vital enzyme because of its ability to end a nerve impulse by decomposition of neurotransmitter acetylcholin. Inhibitors of cholinesterases have been used in many sectors, such as drugs, pesticides, or substances abused as biological weapons. Using chosen agents an existence of acetylcholinesterase inhibition was detected together with its rate and character. The detection was accomplished by the method of measuring the decrease of acetylcholinesterase activity. In this experiment some organic solvents, metal salts, and other agents like gelatine, tacrine or caffeine were used. Ellman's spectrophotometrical detection was used to determine the decrease of acetylcholinesterase activity. The data were evaluated by the graphical representation by Dixon and Boltzmann. In this experiment the acetylcholinesterase from electric eel was used.

Results showed that many chosen agents have the ability to inhibit acetylcholinesterase and on the other hand many of them do not have this property. It was proved that there are inhibitors of cholinesterase both among metal salts and organic solvents. This thesis should serve as a base and a comprehensive source of information about chosen cholinesterase inhibitors, and for the following experiments related to inhibiton or other mechanisms of action of substances on acetylcholinesterase.

Key words: acetylcholinesterase, inhibition, spectrophotometrical detection, Alzheimer's dissease, inhibitors