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Skin delivery systems, formulations and devices

This presentation will discuss drug-device combinations to enhance dermal delivery of cosmeceuticals and pharmaceuticals. We have recently shown that physical treatments by ablative laser and polymeric microneedles enhanced skin delivery of methotrexate and other actives. Poly (D, L-lactide-co-glycolide) microneedles, fabricated by melting technique and ablative laser (2940 nm) were both able to significantly enhance delivery. Successful skin poration by microneedles and ablative laser were demonstrated by dye binding, histology and DermaScan studies. Dimensions of microchannels in skin were measured by Scanning Electron Microscopy, pore uniformity and confocal laser microscopy. The feasibility of transdermal delivery of human growth hormone through laser-microporated skin was also demonstrated and the effect of depth and density of micropores was studied. Recently, we have used in vitro microdialysis as a promising technique to quantify lateral diffusion of drugs in skin. The rate of lateral diffusion of Diclofenac sodium was enhanced by microneedle and ablative laser treatment. Other technologies of interest include iontophoresis and phonophoresis. Recent innovations in these technologies will be presented. We have demonstrated iontophoretic delivery of several drug molecules including several polypeptides.

Biography

Ajay K Banga is a Professor and Department Chair in the Department of Pharmaceutical Sciences at the College of Pharmacy, Mercer University, USA. He also holds an Endowed Chair in transdermal delivery systems and serves as Co-Director for the Center for Drug Delivery Research. He has completed his PhD in Pharmaceutical Sciences from Rutgers University, NJ. He has over 300 publications and scientific abstracts to his credit. He currently serves on the Editorial Board of 10 journals, Associate Editor for one journal and has served as the Editor-in-Chief for a Drug Delivery journal. He has written three single author books and over 12 book chapters in the areas of transdermal delivery and protein formulation/delivery. He is a Fellow of the American Association of Pharmaceutical Scientists.

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