RAJIV KUMAR
NIILM University
India

Improved Bio-performance of DIA Transdermal Patch: In vivo and Ex vivo Proofs

Abstract:

The study focuses developing drug-in-adhesive (DIA) transdermal patch of duloxetine HCl for improving drug delivery to systemic circulation. DIA patch are able to reduce the dose and dosing frequency via transdermal route. For this purpose, we used Duro-Tak 87-2287 as DIA polymer and Transcutol P as permeation enhancer loaded with 40% drug, which was previously complexed with MeβCD. Pharmacokinetic parameters of optimized formulation to assess drug bioavailability were compared with oral dose. Among various permeation enhancers (PEs), Transcutol P exhibited most enhanced permeation (ER ≈ 1.99) in terms of flux and Q24 compared to control group having. Mean of maximum plasma concentration (Cmax) and area under time-concentration curve (AUC 0-72) in Wistar rats (n = 6) for transdermal patch (10 mg/kg) was found to be 70.31 ± 11.2 ng/ml and 2997.29 ± 387.4 ng/ml*h, respectively, and were considerably higher than oral dose of DLX (20 mg/kg and 10 mg/kg). Albeit, T1/2 was higher in case of transdermal delivery, but this was due to sustained behaviour of delivery system. These findings highlight the significance of both inclusion complexation and transdermal delivery of DLX using DIA patch for efficient drug absorption.

Biography

Rajiv Kumar has completed his PhD from UIPS, Panjab University Chandigarh India. He is the director of School of Pharmaceutical Sciences, NIILM University India, a premier academic and research organization. He has published many research papers in reputed journals and has been serving as an editorial board member of repute. His research interests include drug delivery, PK/PD assessment and Bioavailability improvement.