
56 Microscopy Methods for Assessing Percutaneous Drug Penetration

Percutaneous Absorption-Drugs-Cosmetics-Mechanism-Methodology

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56.1 INTRODUCTION

Technical advances in microscopy imaging techniques have been applied to assess the fate of drugs for transdermal delivery in *ex vivo* and *in vivo* experiments for the last few decades. The skin offers the most accessible and convenient administration route for medications. Scientists continue to develop safe and efficacious means of delivering drugs through the skin [1]. The first challenge when topically applying drugs is to know how the drug penetrates through the skin. First, the drug must penetrate the outmost layer of lipophilic skin, the stratum corneum. The layers beneath the stratum corneum are the epidermis and dermis, which are made of compact and organized cells mainly composed of keratinocytes. These layers make it difficult for any actives to penetrate through. Any topical drug penetration assessment needs to indicate the localization of actives in each skin strata or adnexal structures, e.g., sweat ducts, sebaceous glands. Therefore, visual confirmation of the drug profile using microscopy is crucial.