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***In vivo* evaluation of protection and AChE reactivation efficacy of new bis-Pyridinium Acetamide derivatives (HNK series) against insecticide and nerve agent poisoning**

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The use of Organophosphorous Compounds (OPC) in industry, agricultural insecticides and unfortunately as chemical warfare agents (Syria attack, 2013) is well known. Current therapeutic regimen includes the use of atropine in combination with AChE enzyme reactivator (PAM, HI-6, Obidoxime) for treatment of OPC poisoning. The available oximes are not effective against all types of OPC poisoning and require replacement with a broad spectrum oxime, the standing goal of this study. The new HNK series oximes were synthesized in this establishment and tested in combination with atropine against an insecticide (Dichlorvos; DDVP) and a nerve agent (Sarin; GB) in Swiss male mice. The data showed about two fold protection with HNK-102 compared to standard antidote 2-PAM against DDVP and Sarin. In reactivation studies of Acetylcholinesterase enzyme (AChE), dose-time dependent inhibition concentration (IC₅₀) was estimated *in vivo*. Approximately 3.5 times lower dose or 0.217 LD₅₀ of DDVP induced 50 % brain AChE inhibition, whereas 1.0 LD₅₀ dose of sarin was required to get 50% inhibition. AChE reactivating efficacy of these oximes was also determined plotting shift of log IC₅₀ doses. HNK-102 showed significant AChE reactivation ($p < 0.01$) compared to that of 2-PAM. It was concluded that AChE inhibition cannot be the only factor for lethality by OPC toxicity and the new HNK-102 oximes can be a better replaceable antidote with 2-PAM against DDVP and Sarin poisoning.

Biography

Devyani Swami obtained her MSc (Medical biochemistry) from G R Medical College, Jiwaji University, Gwalior. She joined Defence Research and Development establishment, Gwalior as Junior Research Fellow and presently working as Senior Research Fellow in Pharmacology and Toxicology Division of this Establishment. She is working on toxicity of organo-phosphorous compounds and screening of newly synthesized antidotes against organo-phosphorous compounds toxicity.

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