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# Lead selenide nanoparticles-induced oxidative damage of kidney in rats

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## Highlights

1. Nano PbSe was toxic to kidney.
2. Nano PbSe could lead to oxidative damage in the kidney.
3. The toxicity of nano PbSe was positively correlated to the dosage.

## Abstract:

**Objective:** To investigate the effect of lead selenide nanoparticles (nano PbSe) on kidney in rats.

**Method:** Specific pathogen free SD rats were randomly divided into 4 groups (8 rats/group), and injected with of 0 mg/kg (control group), 10 mg/kg (low dose group), 20 mg/kg (middle dose group), or 30 mg/kg (high dose group) nano PbSe respectively. Seven weeks after injection, the serum was taken from rats for the detection of blood urea nitrogen (BUN), creatinine (Cr) and uric acid (UA). Superoxide dismutase (SOD), glutathione peroxidase (GSH-Px), malondialdehyde (MDA) and total antioxidant capacity (T-AOC) levels were detected using renal tissue homogenate. Pathological examination was performed on kidney sections.

**Results** The levels of BUN and Cr in three exposure groups were significantly increased compared with those of control group. Levels of UA in middle dose and high dose group were higher than those in the control group. Levels of SOD, GSH-Px and T-AOC in three exposure groups were markedly decreased compared with those in the control group. Levels of MDA in three exposure groups were higher than those in the control group. Pathological changes at different levels of kidneys were observed, and the damage was more serious with the increase of concentration.

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