

# Abstract

**Title:** Preparation of modulators of cholinesterases and cholinergic receptors

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Organophosphorus compounds are widely used as pesticides and were also misused as chemical warfare agents. Up to date, the pre-exposure treatment of organophosphorus compounds intoxication consists in use of carbamate cholinesterase inhibitors. Carbamates act as reversible inhibitors of acetylcholinesterase (AChE) and thus protect it against irreversible inhibition with organophosphorus compounds. However, carbamates showed severe undesirable effects caused by carbamylation of AChE, and therefore there is trend to find novel compounds, which could more effectively act as protection against intoxication with organophosphorus compounds.

Twenty modulators of cholinesterases and cholinergic receptors were prepared in this project. These compounds showed promising inhibition ability during *in vitro* testing and four of them were chosen for further molecular modelling studies. The former studies of AChE and its receptors features were also taken into account. The properties of newly prepared compounds were discussed. Based on promising results after *in vitro* evaluation, several compounds were recommended for further *in vivo* studies in order to prove or disprove their effectiveness in pre-exposure treatment with organophosphorus compound intoxication.