Formulation and Evaluation of Solid Dispersion of Anti-Epileptic Drug

Submitted

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Abstract

The aim of the present investigation was to formulate and evaluate solid dispersion based capsule formulation for oral drug delivery of lamotrigine to increase the solubility and bioavailability. For the formulation of solid dispersion polymers such as B-cyclodextrine, PVP K-30, PEG 6000, Poloxamer 188 were selected. The solid dispersion prepared by solvent evaporation method and physical mixture method. The effect of changing the type of polymer ratio (1:1, 1:2, 1:3,.) on the formulation of solid dispersion was investigated. The 1:7 ratio was selected because it was gave higher solubility and drug release. The optimized solid dispersion contain 25mg Lamotrigine, PVP K-30 and PEG 6000 in ratio of 1:7, 0.1% Dioctyle sodium sulpho-succinate, 95% methanol. The prepared solid dispersion evaluated for various physio-chemical studies such as flow property, angle of repose, XRD study, DSC study, residual solvent study, saturation solubility, drug content, drug release.The F17 batch shown 1.856±0.344 mg/ml saturation solubility and 87.88 % drug release. The optimized solid dispersion based capsule was evaluated for saturation solubility, content uniformity, weight variation, drug content and in-vitro release study.The results of above all studies shown that solid dispersion based capsule of Lamotrigine having higher solubility and drug release. The release study of optimized solid

dispersion was compared with marketed Lametec (25mg) tablet. It showed that solid dispersion based capsule was successfully formulated for increase in solubility and bioavailability of lamotrigine.

Key words: Lamotrigine, Solid dispersion, Solvent evaporation method, Polyvinyl pyrrolidone K 30, Polyethylene glycol 6000, Saturation solubility, Oral Drug Delivery.