About the Author's

Dr. G. Saravanan is a distinguished academician, researcher, and administrator in Pharmaceutical Sciences, currently serving as Professor and Principal at Vel Pharmacy College, VISTAS Off Campus Centre, Tiruvallur, Tamil Nadu. He is a recognized Ph.D. guide at Osmania University and VISTAS, Chennai. He has authored five textbooks, published over 106 research papers, and holds four patents. He has received numerous national and international awards for his outstanding contributions to research, teaching, and academic excellence.

Ms. M. Divya is working as an Assistant Professor in the Department of Pharmaceutical Analysis at VEL Pharmacy College, Chennai. She completed her B.Pharm from Saveetha College of Pharmacy with Merit Rank No. 2 and earned her M.Pharm in Pharmaceutical Analysis from Sri Ramachandra Faculty of Pharmacy, where she received the prestigious Dr. Khivraj Chordia Gold Medal. She has published several research and review articles and contributed book chapters in the field of Pharmaceutical Sciences.

Dr. D. Kamalakannan is Professor and Head of the Department of Pharmaceutical Analysis at Excel College of Pharmacy, Komarapalayam. With over 15 years of experience in teaching, research, and administration, he specializes in analytical method development, validation, chromatographic techniques, and stability studies. He has published more than 40 peer-reviewed research papers and actively explores the integration of Artificial Intelligence and Machine Learning in pharmaceutical analysis and data interpretation.

Mr. Anshul Sharma is an Assistant Professor at Pharmacy Academy, IFTM University, Moradabad, and also a Research Scholar in Pharmaceutical Sciences. His research focuses on medicinal chemistry, particularly the design and synthesis of heterocyclic compounds as central nervous system (CNS) active agents. He is actively engaged in academic research, scientific writing, and pharmaceutical education. He has contributed to the field through the publication of review and research articles in various journals. His work aims to explore novel heterocyclic scaffolds with potential therapeutic applications and to advance research in drug discovery and development within pharmaceutical sciences.

Ms. Sharmila Mondal is an Assistant Professor at JIS University, Kolkata. She holds a Master's in Pharmacy from Nirmala College of Pharmacy, JNTUA, Andhra Pradesh, and is currently pursuing a PhD at JIS University. With experience as an Assistant Professor and Hospital Pharmacist, she has participated in numerous conferences, workshops, and training programs. Her research interests include analytical method development and validation, pharmaceutical analysis, and drug regulatory affairs. She has publications and patents to her credit.

CHYREN PUBLICATION
Palwal, Haryana-121102
Mob.:+91 9812453066, Tel.: +911275-455-202
E-mail: chyrenpublication@yahoo.com
https://www.chyrenpublication.com

ISBN 978-93-7880-084-9

Book Ref. No. : 1773

A TEXTBOOK OF PHARMACEUTICAL ANALYSIS

A TEXTBOOK OF
PHARMACEUTICAL ANALYSIS

Principles • Techniques • Applications

Dr. G. Saravanan
Ms. M. Divya
Dr. D. Kamalakannan
Mr. Anshul Sharma
Ms. Sharmila Mondal

A TEXTBOOK OF PHARMACEUTICAL ANALYSIS

Dr. G. Saravanan
Ms. M. Divya
Dr. D. Kamalakannan
Mr. Anshul Sharma
Ms. Sharmila Mondal

CHYREN PUBLICATION

Office: Near Bijli Gate, Palwal, Haryana-121102
E-mail: chyrenpublication@gmail.com
https://www.chyrenpublication.com

Book Ref. No.:1773
Publication: 30/04/2026
ISBN: 978-93-7880-084-9
Price: 499/-

Printed & Published By
CHYREN PUBLICATION
Palwal Haryana, India

Disclaimer

The views expressed by the authors in the book published by Chyren Publication, Palwal, (HR) are their own. They do not necessarily reflect the views of the publisher. The publisher is not responsible in any way for any liability arising from the content/text of the book.

ACKNOWLEDGEMENT

I would like to express my sincere gratitude to all those who have supported and guided me in the completion of this book. This work would not have been possible without the encouragement, inspiration, and assistance of many individuals.

First and foremost, I extend my heartfelt thanks to my mentors, teachers, and academic colleagues for their valuable guidance, constructive suggestions, and continuous support throughout the development of this manuscript. Their expertise and insights have greatly enriched the quality of this work.

I am deeply grateful to my institution for providing the necessary academic environment and resources that facilitated the completion of this book. I also acknowledge the contributions of authors, researchers, and scholars whose published works have served as an important reference and foundation for this text.

I would like to thank the publishing team for their professionalism, patience, and cooperation in bringing this book to fruition. Their efforts in editing, designing, and formatting have been invaluable.

Special thanks to my family and friends for their constant encouragement, understanding, and moral support during this journey. Their belief in me has been a source of strength and motivation.

Finally, I express my sincere appreciation to the readers and students for whom this book is intended. I hope this work proves useful and contributes meaningfully to their academic and professional growth.

All Authors

TABLE OF CONTENTS

UNIT

1

PHARMACEUTICAL ANALYSIS – DEFINITION AND SCOPE

Definition

Pharmaceutical analysis is a branch of pharmaceutical sciences that deals with the qualitative and quantitative determination of drugs and pharmaceutical substances. It involves the identification, purity testing, and estimation of active pharmaceutical ingredients (APIs) as well as excipients in various dosage forms. The primary objective of pharmaceutical analysis is to ensure that drugs meet the required standards of quality, safety, efficacy, and purity as specified in pharmacopoeias and regulatory guidelines.

Pharmaceutical analysis includes a wide range of techniques such as titrimetric, gravimetric, spectroscopic, chromatographic, and microbiological methods, which are used to analyze raw materials, intermediates, and finished products. It plays a crucial role throughout the lifecycle of a drug, from development to manufacturing and post-marketing surveillance.

Scope of Pharmaceutical Analysis

The scope of pharmaceutical analysis is broad and continuously expanding with advancements in science and technology. It covers various aspects of drug evaluation and quality assurance.

1. Identification of Drugs: Pharmaceutical analysis is used to confirm the identity of drugs and pharmaceutical substances using chemical, physical, and instrumental methods. This ensures that the correct drug is being used in formulation.

2. Determination of Purity: It involves the detection and quantification of impurities, contaminants, and degradation products present in drugs. Limit