MMSL
Military Medical
Science Letters
Since 1925

Mil. Med. Sci. Lett. (Voj. Zdrav. Listy) 2018, 87(supplementum 1)
ISSN 2571-113X (Online)

MEETING ABSTRACTS

A COMPARISON OF THE REACTIVATING AND THERAPEUTIC EFFICACY OF A NOVEL BISPYRIDINIUM OXIME K870 WITH COMMONLY USED PRALIDOXIME AND THE OXIME HI-6 IN SARIN-POISONED RATS AND MICE

Jiri Kassa [1], Vendula Hepnarova [1], Kamil Musilek [1,2], Daniel Jun [1]
Presenting author – Jiri Kassa

[1] Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Trebesska 1575, 500 01 Hradec Kralove, Czech Republic
[2] Department of Chemistry, Faculty of Science, University Hradec Kralove, Rokitanskeho 62, 500 03 Hradec Kralove, Czech Republic

The ability of a novel bispyridinium oxime K870 and currently available oximes (pralidoxime, HI-6) to reactivate sarin-inhibited acetylcholinesterase and to reduce acute toxicity of sarin was evaluated. *In vivo* determined percentage of reactivation of sarin-inhibited rat blood, diaphragm and brain acetylcholinesterase showed that the potency of newly developed oxime K870 to reactivate sarin-inhibited acetylcholinesterase roughly corresponds to the reactivating efficacy of pralidoxime with the exception of diaphragm where the oxime K870 was more effective than pralidoxime. However, the oxime HI-6 was found to be the most efficient reactivator of sarin-inhibited acetylcholinesterase. While the oxime HI-6 was able to reduce the acute toxicity of sarin more than five times, the novel oxime K870 and pralidoxime decreased the acute toxicity of sarin less than three times. Based on the results, we can conclude that the reactivating and therapeutic efficacy of newly developed oxime K870 is significantly lower compared to the oxime HI-6 and, therefore, it is not suitable for the replacement of the oxime HI-6 for the antidotal treatment of acute sarin poisoning.

Keywords: sarin; acetylcholinesterase; K870; pralidoxime; HI-6

Acknowledgement

The study was supported by the grant of Ministry of Defence – „Long-term organization development plan – Medical Aspects of Weapons of Mass Destruction“.