dinim) butane dibromide], K027 [1,4-hydroksyiminomethylpyridinium)-3-(4-carbamoylpyridinium) propane dibromide], K048 [1-(4-hydroxyiminomethylpyridinium)-4-(4-carbamoylpyridinium) butane dibromide] were tested as potential antidotes in tabun poisoned mice. Their antidotal effect was compared with TMB-4 [1,3-bis (4-hydrxyiminomethylpyridinium) propane dibromide], which is the best-known antidote in tabun poisoning.

In all experiments, oxime K033 in doses of 1/4 or 5% of its LD_{50} was used for the pre-treatment 15 min before tabun-intoxication. Also, one or 5 min after tabun application experimental animals received oxime K027, K033 or K048 (5% or 1/4 of its LD_{50}) plus atropine sulphate as therapy. The antidotal efficacy of tested compounds was expressed as therapeutic factor (TF) and therapeutic dose (TD). Under same experimental conditions, our experiment selected compound K048 as the most protector/reactivator of tabun inhibited AChE. Namely, this study has shown that the therapeutic regimen consisting of K033 as preatretment and 1/4 of LD_{50} of K048 plus atropine as treatment had the highest TF and TD. The TF was 13.3 LD_{50} of tabun; TD was 10 LD_{50} of tabun and insurance survival of all tested animals.

In conclusion, treatment with these new bispyridinium oximes seems to be a very good alternative for current treatment in tabun poisoning. For this reason, these and other similar compounds require further investigation.

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P2-46

Interventional environmental study and health survey in metal pickling process

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Pickling is a process for the removal of a scale, oxides, or other impurities from a metal surface by immersion in an inorganic acid, usually sulfuric acid, hydrochloric acid, nitric, hydrofluoric, or phosphoric acid. This research aims at environmental assessment, health survey and biological monitoring of metals for workers engaged in the process of metal pickling in steel industry. Our study design is an interventional study that includes environmental assessment of the work place for hydrochloric acid and chlorine gas, clinical evaluation, ECG, ventilatory functions and biological measurements of metals (Ca, Pb, Cd, Cu and Mn). We suggested ventilation means to ameliorate workplace conditions. Reassessment of air quality is tested. Very high environmental measures of HCL and Cl_2 were found in metal pickling ward that responded dramatically to enhanced exhaust ventilation means ($P < 0.01$). Metal screening revealed low mean value of calcium both total and ionized levels, 15 cases of high Pb, 3 cases of high Cd and 3 cases with high Cu. We concluded that environmental and engineering control measures besides the use of personal protective equipment are important in minimizing exposure hazards. Exposure to metals leached from steel surfaces during pickling is a great hazard affecting the level of body trace elements. We recommend enhancing the ventilation and the use of personal protective equipment (PPE). Raising the awareness of all workers about the importance of use of PPE is mandatory.

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P2-47

Investigation of blood toxicity in association with aescin (the horse chestnut seed extract)

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Object: To investigate the blood toxicity of aescin and evaluate its safety in SD rat.

Methods: SD rats were treated with different doses of aescin (15, 10 and 5 mg/kg, i.p.) once time per day for 7 days. Hematology indices (white blood cell, red blood cell, platelet and hemoglobin) and blood coagulation indices (Prothrombin time, Thrombin time, activated part thromboplastin and coagulation time) were selected as observational indices.

Results: Comparing with the control, rats treated with aescin, the number of white blood cell was obviously decreased ($p < 0.05$, <0.01), the number of red blood cell and platelet, and the content of hemoglobin enhanced markedly ($p < 0.05$, <0.01). At the same time, all the blood coagulation indices in rats treated with aescin 10 and 15 mg/kg shortened significantly ($p < 0.05$, <0.01), and rats treated with 5 mg/kg, Prothrombin time and Thrombin time were evidently reduced ($p < 0.05$, <0.01).

Conclusion: There was significant blood toxicity to SD rats treated with high dose of aescin.

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