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### **Accumulation of silver nanoparticles in mammalian brain and effects on cognitive functions**

A silver has been known as an antiseptic agent from the ancient times. Nowadays due to the development of the nano technologies, silver is mostly used in nanoform and is applied in food and light industries, medicine and pharmaceuticals. The most ambiguous area of its application is the alternative medicine, where nanosilver is recommended for daily use in order to treat bacterial and viral diseases and to strengthen the immunity. However, the supposed doses are quite high and the periods of the administration are quite long. The objective of the research was to identify negative effects caused by nano silver treatment on cognitive, behavioral and physiological functions of mammals as well as to measure the amount of silver in the brain and their parts. Colloidal solution of PVP coated silver performed by the food supplement Argovit C manufactured in Russia was used as silver nanoparticles. Due to Dynamic Light Scattering (DLS) and TEM the mean size of the nanoparticles was  $34\pm 4$  nm. C57BL/6 mice were used as a mammal model. The mice have been daily exposed to the nano particles during 30, 60, 120 and 180 days in the amount of 50  $\mu\text{g}$  per day. Mice were tested in several behavioral and cognitive mazes and in Pheno Master to check their physiological functions. After that mice were decapitated and their brain and the parts were investigated by neutron activation analysis to measure the amount of silver in them. It can be concluded that accumulation of nanosilver in mammalian brain leads to cognitive and behavioral impairments.

### **Biography**

Anna Antsiferova has completed her Graduation from the Physical Faculty of Lomonosov Moscow State University in 2011. She has received her PhD degree in Physics and Math at the National Research Center Kurchatov Institute in 2016. She is a Head of the Laboratory of Nanosafety of the National Research Center Kurchatov Institute; Deputy Dean and an Associate Professor in the Department of Nano, Bio, Informational, Cognitive and Socio-humanitarian Technologies -Moscow Institute of Physics and Technology. She has published 18 papers in reputed journals, two books and given more than 30 talks on the international conferences.

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