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MEETING ABSTRACTS

DIAGNOSIS OF POISONING WITH *O*-ISOBUTYL-*S*-[2-(DIETHYLAMINO)ETHYL]METHYLPHOSPHONOTHIOATE (VR) UNDER ANTIDOTAL THERAPY WITH CARBOXIM

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The choice of biomarkers for establishment of exposure to organophosphorus compounds (OPs) is made based on the results of assessment of the real situation with account for such factors as the required timeframe for providing the results of expert examination, nature and volume of biosamples, available equipment, and the degree of confidence of information on the influencing factor (substance, dose, way of entry, use of antidote).

We estimated the efficiency of express methods of diagnosis of exposure to OPs, specifically, Ellman's cholinesterase activity assay, as well as GC-MS/MS and HPLC/MS/MS determination of OPs fluoride-regenerated from protein adducts and low-molecular hydrolytic metabolites of OPs, respectively. The objects of study were blood and urine samples of rats exposed to VR in a dose of 2×0.4LD50 under conditions of antidotal therapy with Carboxim {5-[[[2-[benzyl(diemthyl)ammonio]ethyl]amino]carbonyl]-2-[(hydroxyimino)methyl]-1-methylpyridinium dichloride}.

Carboxim therapy led to AChE reactivation 3 h after exposure to VR, while in the absence of the therapy the AChE activity recovered within 3 days.

Fluoride regeneration of VR from its blood plasma protein adducts was possible within 7 days after poisoning irrespective of whether the therapy was applied or not

O-isobutyl methylphosphonate was detected in urine 24 h after exposure in the urine samples of animals both subjected and not subjected to antidotal therapy, whereas after 3 days it was detected exclusively in the urine samples of animals not given the antidote.

It was also found that blood plasma levels of free and esterified fatty acids can serve as an additional toxicodynamic parameter of VR poisoning.

Keywords: nerve agents; VR; markers; Carboxim; antidotal therapy