



Formulation And Evaluation of Empagliflozin onto Zinc Oxide Nanoparticles

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Abstract

In this work, it was attempted to prepare nanoparticles of Empagliflozin onto zinc oxide nanoparticles using Eudragit and HPMC as polymers by solvent evaporation technique.

Keywords: Nanoparticles; polymers; evaporation technique, physical mixture

Introduction

Nanoparticles are defined as a small particles which are range between 1 and 100nm in a size with a bounding interfacial layer of drug molecule. The word nanoparticles are derived from greek word which nano means very small particle [1].

METHODOLOGY:

Emulsification-solvent evaporation Method: Required amount of ethyl cellulose and Eudragit RL100(F1,F2,F3); ethyl cellulose and Hydroxy propyl methyl cellulose (HPMC- K100) polymer(F3,F4, F6) is diffused in 20 ml of ethanol and dichloromethane(1:1)mixture using magnetic stirrer And the predetermined amount of Empagliflozin onto zinc oxide nanoparticles was combined to the polymeric solution with magnetic stirring. (2-5)

RESULTS AND DISCUSSION

IR Studies: The physical mixture of the polymers and drug showed similar spectrum to the spectrum of the pure drug, this indicates no chemical interaction between the drug molecule and polymers used.(5,6)

Optimisation Parameters:

Particle Size: With decrease in the polymer concentration, the particle size of the nanoparticles decreased significantly and was in the range of 100 nm to 300 nm.

Percent Encapsulation Efficiency and percent Drug loading

Percent loading of drugs and percent encapsulation efficiency of drug-polymer-containing nanoparticles in different ratios was found to be between 13.20 to 19.96 percent and 68.38 to 95.82 percent, which decreased with an rise in the amount of polymer-forming film.(5,6)

Conclusion

For the various measured parameters of nanoparticles, out of six, formulations F1 and F4 showed the best results. Drug engulf and Encapsulation efficacious of nanoparticles containing drug-polymer in different ratios were derive to be within the range of 13.20 to 19.96 percent and 68.38 to 95.82 percent which shrinking with increase in the sum of polymer. For 10 hours, in vitro dissolution was carried out and the drug release percentage for all formulations was in the range between 97.93 percent and 89.75 percent. In vitro studies have concluded that Eudragit based nanoparticles are better for Empagliflozin onto zinc oxide nanoparticles delivery than HPMC based nanoparticles.

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