

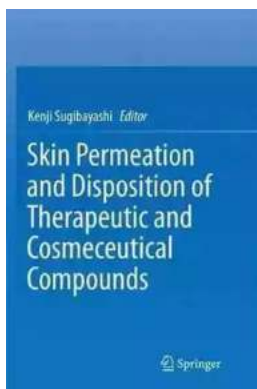
The Skin: A Gateway for Beauty and Healing

Every day, our skin acts as a protective barrier, shielding us from harmful external factors. However, did you know that our skin has another hidden talent? It has the ability to absorb and deliver therapeutic and cosmeceutical compounds to where they are needed most. This process, known as skin permeation and disposition, plays a crucial role in the efficacy and effectiveness of various treatments and cosmetic products.

The Science Behind Skin Permeation

Skin permeation refers to the movement of substances through the different layers of the skin. The outermost layer of the skin, known as the stratum corneum, is composed of layers of dead skin cells and lipids. This layer acts as a protective barrier, preventing the penetration of most substances.

However, certain therapeutic and cosmeceutical compounds have the ability to penetrate this barrier, thanks to their unique properties. Factors such as molecular weight, size, lipophilicity, and solubility influence the ability of a compound to permeate the skin. Additionally, the presence of enhancers or delivery systems can further enhance the permeation of these compounds.



Skin Permeation and Disposition of Therapeutic and Cosmeceutical Compounds

by Herbert S. Zim(1st ed. 2017 Edition, Kindle Edition)

★★★★☆ 4.8 out of 5

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File size : 12184 KB

Text-to-Speech : Enabled

Enhanced typesetting: Enabled

Print length : 438 pages

Screen Reader : Supported



Enhancing Skin Permeation: The Role of Formulation

Formulation plays a crucial role in enhancing the skin permeation of therapeutic and cosmeceutical compounds. Through the use of various delivery systems, such as liposomes, microspheres, and patches, these compounds can be effectively delivered to their target site.

For example, liposomes are lipid vesicles that can encapsulate hydrophilic or lipophilic compounds. By incorporating the active ingredients into liposomes, their penetration and delivery can be improved. Similarly, microspheres can entrap compounds and provide controlled release over time, ensuring a sustained effect.

Moreover, the addition of penetration enhancers can further enhance the permeation of compounds into the skin. These enhancers work by temporarily disrupting the skin barrier, allowing for better absorption. Common penetration enhancers include fatty acids, alcohols, and surfactants.

The Disposition of Compounds Within the Skin

Once a therapeutic or cosmeceutical compound has successfully permeated the skin, it undergoes disposition within the different layers and compartments of the skin.

The dermis, the layer beneath the stratum corneum, contains blood vessels, sweat glands, and hair follicles. This layer serves as a reservoir for the compound, allowing for sustained release and diffusion into the surrounding tissues. The amount of blood flow and the presence of receptors on the target cells determine the efficacy of the compound.

In some cases, compounds can also penetrate into the subcutaneous tissue, which is the deepest layer of the skin. From here, they can access the bloodstream, leading to systemic distribution and potential systemic effects.

The Importance of Skin Permeation and Disposition in Therapeutic and Cosmeceutical Applications

The ability of therapeutic and cosmeceutical compounds to permeate the skin and reach their target sites is of utmost importance in the field of medicine and skincare.

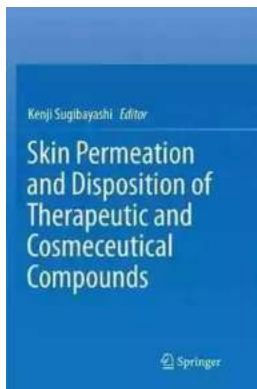
In the case of therapeutic compounds, such as anti-inflammatory drugs or local anesthetics, efficient skin permeation ensures that the medication can reach the site of action effectively. This is particularly relevant in the treatment of skin conditions, where direct delivery to the affected area is crucial.

Cosmeceutical compounds, on the other hand, aim to improve the appearance and health of the skin. By enhancing skin permeation, these compounds can deliver their active ingredients, such as anti-aging agents or moisturizers, where they are needed most. This leads to their desired effects, resulting in improved skin texture, hydration, and overall appearance.

The process of skin permeation and disposition plays a vital role in the efficacy and effectiveness of both therapeutic and cosmeceutical compounds. By understanding the science behind skin permeation and utilizing appropriate formulations, we can unlock the full potential of these compounds, leading to better and more targeted treatments and skincare products.

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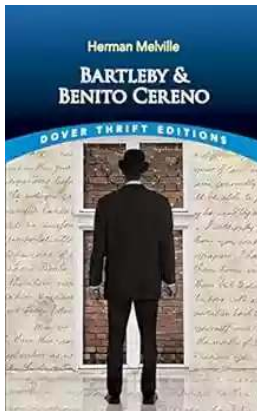
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This book reviews skin permeation and disposition of chemical compounds. Skin is utilized as an administration site for transdermal drug delivery systems, topical drug formulations, cosmeceuticals, and cosmetics. Their usefulness is closely related to the permeation and disposition of entrapped active ingredients through and into the skin. Skin permeation, disposition, and metabolism of chemicals are first summarized in the general . Then primary topical formulations are explained in the second part, “Basic Formulations Applied to Skin”. The explanation for the active compounds and formulations are of the most important parts required to fabricate these formulations. Skin absorption of chemicals is generally much lower than oral and the other mucosal absorptions, so that skin-penetration enhancement is a key issue to have good formulations topically applied. Part 3 presents “Skin Penetration Enhancement”. In addition, Part 4, “Selection of Topically Applied Chemical Candidates”, deals with selection methods of topically applied ingredients for transdermal drug delivery systems, topical drug formulations, cosmeceuticals, and cosmetics. Parts 5 and 6, “Safety Assessment of Topically Applied Compounds“ and “Experimental Methods of Skin Permeation“, respectively, show safety issues and experimental methods for topical formulations. The final part consists of comments on therapeutic and cosmetic formulations by medical doctors and pharmacists. Their comments are

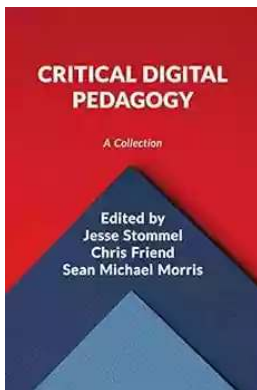
especially helpful for pharmaceutical and cosmetic researchers who study dermatopharmacokinetics and topical formulations.

This volume is particularly useful for those working in R&D, graduate students, and educators in the area of pharmaceuticals, cosmetic sciences, dermatological sciences, pharmacology, toxicology, biopharmacy, pharmacokinetics, physical pharmacy, chemical engineering, and related fields.



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