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Novel controlled release microsponges for topical infections

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The present study deals with the formulation and evaluation of microsponge drug delivery system of neomycin sulphate by using the polymer ethyl cellulose. Neomycin sulphate has shorter half-life (2 hrs) and severe systemic side effects like nephrotoxicity and neurotoxicity. The percutaneous absorption increases risk associated with systemic absorption of topically applied formulation. Controlled release of drug to the skin could reduce the side effects while reducing percutaneous absorption. Therefore, the aim of the present study was to produce Neomycin sulphate entrapped microporous microparticles (microsponges) to control the release of drug to the skin. Microsponges were prepared by previously optimized quasi-emulsion solvent diffusion method. Compatibility of drug with reaction adjuncts was studied by FT-IR and DSC. The production yield, loading efficiency, particle size analysis and surface morphology of microsponges were performed. Microparticles were then incorporated into carbopol 934 gels and further the drug release and skin deposition studies were conducted. Free flowing powder microsponges were spherical in shape, between 13.8 and 78.3 μm in diameter. FT-IR and DSC studies revealed absence of primary incompatibility between formulation adjuvants and process parameters. Surface morphology by scanning electron microscopy revealed micro-porous nature of microsponges. Drug release was observed controlled with comparative anti-bacterial activity with the gels containing free drug. Animal studies showed improvement in reducing infections when compared to market preparation.

Biography

Gannu Praveen Kumar has completed his MPharmacy from Birla Institute of Technology and Science, Pilani and PhD from Kakatiya University. He is the Principal of Sahasra Institute of Pharmaceutical Sciences, Warangal. He has published more than 30 papers in reputed journals and is also serving as an advisor and consultant of repute pharmaceutical companies and participated in many social activities.

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