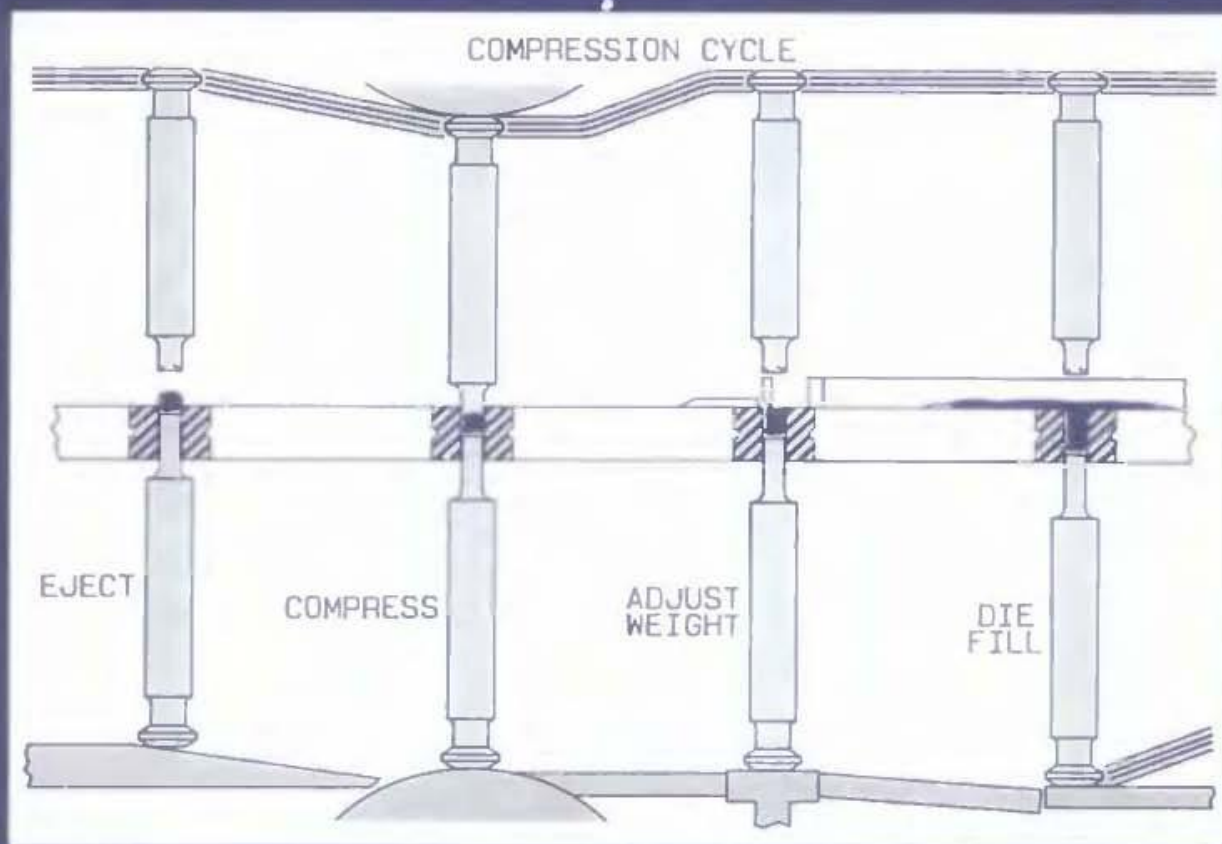


Pharmaceutical Dosage Forms: Tablets Volume 1

Second Edition, Revised and Expanded

Edited by Herbert A. Lieberman,
Leon Lachman, and Joseph B. Schwartz



PHARMACEUTICAL DOSAGE FORMS

Tablets

SECOND EDITION, REVISED AND EXPANDED

In Three Volumes

VOLUME 1

EDITED BY

Herbert A. Lieberman

H H Lieberman Associates, Inc
Consultant Services
Livingston, New Jersey

Leon Lachman

Lachman Consultant Services
Westbury, New York

Joseph B. Schwartz

Philadelphia College of Pharmacy and Science
Philadelphia, Pennsylvania



MARCEL DEKKER, INC.

NEW YORK • BASEL • HONG KONG

Library of Congress Cataloging-in-Publication Data

**Pharmaceutical dosage forms--tablets / edited by Herbert A. Lieberman,
Leon Lachman, Joseph B. Schwartz. -- 2nd ed., rev. and expanded.**

p. cm.

Includes index.

ISBN 0-8247-8044-2 (v. 1 : alk. paper)

1. Tablets (Medicine) 2. Drugs--Dosage forms. I. Lieberman,
Herbert A. II. Lachman, Leon. III. Schwartz, Joseph B.

[DNLM: 1. Dosage Forms. 2. Drugs--administration & dosage. QV
785 P535]

RS201.T2P46 1989

615'.191--dc19

DNLM/DLC

for Library of Congress

89-1629

CIP

Copyright © 1989 by MARCEL DEKKER, INC. All Rights Reserved

Neither this book nor any part may be reproduced or transmitted in
any form or by any means, electronic or mechanical, including photo-
copying, microfilming, and recording, or by any information storage
and retrieval system, without permission in writing from the publisher.

MARCEL DEKKER, INC.

270 Madison Avenue, New York, New York 10016

Current printing (last digit):

10 9 8 7 6

PRINTED IN THE UNITED STATES OF AMERICA

PHARMACEUTICAL DOSAGE FORMS

Preface

Several years have passed since the first edition of *Pharmaceutical Dosage Forms: Tablets* was published. During this time, considerable advances have been made in the science and technology of tablet formulation, manufacture, and testing. These changes are reflected in this updated, revised and expanded second edition.

The tablet dosage form continues to be the most widely used drug delivery system for both over-the-counter and prescription drugs. The term *tablet* encompasses: the usual compressed tablet; the compressed tablet that is sugar- or film-coated to provide dissolution in either the stomach or the intestine, or partially in the stomach and partially in the intestine; layered tablets for gastric and intestinal release; effervescent tablets; sustained-release tablets; compressed coated tablets; sublingual and buccal tablets; chewable tablets; and medicated lozenges. These various dosage forms are described in depth in the three volumes of this series.

In the first volume, the various types of tablet products are discussed; the second volume is concerned with the processes involved in producing tablets, their bioavailability and pharmacokinetics; and in the third volume, additional processes in tablet production are discussed, as well as sustained drug release, stability, kinetics, automation, pilot plant, and quality assurance.

The first chapter in Volume 1 describes "Preformulation Testing." This second edition of the chapter contains an extensive amount of new material on substance purity, dissolution, the concept of permeability, and some of the pharmaceutical properties of solids. In the second chapter, "Tablet Formulation and Design," the plan for developing prototype formulas has been revised and an approach, using statistical design, is presented. There is consideration given to those elements in tablet formulation that are of importance to the operation of tablet presses with microprocessor controls.

There have been so many advances in the technology of wet granulation and direct compression methods since the first edition that what had previously been one chapter has now been expanded into two chapters.

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.