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TITLE

Modified surface coated nanoemulsion bearing ropinirole to target brain for the better management of Parkinsonism: A scintigraphic evaluation

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Purpose: Parkinson's disease (Pd) is a chronic and progressive degenerative diorder. PD is unique among the other CNS disorders because of the almost palpable anticipation of an imminent cure. Effective brain drug delivery is limited by the blood–brain barrier (BBB). Plentiful strategies have been employed to circumvent the BBB; an emerging approach is the use of nanoemulsion (NEs). NE has the invading potential to the BBB; therapeutic drug can be release from the colloidal carrier into the CSF. Present study was design to prepare nanovector containing ropinirole as to reach deep inside the brain for the better cure of Parkinsonism.

Methods: Sefsol-218 based nanoemulsion encapsulating ropinirole were prepared by aqueous titration technique using Smix Tween20 and carbitol (1:0, 1:1, 1:2, 1:3, 2:1, 3:1, and 4:1). 10% v/v solution of sefsol was pour dropwise in 40 % v/v aqueous Smix solution in distilled water with continuous vortexing 60 sec. After that, emulsified solution was treated with 0.05% of chitosan followed by TPP (0.1%) as an stabilizer. The obtained modified nanoemulsion were finally evaluated by scintigraphic imaging.

Results: The mean particle size distribution (PSD) and zeta potential were found to be 115.59 ± 11.64 nm with 31.32 ± 3.78 respectively. Transmission electron microscopy demonstrated a regular spherical surface with particle size range potentiating the PSD study. However, the characterization of the molecular arrangement of the drug and the lipid needs to be further investigated by NMR and ESR techniques which are inprocess.

Conclusions: In-vitro results suggest that modified nanoemulsion showing high %LC drug loading, with particle size less than 200 nm which was desired for by passing the blood brain barrier through intranasal route. Further the design delivery system was already emulsified by polysorbate which aid in prolonging the residence time in body circulation as well to combat the effluxing receptor present in the bbb as shown in the scintigraphic imaging.

Biography

Sir, I am a Ph.D student, working at Jamia Hamdard University, New Delhi, INDIA. I am working on Parkinson disease model using some nano approaches through intranasal drug delivery system. Sir, from my master dissertation, I published my manuscript in repute journals. Sir, author is expecting their outcome in some of the repute neurology journals.