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## PROGRAM A ABSTRAKTY

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# GENETICKÁ TOXIKOLOGIE A PREVENCE RAKOVINY

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# Mouse body response to coated gold nanospheres and their biodistribution in 4 months period.

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Nanoparticles are widely studied as a promising tool for biomedical applications. Gold nanoparticles (AuNPs) with their unique physicochemical properties could be utilized by cancer treatment as drug delivery systems, by photothermal therapy, imaging etc. Safety concerns are the main aspects of any new medical therapy or any new kind of treatment agents that play critical role in deciding which drug will be given to a patient. Therefore, it is important to monitor the fate of the agent in the organism, especially its elimination from the body, to recognize and potentially avoid the unwanted side effects caused e.g. by long-term accumulation of a substance. In our research we have studied the fate of coated gold nanoparticles in the mouse body during the 4 months after single intravenous application.

Gold nanospheres with 10 nm in diameter and coated with bovine serum albumin (BSA) were investigated. Nanoparticles were applied intravenously to C57BL/6 mice in single dose of 1 µg Au/1g mouse body weight. Mice were regularly weighted and sacrificed in 4 different time points – 1, 30, 60 and 120 days after treatment. At each time point the organs (liver, spleen and kidney) were surgically extracted and analysed for the gold amount in the tissue.

For the duration of the experiment, the health of mice was not affected by the AuNPs application. We were able to detect presence of gold in each time point in the analysed tissues, even after 120 days after application. Nanoparticles were mostly accumulated in the liver tissue, followed by spleen and kidney. Liver and spleen in treated group were also slightly heavier 120 days post nanoparticles injection. Our results indicate, that gold nanoparticles with 10 nm diameter accumulate in mouse organs in different amounts and even after 4 months aren't completely cleared from the body.

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