Acta Chimica and Pharmaceutica Indica
ISSN: 2277-288X

Acta Chimica and Pharmaceutica Indica

Glimepiride Nanoemulgel: An innovative carrier with improved antidiabetic effect

Syed Haroon Khalid

Government College University, Pakistan

Abstract

The aim was to develop a topical nanoemulgel of a BCS class II drug, Glimepiride (GLP) in both and inclusion complexed form. In our previous studies, we prepared binary and ternary inclusion complexes of GLP by physical trituration and kneading methods and found the optimized ternary inclusion of GLP with βCD and Gelucire-44/14 in the ratio of 1:4:10 %. In the present study, nanoemulsion formulations were prepared using clove oil, Tween-80 and PEG-400 following spontaneous emulsification technique and characterized for pH, conductivity, viscosity, particle size, polydispersity index and zeta potential. The gel base was developed using xanthan gum (3%) and incorporated the prepared nanoemulsion in 1:1 to devise nanoemulgels (NEGs). The prepared NEGs were further evaluated for their pH, viscosity, spreadability, drug content, ex-vivo permeation and in-vivo hypoglycemic activity. Franz diffusion cell was used for ex-vivo permeability in excised rat skin. The antidiabetic activity was performed using streptozocin induced diabetic rats against marketed glimepiride per oral medication. Nanoemulgel formulations loaded with pure and inclusion complexed presented high permeation flux in comparison to control drug solution (11.64±2.61 µg/cm2/hr) with ICI-NEG showing the highest drug flux (70.06±6.60 µg/cm2/hr). In-vivo studies also produced the similar results to control hyperglycemia for unto 24 hours in comparison to its oral delivery which lasted for 6 hours only. Nanoemulgel loaded with inclusion complex showed a more profound outcome in comparison to pure drug loaded formulation. In conclusion, the inclusion complexed nanoemulgel could be regarded as an effective delivery system in the treatment of diabetes hence overlaying the path for management of diabetes by topical application

Biography

Syed Haroon Khalid has completed his PhD from Universiti Sains Malaysia, Malaysia in 2015. He is the Assistant Professor of Government College University, Faisalabad, Pakistan. He has over 50 publications and six book chapters. His publication H-index is 9. He has been serving as the external reviewer to Higher Education Commission, Pakistan and a member of American Chemical Society (ACS).

Publications

1.Optimization, in vitro release and toxicity evaluation of novel pH sensitive itaconic acid-g-poly(acrylamide)/sterculia gum semi-interpenetrating networks

2.Nanoemulgel, an Innovative Carrier for Diflunisal Topical Delivery with Profound Anti-Inflammatory Effect: in vitro and in vivo Evaluation

3.Poloxamer-188 and d-α-Tocopheryl Polyethylene Glycol Succinate (TPGS-1000) Mixed Micelles Integrated Orodispersible Sublingual Films to Improve Oral Bioavailability of Ebastine; In Vitro and In Vivo Characterization

4.Hydrogel Composite Films for Wound Healing

5.Marine Polysaccharide-Based Composite Hydrogels

4th International Conference on Pharmaceutics & Advanced Drug Delivery Systems | Berlin, Germany | April 05, 2021

Citation: Syed Haroon Khalid, Glimepiride Nanoemulgel: An innovative carrier with improved antidiabetic effect, Pharmaceutical Science 2021, 4th International Conference on Pharmaceutics & Advanced Drug Delivery Systems, Berlin, Germany, April 05, 2021