International Journal of ChemTech Research
CODEN (USA): IJCRGG, ISSN: 0974-4290, ISSN(Online):2455-9555
Vol.10 No.10, pp 762-774, 2017

Design, Development and Characterization of Self-Microemulsifying Drug Delivery System of Nitrendipin

Anilkumar J. Shinde[1]*, Leena S. Tirmare[1], Harinath N. More[1]

***[1]Dept. of Pharmaceutics, Bharati Vidyapeeth college of Pharmacy, Near Chitranagari, Kolhapur (M.S), India**

Abstract: The objective of the present work was to formulate a self-microemulsifying drug delivery system (SMEDDS) for Nitrendipin, which is widely used in the treatment of hypertension. Nitrendipin SMEDDS were formulated using a mixture of Ethyl oleate as oil, cremaphore RH40 as surfactant and PEG 400 as co-surfactant. The developed SMEDDS were evaluated for droplet size, zeta potential, self micro emulsification time and drug content determination and in vitro diffusion profiles. The cumulative percentage release of optimized batch was observed 98.33%. The optimized batch of mean droplet size, polydispersity index, zeta potential and drug content were showed 67nm, 0.247, -38.2 and 99.85±0.024 respectively. The stability studies of solid SMEDDS, reveals that there was no significant decrease in drug release and drug content, hence the all the prepared formulation were found to be stable. The comparative in vitro release study of optimized batch and marketed formulation showed that the formulation of solid SMEDDS of nitrendipine showed more than 90% drug release in 60 min, where as marketed preparation shows <80% drug release. The study illustrated the self micro emulsifying drug delivery system of Nitrendipine, owing to nanosize, has potential to enhance its absorption and solubility, dissolution, and consequently oral bioavailability.

Keywords: Nitrendipine, SMEDDS, Ternary phase diagram, bioavailability, Solubility.

*****