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(57) Abstract :

The present invention relates to pharmaceutical 5 formulations, particularly to polymeric nanoparticles designed for the delivery of Memantine (MEM), a therapeutic agent indicated for the treatment of Alzheimer's disease (AD). This invention encompasses methods of preparing Memantine-bound polymeric nanoparticles, their characterization, and their application in enhancing the 10 bioavailability and therapeutic efficacy of MEM. Specifically, the invention focuses on the use of nanoparticles as a drug delivery system to improve the pharmacokinetic profile of Memantine through various administration routes, including nasal and oral delivery.

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