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Assessment of Gold Nanoparticles Uptake in Tissues of Female Mice and Their Offspring Using Neutron Activation Analysis

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The uptake of gold in different tissues of female mice and their offspring after prolonged oral administration of gold nanoparticles to the females during pregnancy and lactation was investigated. Gold content in different organs was determined using neutron activation analysis. The highest content of gold was accumulated in kidneys followed by liver, lungs, blood and brain. Accumulation of gold in brain confirms ability of nanoparticles to pass through placental and blood-brain barriers. The average specific mass content of gold which crossed the blood-brain barrier was 3.8 ng/g (for female) and 1.1 ng/g (for offspring). The results are important for research on developmental and reproductive toxicity and safety of nanomaterials.