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Improvement of miconazole nitrate antimycotic activity via particulate binary mixtures for topical delivery

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In the present study, miconazole nitrate (MCN) was incorporated into particulate binary mixtures (PBM) using a hydrophilic polymer, poloxamer 188 (PXM), as a carrier to improve its antimycotic activity in comparison with the pure drug. Solvent evaporation and fusion techniques were employed to prepare series of MCN-PBMs as well as physical mixtures at 1:1, 1:3, 1:5 and 1:7 ratios of MCN and PXM. MCN-PBMs were evaluated for their shape, particle size, flow ability, compressibility, mucoadhesiveness, *in vitro* dissolution and microbiological activity. The results revealed that a marked improvement in MCN dissolution rate was obtained from only PBMs prepared by fusion technique rather than those prepared by solvent evaporation and physical mixtures. In addition, the *in vitro* microbiological study showed a relevant effect where MCN-PBMs obtained by fusion method significantly enhanced inhibitory activity on yeast growth as compared to that one prepared by solvent evaporation and physical mixtures. In conclusion, the solid particulate binary mixtures prepared by fusion technique may be proposed for MCN topical applications against mycotic infections, taking advantage of the mucoadhesive and permeation enhancing properties of PXM polymer.

Biography:

Dr. Bazigha K. Abdulrasool is currently working as an Associate Professor in Department of Pharmaceutics, Dubai Pharmacy College, Dubai, United Arab Emirates. She has done her master and doctorate in Pharmaceutics at College of Pharmacy-University of Baghdad, Iraq with high research output in the area of nano particulate-peptides delivery systems. Prior to joining Dubai Pharmacy College she has taught at Baghdad University, Al-Mustansyria University and Baghdad Pharmacy Private College. Dr. Bazigha has supervised Master and Higher Diploma students for their graduation thesis. She published more than 30 research articles and abstracts in international peer reviewed journals in the fields of drugs pharmacokinetics, advanced drug formulations, novel transdermal, buccal, ocular, and oral drug delivery systems as well as in the field of pharmaceutical education. Also she presented several posters in pharmaceutical conferences. Her research qualifications have established her as a member of editorial board and a reviewer for various international, peer reviewed scientific pharmaceutical journals. Moreover, she had been registered as a subject of the biographical record "Who is who" 2015.