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MEETING ABSTRACTS

IN VITRO DECONTAMINATION EFFICACY OF NEWLY DEVELOPED DECONTAMINATION MEANS ON NERVE AGENTS

Alzbeta Dlabkova [1], Marek Matula [1], Aneta Markova [2], Jan Marek [2]
Presenting author: Alzbeta Dlabkova (alzbeta.dlabkova@unob.cz)

[1] Department of Toxicology and Military Pharmacy, Faculty of Military Health Sciences, University of Defence, Trebesska 1575, 500 01 Hradec Kralove, The Czech Republic
[2] Biomedical Research Centre, University Hospital Hradec Kralove, Sokolska 581, 500 05 Hradec Kralove, The Czech Republic

The aim of the presented work was to evaluate the decontamination efficacy of newly developed decontamination agents based on surfactants with hydroxyl functional group.

Sarin and VX were selected as representative nerve agents (NA). The ability to accelerate the catalytic hydrolysis of the NA was assessed by the pH value measurement using an automatic burette. The hydrolysis of NA in a contaminated solution leads to a decline of pH value due to the formation of O-alkyl methylphosphonic acids (MPAs). The ability of tested surfactants to penetrate through the skin and their rinsing effectivity was observed using modified Franz-type of glass diffusion cells and *ex vivo* dermatomed porcine skin as a model membrane. The amounts of surfactants penetrated into the receptor fluid after application on the skin surface were determined by HPLC with fluorescent detection. The solutions of surfactants were used to rinse the contaminated skin. Simultaneously, the same solution was contaminated by corresponding amount of NA to simulate the situation when 100 % of a contaminant is rinsed off. The MPAs in the rinsing fluid and NA penetrated into the receptor fluid were determined by HPLC-MS. The decontamination efficacy of the tested solutions was expressed in % of an agent washed away by the rinsing fluid.

All of tested newly synthesized compounds had better hydrolytic activity compared to the commercially available surfactant. Their penetration through the skin was not observed. The rinsing efficacy of all tested solutions was comparable.

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Keywords: nerve agents; decontamination; surfactants