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Gold Nanoparticle: Synthesis, Characterization, Clinico-Pathological, Pathological and Bio-Distribution Studies in Rabbits

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Abstract : This study evaluated the acute toxicity and tissue distribution of intravenously administered gold nanoparticles (AuNPs) in male rabbits. Rabbits were exposed to single dose of AuNPs (300 µg/ kg). Toxic effects were assessed via general behavior, hematological parameters, serum biochemical parameters and histopathological examination of various rabbits' organs. Tissue distribution of AuNPs was evaluated at a dose of 300 µg/ kg in male rabbit. Inductively coupled plasma–mass spectrometry (ICP-MS) was used to determine gold concentrations in tissue samples collected at predetermined time intervals. After one week, AuNPs exerted no obvious acute toxicity in rabbits. However, inflammatory reactions in lung and liver cells were induced in rabbits treated at the300 µg/ kg dose level. The highest gold levels were found in the spleen, followed by liver, lungs and kidneys. These results indicated that AuNPs could be distributed extensively to various tissues in the body, but primarily in the spleen and liver.

Keywords : gold nanoparticles, toxicity, pathology, hematology, liver function, kidney function
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