Topical delivery of cosmetics and drugs. Molecular aspects of percutaneous absorption and delivery

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Percutaneous penetration/permeation is a useful tool for obtaining qualitative and/or quantitative information on the amount of a drug, a cosmetic substance, or any chemical that may enter a skin compartment or the systemic circulation of the human body for pharmaceutical or cosmetic purposes, or for toxicological studies. In the latter case, the extent entering can then be taken into consideration in order to calculate the margin of safety using the NOAEL (No Observed Adverse Effect Level) of an appropriate repeated dose toxicity study with the respective substance. This paper is a short overview of various aspects of skin penetration/permeation of drugs or cosmetic agents. The literature reports numerous studies on skin structure and skin properties influencing drug/cosmetic agent permeation profiles and kinetic parameters. The extensive research concerning the skin structure for determining the key parameters of the penetration/permeation process is therefore described first. Mathematical models of the skin absorption process for a drug are then discussed. Finally new developments in pharmaceutical and cosmetic fields to enhance drug permeation or to modify the stratum corneum structure are considered.
Indeed, both molecular complexity associated with drugs and inaccessibility of most pharmacological targets are the major constraints and the main reasons behind the renewed curiosity and expanding research on nanodelivery systems, which can carry drugs directly to their site of action. Chapters 1 to 11 cover various formulation aspects of nanoparticulate drug delivery systems. Studies on the use of liposomes for topical delivery of drugs. A particularly promising area concerns topical administration using liposomal drug formulations. Methods of production of liposomes and their potential in topical application, especially in the field of cosmetics and dermatology, have been reviewed by Siciliano [17]. They also examined the in-vitro percutaneous penetration of butylparaben and DPPC from the liposomal formulations using flow-through diffusion cells in order to quantitate the effect of liposomes on drug penetration [20]. They found that the amount of butylparaben that. With the use of appropriately radiolabeled drugs and liposomal lipids, it has been possible to obtain both drug and liposomal lipid distributions in the various strata of the skin. Percutaneous absorption and delivery systems 3 3 The opinions expressed herein are solely those of the writers and do not necessarily reflect the opinions of the institutions with which the writers are associated. Article. Jul 2001. This review presents a comprehensive account of various aspects of drug delivery by transdermal route including the various chemical and physical penetration enhancers. It also discusses the in vivo and in vitro methods of evaluating chemical enhancers, their mode of action and safety. View. Topical delivery of cosmetics and drugs. Molecular aspects of percutaneous absorption and delivery. Article. Jun 2009.