NOSE TO BRAIN DRUG DELIVERY OF MODIFIED SOLID-LIPID NANOPARTICLE BEARING ROPINIROLE: AN IN VITRO EVALUATION

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Aims: Parkinson's disease (PD) is a chronic neurodegenerative disorder of CNS. Many drug therapies are available but the 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 to use nanoparticles (NPs), possessing invading potential to the BBB. Therefore present study was design to prepare Nano vector containing ropinirole as to reach deep inside the brain for better cure of Parkinsonism.

Methods: Stearic acid (SA) based nanoparticles encapsulating ropinirole were prepared by hot homogenization technique using S
mix Tween-80 and carbitol (1:1). SA (15% v/v) solution was pour drop wise in aqueous S
mix solution in hot distilled water with continuous stirring at 1050 rpm followed by chilled water. The obtained nanoparticles were characterized by mean particle size, zeta potential, TEM study, entrapment efficiency (EE) and loading capacity (LC).

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. The yield was 73.66± 3.3 with drug encapsulation and loading capacity were 57.33 ± 0.4% and 4.61 ± 3.98 respectively. TEM demonstrated a regular spherical surface with particle size range potentiating the PSD study.

Conclusions: In-vitro results suggest that Nano vector showing high %EE as well LC, with particle size less than 200 nm which was desired for BBB passage. As system was coated with polysorbate-80 which aid in prolonging the residence time as well as combat the effluxing receptor present over the BBB.