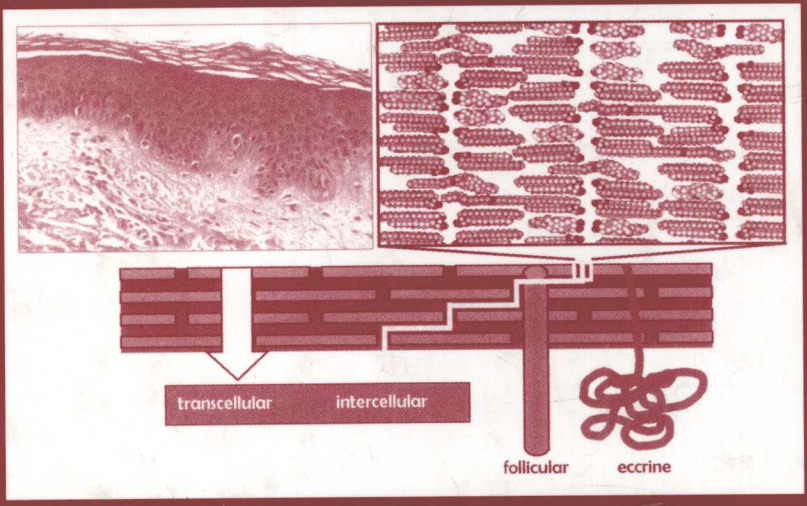
DRUGS AND THE PHARMACEUTICAL SCIENCES VOLUME 123

Transdermal Drug Delivery

Second Edition, Revised and Expanded



edited by
Richard H. Guy
Jonathan Hadgraft

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Second Edition, Revised and Expanded

edited by

Richard H. Guy
Universities of Geneva and Lyon, Archamps, France
and University of Geneva, Geneva, Switzerland

Jonathan Hadgraft
NRI, University of Greenwich, Chatham, England

MARCEL DEKKER

MARCEL DEKKER, INC. NEW YORK • BASEL

Library of Congress Cataloging-in-Publication Data
A catalog record for this book is available from the Library of Congress.

ISBN: 0-8247-0861-X

The first edition was published as *Transdermal Drug Delivery: Developmental Issues and Research Initiatives,* edited by Jonathan Hadgraft and Richard H. Guy.

This book is printed on acid-free paper.

Headquarters
Marcel Dekker, Inc.
270 Madison Avenue, New York, NY 10016
tel: 212-696-9000; fax: 212-685-4540

Eastern Hemisphere Distribution
Marcel Dekker AG
Hutgasse 4, Postfach 812, CH-4001 Basel, Switzerland
tel: 41-61-260-6300; fax: 41-61-260-6333

World Wide Web
http://www.dekker.com

The publisher offers discounts on this book when ordered in bulk quantities. For more information, write to Special Sales/Professional Marketing at the headquarters address above.

Current printing (last digit):
10 9 8 7 6 5 4 3 2 1

PRINTED IN THE UNITED STATES OF AMERICA

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Preface

The previous edition of our book was compiled in the late '80s at the height of academic and industrial activity in transdermal research. While this route of administration continues to be limited by the number of suitable drug candidates available, it still attracts considerable worldwide interest, and, importantly, the pharmaceutical industry is now prepared to consider new chemical entities for transdermal delivery. This will reinvigorate the field, which, until now, has depended on the development of existing compounds that typically do not possess optimal physicochemical properties for dermal delivery.

The second edition reflects our increased knowledge of the mechanisms of absorption and how these can be used to advantage in the development of medicinal agents and formulations for both dermal and transdermal delivery. The barrier properties of the skin, thanks to the use of sophisticated biophysical techniques, are much better understood and their modulation by both chemical and physical techniques has achieved impressive results. Consequently, the manner in which the basic physicochemical properties of a drug determine the amount that can be transported across the stratum corneum can now be explained in detail. The revised text shows the importance of these properties and how predictive models can be established to examine the feasibility of delivering molecules into and through the skin. Over the last 15 years, considerable advances have been made in the use of physical approaches to promote absorption. These techniques, which include electrical, ultrasound, and other minimally invasive strategies, are reviewed here in some detail. Chemical enhancers, on the other hand, have been fully examined in multiple other texts and are therefore not covered in this edition.

The fact that the skin is a metabolically active organ means that its barrier properties can be modulated by interference with lipid synthesis. This novel approach is reviewed in this book, as is the application of supersaturation as a mechanism for enhanced delivery. Finally, as no transdermal system can be successful until it has passed through stringent regulatory control, the final chapter considers the steps required for the registration of dermal delivery systems.

In summary, this text attempts to achieve two broad objectives. The first is to provide a "snapshot" of the field and an evaluation of some creative ideas under examination. The second objective is to serve as a reference work that summarizes the state of the art and can be used to guide the interested reader into the fascinating world (and associated challenges) of transdermal drug delivery.

Richard H. Guy
Jonathan Hadgraft

Contributors

Annette L. Bunge Chemical Engineering Department, Colorado School of Mines, Golden, Colorado, U.S.A.

Adrian Davis GlaxoSmithKline Consumer Healthcare, Weybridge, England

M. Begoña Delgado-Charro Centre Interuniversitaire de Recherche et d'Enseignement, Universities of Geneva and Lyon, Archamps, France, and School of Pharmacy, University of Geneva, Geneva, Switzerland

James A. Down BD Technologies, Research Triangle Park, North Carolina, U.S.A.

Peter M. Elias Departments of Dermatology and Medicine, University of California, San Francisco, San Francisco, California, U.S.A.

Kenneth R. Feingold Departments of Dermatology and Medicine, University of California, San Francisco, San Francisco, California, U.S.A.

Richard H. Guy Centre Interuniversitaire de Recherche et d'Enseignement, Universities of Geneva and Lyon, Archamps, France, and School of Pharmacy, University of Geneva, Geneva, Switzerland

Jonathan Hadgraft Skin and Membrane Transfer Research Center, NRI, University of Greenwich, Chatham, England

Noel G. Harvey BD Technologies, Research Triangle Park, North Carolina, U.S.A.

Victor Meidan New Jersey Center for Biomaterials, Newark, New Jersey, U.S.A.

Gopinathan Menon Avon Products, Inc., Suffern, New York, U.S.A.

Mark Pellett Wyeth Consumer Healthcare, Havant, England

Véronique Préat Unité de Pharmacie Galénique, Université Catholique de Louvain, Brussels, Belgium

S. Lakshmi Raghavan Skin and Membrane Transfer Research Center, NRI, University of Greenwich, Chatham, England

Vinod P. Shah Center for Drug Evaluation and Research, Food and Drug Administration, Rockville, Maryland, U.S.A.

Carl Thornfeldt Cellegy Pharmaceuticals, Inc., Foster City, California, U.S.A.

Janice Tsai Department of Dermatology, University of California, San Francisco, San Francisco, California, U.S.A.; Department of Clinical Pharmacy, National Cheng Kung University, Taiwan; and Cellegy Pharmaceuticals, Inc., Foster City, California, U.S.A.

Rita Vanbever Unité de Pharmacie Galénique, Université Catholique de Louvain, Brussels, Belgium

Brent E. Vecchia* Chemical Engineering Department, Colorado School of Mines, Golden, Colorado, U.S.A.

* *Current affiliation*: Blakely Sokoloff Taylor & Zafman LLP, Denver, Colorado, U.S.A.

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