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MEETING ABSTRACTS

SYNTHESIS AND *IN VITRO* EVALUATION OF NON-SYMMETRICAL MONOQUATERNARY AMMONIUM SALTS AS POTENTIAL REACTIVATORS OF INHIBITED CHOLINESTERASES

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Organophosphorous compounds (OPs) such as nerve agents or pesticides are irreversible inhibitors of cholinesterases, namely Acetylcholinesterase (AChE) and Butyrylcholinesterase (BChE), causing cholinergic crisis (1). While inhibition of AChE can be lethal, inhibition of BChE has no adverse effects. Therefore, BChE can be used for scavenging OPs before it reaches AChE in CNS. BChE itself has no catalytic activity, but by joint administration of BChE and reactivator we can establish pseudo-catalytic bioscavenger (2). Reactivators cleave the OP moiety from the enzyme by making a covalent bond with it. Reactivators of AChE are already widely used (eg. pralidoxime, asoxime) but there are few disadvantages. Firstly, there is no broad-spectrum reactivator. Second problem is that they have low ability to pass the blood-brain barrier (BBB) due to their double-charged structure. Moreover, when the OP-ChE complex is dealkylated (so called "aging" of ChE), it is no longer possible to reactivate. That is why nowadays the research is focusing to development of reactivators of BChE as well (3). Promising results were obtained for the novel "K-oximes" K027, K048 and K203. The aim of this research is synthesis and *in vitro* evaluation of monoquaternary analogues of oxime K203 and observation of the effect of charge on physicochemical properties of compounds and on biological activity.

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Keywords: reactivators; organophosphates; cholinesterases; oximes

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