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Poster Presentation

Using Nano Particles as a Novel Application for Alzheimer's Disease; an Effective Endeavor for Drug Delivery

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Abstract

As the most common cause of dementia among the elderly results in cognitive and behavioral impairment, Alzheimer's disease (AD) is characterized with aggregation of senile plaques (Beta-amyloid protein), cortical atrophy and ventricular enlargement. Unfortunately, conventional methods like acetyl cholinesterase inhibitor drugs, are not so effective owing to restrictive mechanisms imposed at the blood–brain barrier (BBB), poor solubility, and low bioavailability. So, researchers show a tendency towards using Nano technological methods involving application of nanoscale drug delivery system through polymeric nanoparticles, microemulsion, solid lipid nanoparticles, nanos tructured lipid carriers, nanoemulsion, and liquid crystals. As drug delivery agents, Nanoparticles are solid colloidal particles ranging in size from 1 to 1000 nm that mask the BBB limiting characteristics. This system may slow drug release in the brain, decreasing collateral damage and peripheral toxicity. They have high drug loading capacities that is capable of targeting towards the mutagenic proteins of AD. Biodegradable nanoparticles such as PLGA, PLA, chitosan gelatin, polycaprolactone and poly-alkyl-cyanoacrylates have been used frequently as drug delivery vehicles due to its grand bioavailability, better encapsulation and less toxic properties. These carriers can deliver drugs that proved to have anti-Alzheimer effect, such as: clioquinol derived from quinoline known to solubilize the A-Beta plaques in vitro and inhibits the A-Beta accumulation in AD transgenic mice in vivo, D-Penicillamine conjugated to NPs seem to reverse the metal-induced precipitation (specially Cu2+) and decreases the beta amyloid protein concentration. A robus t collaboration between specialists and medical nanotechnology researchers opens promising windows to AD dilemma.

Keywords: Nano Particles, Alzheimer's Disease, Drug Delivery

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