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Comparative studies on the treatment of acute lung injury induced by dichlorvos in rats between rabbit serum paraoxonase 1 (PON1) and atropine combined pralidoxime iodide

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Objectives: To explore the curative effect of paraoxonase 1 in rats acute lung injury induced by dichlorvos, then comparing this therapeutic effect with the traditional atropine combined pralidoxime iodide regimen.

Methods: Thirty male SD rats were randomly divided into the following 5 groups, with 6 rats in each group: control group (group A), dichlorvos group (group B), atropine and pralidoxime iodide treatment group (group C), PON1 treatment group (group D), combined treatment group (group E). Rats in groups B, C, D and E were administered dichlorvos by intraperitoneal injection 15 mg/kg. In group C, atropine 10 mg/kg and pralidoxime iodide 45mg/kg were injected intraperitoneally after exposure to dichlorvos. And in group D, PON1 was given caudal intravenously PON1 at a dose of 9600 U/kg after poisoning. In group E, PON1 was injected caudal intravenously at a dose of 9600 U/kg and was injected atropine 10 mg/kg and pralidoxime iodide 45 mg/kg immediately after dichlorvos administration. Rats in group A received normal saline. Lung tissue samples and blood was collected for testing at 8 hours after model establishment. Pulmonary coefficient were determined, lung tissue homogenate and blood was collected to examine the E-selectin and plasma soluble intercellular adhesion molecule concentration by ELISA method, and the changes of the lung histopathology were observed.

Results: In group B, pulmonary coefficient was large, the concentration of E-selectin and sICAM-1 increased, the lung tissue appeared neutrophil infiltration, lung edema and alveolar septal thickening. The above indicators and pathological changes of group C, D and E were less than those of group B. The indicators and pathological changes of group D and E were less than those of group C.

Conclusion: PON1 is effective in the treatment of acute lung injury induced by dichlorvos in rats, and this curative effect is better than offered by atropine combined pralidoxime iodide.