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TITLE

Poly(n-hexylcyanoacrylate) nanoparticles coated with polysorbate 80 for the management of Alzheimer's disease

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The objective of the study was to develop Poly (n-hexylcyanoacrylate) nanoparticles (PHCA NPs) of the anti-alzheimer's drug galantamine and to study the effect of polysorbate 80 coating on its brain targeting ability. Galantamine loaded PHCA NPs (Gal-PHCA NPs) was prepared successfully by emulsion polymerization coated with polysorbate 80 and were characterized of process yield, particle size, zeta potential, surface morphology, in vitro release and brain targeting ability. The process yield of polysorbate 80 coated Gal-PHCA NPs was 88.54±1.18% with 59 ± 4 nm mean particle size. The zeta potential of Gal-PHCA NPs coated with 1% polysorbate 80 and without coating was -32.8±2.2 and -29.4±1.4 mV, respectively and demonstrated a negative charge for the particles and coating with polysorbate 80 slightly reduced the surface charge of the particles. By SEM study was confirmed that, all the particles were uniformly distributed with almost spherical in shape. A biphasic release and sustained pattern was observed for the release of drug from the NPs. Release of the drug from NPs was diffusion controlled and the mechanism of drug release was Fickian. Biodistribution study confirmed the significantly more amount of drug was targeted to brain when Gal-PHCA NPs coated with polysorbate 80 compared with Gal-PHCA NPs and free Gal drug. In conclusion, our study indicates that polysorbate-80 coated PHCA NPs could be a feasible carrier for Galantamine delivery to the brain. It is anticipated that the developed formulation may improve on targeted therapy for Alzheimer's disease in the future.

Biography

Dr. (Prof.) Malay K. Samanta has completed his Ph.D. during from Dr. M.G.R University, Chennai, India. He is the professor of Pharmaceutics and Head the Department, JSS College of Pharmacy, Ooty, India. He has published more than 40 papers in reputed indexed journals and serving as editorial members of reputed journals. He has guided 11 Ph.D scholars and 47 PG students. He also chaired and conducted many conferences and seminars. He completed many research projects including FULBRIGHT senior faculty exchange program.