

Book Review

PERCUTANEOUS PENETRATION ENHANCERS, 2ND ED., E. Smith and H. I. Maibach, Eds. (Taylor & Francis Group, CRC Press, Boca Raton, FL, 2006), 432 pp., \$199.95.

Percutaneous Penetration Enhancers, edited by Eric Smith and Howard Maibach, contains chapters divided into six headings: (1) Introduction, (2) Vehicle effects in penetration enhancement, (3) Physical methods of penetration enhancement, (4) Assessment of penetration enhancement, (5) Retardation of percutaneous penetration, and (6) Commercial applications of penetration enhancers. This second edition is a comprehensive review of chemical methods and physical methods for the scientist entering the area of percutaneous drug delivery and presents some chapters of exceptional quality.

Because a chapter review gives authors the latitude to publish conceptual thinking independent of the peer-review process, one criterion for a review might be the integration of current scientific information into fresh and innovative contributions to the scientific literature. Using that criterion, four chapters in this book meet or exceed the reviewer's expectations. The two chapters by S. Kevin Li and William Higuchi ("Quantitative Structure-Enhancement Relationship and the Microenvironment of the Enhancer Site of Action" and "Mechanistic Studies of Permeation Enhancers") combine to reveal innovative thinking in the area of penetration enhancers. These clear and concise chapters challenge established methodology and left me

hungry for more. The third chapter of note, the introductory chapter by Brian Barry entitled "Penetration Enhancer Classification," is as current a review on penetration enhancement as can be found, as more than 50% of the 28 references are dated 2004 or 2005. This chapter becomes, therefore, the first that one should read when entering the percutaneous drug delivery area. The fourth chapter of notable quality is the review by E. Braue, Jr., *et al.*, "Military Perspectives in Chemical Penetration Retardation." Most interesting to the reviewer is the decades-long scientific process in developing percutaneous barrier products.

Four items suggest that this book should have exhibited greater attention to details. First, although it has been well known for almost a decade that particulate sunscreens such as titanium dioxide and zinc oxide act by absorbing UV radiation (R. M. Sayre, N. Kollias, R. Roberts, A. Baqer, Physical sunscreens, *J. Soc. Cosmet. Chem.*, 41, 103–109; 1990), Purdon, Smith, and Surber (Chapter 25: "Retardation Strategies for Sunscreen Agents") write that "particulate sunscreens present a physical barrier . . . scattering or reflecting the radiation." Second, an apparent inconsistency is shown by Babu, Singh, and Kanikkannan (Chapter 12: "Fatty Alcohols and Fatty Acids"), referring to "medium chain (C6–C10) . . . fatty acids" on page 138 and then referring to "medium chain aliphatic alcohols (C8–C12)" on page 143. No explanation is given as to why medium chain aliphatic alcohols are longer than

medium chain fatty acids. Third, three different methods are used to cite references (see references for Chapters 1, 18, and 25). Fourth, in the era of electronic spell-checking, the book contains several typographical errors.

Despite these minor shortcomings, this book includes innovative science and will

be valuable to scientists in the area of formulation development and drug delivery. This second edition serves not only as an initial resource to begin any percutaneous penetration research project, but also as a thought-provoking challenge to those conducting research in drug delivery.—**MICHAEL CASWELL**—Fleet Laboratories