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FORMULATION AND EVALUATION OF SOLID SELF MICROEMULSIFYING DRUG DELIVERY SYSTEM OF AMITRIPTYLINE DRUG BY USING AEROSIL 200 (SILICON DERIVATIVE) AS SOLID CARRIER

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Abstract

Amitriptyline hydrochloride has been widely used for the treatment of major depressive disorder and general anxiety disorder. However, drug has freely soluble in water which limits its poor bioavailability. Hence, the present investigation was concluded with improvement of solubility and there by improvement of bioavailability by preparing the solid SMEDDS of Amitriptyline hydrochloride. There are many techniques to convert liquid SMEDDS to solid, but an adsorption technique is simple and economic. Hence, the aim of present study was to develop S-SMEDDS of poorly water-soluble drug Amitriptyline HCL using Aerosil 200 as solid carrier. On the basis of solubility study Sesame oil was selected as oil phase. On the basis of emulsification method Tween 80 was selected as surfactant and Propylene Glycol (PG) as co-surfactant. All batches of drug loaded self-microemulsion was characterized for In vitro drug release study. Optimized formulation of self-microemulsion was further evaluated for appearance, viscosity, pH, self-emulsification time, dilution test and drug content. Optimized batch of self-microemulsion was composed of 3.6 ml oil (sesame oil), 3.6 ml Smix (Tween 80 & PG). Finally, solid self-microemulsion was prepared by adsorption technique using Aerosil 200 as the adsorbent and evaluated for bulk density, tapped density, angle of repose, drug content and in vitro drug release study. Stability study of prepared S-SMEDDS was done for one month and the results suggested that the formulation did not show significant change in bulk density, tapped density, angle of repose, drug content and in vitro drug release study. Study concluded that S-SMEDDS can effectively formulated by adsorption technique with enhanced dissolution rate and concomitantly bioavailability.

Author Keywords

S-SMEDDS, Amitriptyline HCL, In vitro drug release study, Solubility & bioavailability enhancement

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