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Assessment of orally dosed commercial silver nanoparticles on human ex vivo platelet aggregation.

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Abstract

Abstract Enhanced in vitro human and ex vivo rat platelet aggregation from direct exposure to silver nanoparticles is previously reported. Given the increasing human use of engineered silver nanoscale products, platelet aggregation prompted by silver nanoparticles may contribute to human cardiovascular events. To understand how direct washed platelet exposure to silver nanoparticles translates to ex vivo platelet aggregation, the authors conducted a placebo-controlled, single-blind, dose-monitored, cross-over study design in 18 healthy human volunteers. After 2 weeks of daily oral silver nanoparticle ingestion, platelet aggregation was evaluated by light transmission aggregometry in response to collagen and ADP agonists, both at baseline and after silver nanoparticle or placebo diluent oral dosing. Final percent aggregation (PA) and the changes in PA were determined using a paired design (i.e., active and placebo solutions). Enhanced ex vivo platelet activation was not detectable at peak serum silver concentrations <10 µg/L. Further studies of colloidal silver nanoparticles on human platelet activities are warranted.

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