

Genotoxicity, Acute Oral and Dermal Toxicity, Eye and Dermal Irritation and Corrosion, and Skin Sensitization Evaluation of Silver Nanoparticles

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Abstract

To clarify the health risks related to silver nanoparticles (Ag-NPs), we evaluated the genotoxicity, acute oral and dermal toxicity, eye irritation, dermal irritation and corrosion, and skin sensitization of commercially manufactured Ag-NPs according to the OECD test guidelines and GLP. The Ag-NPs were not found to induce genotoxicity in a bacterial reverse mutation test and chromosomal aberration test, although some cytotoxicity was observed. In acute oral and dermal toxicity tests using rats, none of the rats showed any abnormal signs or mortality at a dose level of ~ 2000 mg/kg. Similarly, acute eye and dermal irritation and corrosion tests using rabbits revealed no significant clinical signs or mortality and no acute irritation or corrosion reaction for the eyes and skin. In a skin sensitization test using guinea pigs, one animal (1/20) showed discrete or patchy erythema, thus Ag-NPs can be classified as a weak skin sensitizer.

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