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Nanoparticles for treatment of Alzheimer's disease

A lzheimer's Disease (AD) is a neurodegenerative disorder characterized by the β -amyloid (A β) peptide accumulation and deposition in the brain. A β alterations are thought to take place decades before the appearance of the first signs of dementia: This preclinical phase is considered the most promising period for successful disease-modifying therapies, which are still lacking. Since negatively charged lipids showed high binding affinity toward A β peptide and low-density lipoproteinreceptor was observed at the blood-brain barrier, we previously designed liposomes functionalized with phosphatidic acid and with a modified peptide derived from apolipoprotein-E (mApoE-PA-LIP) potentially able to enter the brain and disaggregate A β aggregates both *in vitro* and *in vivo*. We evaluated the possibility to use mApoE-PA-LIP for treatment of AD on different Tg rodent models of the disease, namely APP/PS1 or APP23 mice. The data obtained in vivo suggest that mApoE-PA-LIP is able either to promote the decrease of brain A β burden and the amelioration of memory impairment in "old" Tg mice upon acute treatment, or to slow down brain A β accumulation and memory impairment in "young" upon long term treatment. Together, these data indicate mApoE-PA-LIP as a new nanotechnological device potentially suitable for AD treatment.

Biography

Massimo Masserini is Full Professor of Biochemistry and Moecular Biology at the School of Medicine, University Milano-Bicocca, Milano, Italy. He is Head of the Nanomedicine Center NANOMIB of the same university. He has published more than 150 articles in journals of Biochemistry, Neuroscience and Nanomedicine. He is CEO of AmypoPharma, a Spin-off Company of the University Milano-Bicocca aiming to carry nanoparticles for treatment of Alzheimer disease to the clinical phase.

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