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Abstract

Nanocrystals are composed of 100% active and possess an increased aqueous solubility and dissolution velocity when compared to larger sized materials. Nanocrystals can be used to improve the bioavailability of poorly soluble actives not only for oral, but also for topical application. In this study nanocrystals of different sizes were produced and the influence of size on dermal penetration was investigated. The influence of different excipients and vehicles on the penetration efficacy upon dermal application was also investigated. Results confirm that dermal penetration of poorly soluble actives increases with decreasing size of the nanocrystals. Unexpectedly, it was observed that many classical penetration enhancers failed to promote the penetration of actives from nanocrystals. Also hydrogels were found to be non-suitable vehicles for the formulation of nanocrystals. As most suitable vehicles for nanocrystals oleogels and creams were identified.

Keywords

Nanocrystals, dermal application, size, passive diffusion, excipients, vehicle