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Nanoparticles as alternative strategies for drug delivery to the Alzheimer brain

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One of the biggest problems and challenges for the development of new drugs and treatment strategies against Alzheimer disease (AD) is the crossing of target drugs into the blood brain barrier. The use of nanoparticles in drug delivery therapy holds much promise in targeting remote tissues, and as a result many studies have attempted to study the ultrastructural localization of nanoparticles in various tissues. However, there are currently no *in vivo* studies demonstrating the ultrastructural distribution of nanoparticles in the brain. The aim of this study was to address how intraperitoneal injection of silver nanoparticles in the brain leads to leaking on the inter-endothelial contact and

luminal plasma membrane, thus elucidating the possibility of penetrating into the most affected areas in the Alzheimer brain (vascular endothelium, perivascular, neuronal and glial cells). Our results show that the silver nanoparticles reached the brain and were found in hippocampal areas, indicating that they can be conjugated and used to deliver the drugs into the cell cytoplasm of the damaged brain cells. The present study can be useful for the development of novel drug delivering therapy and useful in understanding the delivery, distribution and effects of silver nanoparticles in AD brain tissue at cellular and subcellular level.

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