



## Determination of absorbed silver nanoparticles and histopathologic abnormalities in kidney tissue: A subchronic dermal toxicity

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**Background and Aims:** The present study was designed to evaluate toxic effects of silver nanoparticles, in a sub chronic model.

**Methods:** Male guinea pigs were used in this study. Three concentrations of nanosilver (100µg/ml, 1000µg/ml, and 10000µg/ml) were prepared. Before toxicity assessment, the size of colloidal nanosilver was recorded in sizes <100 nm by X-ray diffraction and transmission electron microscopy.

**Results:** After 13 weeks of exposure, macroscopic changes and histopathology changes and silver distribution were determined. In this study, no significant changes in food and water consumption due to exposure were observed. Nanosilver was distributed in kidney. The nanoparticles were detected by atomic absorption spectroscopy. Silver concentration in the tissues was detectable after 13 weeks of treatment. There was a significant difference ( $P < 0.05$ ) for the silver concentration in kidney. Kidney toxicity evaluated by histopathology abnormalities included inflammation, increase of mesangial and thickened Bowman's capsule.

**Conclusions:** In the present study, there was a significant relationship between the histopathologic changes and accumulation of nanosilver in them, this means increasing accumulation of nanosilver in tissues, also increased the tissue abnormalities that are dose-dependent changes.

**Keywords:** Nanosilver; Subchronic toxicity; Histopathologic abnormalities