

Investigation of adverse effects of silver nanoparticles in THP-1 cells by means of FTIR microspectroscopy - concept and preliminary results

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Due to their antimicrobial properties, nanoparticulate silver is increasingly used for various types of consumer products such as lingerie, food packaging materials, toothbrushes and pillows, just to name a few. Playing a crucial role in the immune system, we chose the human acute monocytic leukemia cell line THP-1 as a model to study the effects of 20 nm sized protein coated silver particles upon entry into the human body. In a first step, cell viability was assessed using the proliferation reagent WST-1. Based on the obtained dose-response curve, we investigated the initial biochemical events in THP-1 cells *in vitro* by using FTIR microspectroscopy. Furthermore, dose dependent spectral alterations were compared to those induced by the alkaloid staurosporine, a known apoptosis inducing bacterial toxin.

Using FTIR microspectroscopy as a fast, cheap, sensitive and simple method, we aim to contribute substantially to the urgently needed risk assessment of these novel materials.