
44 Effect of Tape Stripping on Percutaneous Penetration and Topical Vaccination

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44.1 INTRODUCTION

The skin protects the body from unwanted environmental effects. The stratum corneum (SC), only 10 to 30 μm thick, provides a barrier to the percutaneous penetration of drugs and macromolecules (1). Despite major research and development efforts in topical/transdermal systems and the advantages of these routes, low SC permeability remains a major limit for the usefulness of the topical approach (2, 3). To increase permeability, chemical and physical approaches have been examined to decrease barrier properties. Physical approaches for skin penetration enhancement such as stripping (4–12), iontophoresis (13), and electroporation (13, 14) have been evaluated. In addition, penetration enhancers and vesicle systems have been used to enhance permeability (15–17). Tape stripping is commonly used to disrupt the epidermal barrier to enhance the delivery of applied drug and biological macromolecules.

Tape stripping is putatively simple, inexpensive, and minimally invasive. The number of tape strips needed to remove the SC varies with age, gender, anatomical site, skin condition, and possibly ethnicity (18). Tape stripping has been used in the dermatological and pharmaceutical fields to measure SC mass and thickness (4–6), to investigate percutaneous penetration of topically applied