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Nanocrystal: a novel approach to overcome skin barriers for improved topical drug delivery

Abstract:

Skin is an important route of drug delivery for the treatment of various dermatological conditions. The advent of nanotechnology is paving the roadmaps for topical drug delivery by providing sustained release as well as maintaining a localized effect, outweighing the toxicity concern. This review highlighted the morphology of skin, its barrier nature as well as drug penetration pathways after topical application of formulations. The existing methods to improve topical drug delivery, by infringing or permeating the skin barriers, are discussed. This context concretes the foundation to accentuate the need for the development of nanocrystal-based topical formulation. The mechanism of drug release, immediate as well as sustained release, after topical administration of drug nanocrystals is also elaborated. The special emphasis is given on the breakthrough achieved, in topical drug delivery using drug nanocrystals, so far in the plethora of literature, patents, and products, under clinical trial as well as in the market. The current research on nanocrystals for topical drug delivery is highlighting the breakthroughs achieved so far. The output of these research envisages that topical nanocrystals based formulations can be a novel strategy for the drugs which are facing solubility, bioavailability and toxicity concerns.

Biography

Viral has completed her PhD from Institute of Pharmacy Nirma University, Ahmedabad, India. She started her professional carrier as research scientist by affiliating to Baxter Pharmaceuticals India Private Limited at its R&D center located in Ahmedabad. Later, to fulfil her quest for research she joined Ramanbhai Patel College of Pharmacy as Assistant Professor. She has been recipient of many research grants, the prestigious one being DST-INSPIRE grant from Department of Science and Technology, Govt. of India. She is proud editor of a book and has many research and review articles published in reputed journals to her credit. She has guided 12 post graduate students and 11 undergrad students for their dissertation research work. She is associated with reputed journals of Elsvier, Springer Nature, Taylor & Francis, Wiley, Frontiers, etc., as an esteemed reviewer.