

Abstract

The objective of this investigation was to develop solid lipid nanoparticles (SLN) of tretinoin (TRE) with the help of facile and simple emulsification-solvent diffusion (ESD) technique and to evaluate the viability of an SLN based gel in improving topical delivery of TRE. The feasibility of fabricating SLN of TRE by the ESD method was successfully demonstrated in this investigation. The developed SLN were characterized for particle size, polydispersity index, entrapment efficiency of TRE and morphology. Studies were carried out to evaluate the ability of SLN in improving the photostability of TRE as compared to TRE in methanol. Encapsulation of TRE in SLN resulted in a significant improvement in its photostability in comparison to methanolic TRE solution and also prevented its isomerization. Furthermore, the skin irritation studies carried out on rabbits showed that SLN based TRE gel is significantly less irritating to skin as compared to marketed TRE cream and clearly indicated its potential in improving the skin tolerability of TRE. In vitro permeation studies through rat skin indicated that an SLN based TRE gel has permeation profile comparable to that of the marketed TRE cream.