Abstract

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Performed at: University of defence in Brno, Fakulty of Military Health Sciences in Hradec Králové, Department of Molecular Pathology and Biology
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Title of diploma thesis: Colorimetric Analysis Of Biochemical Markers Using Photography
Keywords: colorimetry, acetylcholinesterase, tacrine, photometric method
Acetylcholine, which is responsible for synaptic transmission, is nowadays considered to be the main neurotransmitter in the brain. It is degraded into choline and acetate by two enzymes – acetylcholinesterase (AChE) (EC 3.1.1.7) and butyrylcholinesterase (BChE) (EC 3.1.1.8) AChE inhibitors represent an interesting subject of current scientific research since they belong to the main treatments for Alzheimer's disease or myasthenia gravis.
The aim of the thesis was to verify the photometric equipment while determining the reaction of AChE with the substrate on pH papers, to determine the kinetic parameters AChE, and to optimize the method for the determination of the takrin inhibitor. Furthermore, the goal was to determine the influence of selected matrices on AChE using the photometric technique.
The experiment was conducted on the pH paper from MACHEREY-NAGEL and also on the spectrophotometer using the Ellman method. The AChE, which has been used, comes from an electric eel.
The photometric technique was found to be reproducible and suitable for the determination of AChE activity as well as for the measurement of real samples. The influence of selected matrices on this enzyme was minimal.