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3.3.3 Number of books and chapter is edited volume/ books published and paper published in national / international conferences proceedings as per teacher during published per teacher the year

S. No	Title of chapter/ Book	Name of the author/s	Department of the teacher	Name of Book	Year of publication	ISBN number	Link to the recognition in UGC enlistment of the Journal /Digital Object Identifier (doi) number			
							Link to website of the Book	Link to Chapter	Is it listed in UGC Care list/Scopus /Web of Science/other, mention	
1	A Textbook of Pharmacology-III (Book)	Dr. Praveen Sharma, Dr. Santosh D. Ghule, Dr. Pritesh Paliwal, Dr. Upendra Singh Bhadoriya	Pharmacology	A Textbook of Pharmacology-III	NA	2023	978-81-19425-12-9	www.shinebookpublishing.com	NA	No
2	Practical Handbook of Pharmacology-I (Book)	Mr. Rohit Dhoke, Dr. Praveen Sharma, Mr. Ajay Bhagwat, Dr. Santosh Ghule	Pharmacology	Practical Handbook of Pharmacology-I	NA	2023	978-93-5733-226-0	www.pritampublication.com	NA	No
3	Physical Pharmaceutics II (Book)	Dr. Dinesh Kumar Mishra, Ms. Nayany Sharma, Mr. Kuldeep Vinchurkar	Pharmaceutics	Physical Pharmaceutics II	NA	2023	978-81-963767-3-0	www.gyanpublications.com	NA	No
4	"New Anti-Diabetic Drugs for Treatment of Type-II Diabetes - A Comprehensive Overview" (Chapter)	Rekha Bisht	Pharmacy Practice	Recent Research Trends in Pharmaceutical Science		2023	978-93-5834-010-5	www.integratedpublications.in		
5	Artificial intelligence (AI) and Machine Learning in the Treatment of Various Diseases	Dr. Rupesh K. Gautam	Pharmacology	Computational Approaches in Drug Discovery, Development and Systems pharmacology		2023	978-0-323-99137-7	https://www.sciencedirect.com/book/9780323991377/computational-approaches-in-drug-discovery-development-and-systems-pharmacology	https://doi.org/10.1016/B978-0-323-99137-7.00010-1	Scopus
6	Pharmacophore Modeling	Dr. Rupesh K. Gautam	Pharmacology	Computational Approaches in Drug Discovery, Development and Systems pharmacology		2023	978-0-323-99137-7	https://www.sciencedirect.com/book/9780323991377/computational-approaches-in-drug-discovery-development-and-systems-pharmacology	https://doi.org/10.1016/B978-0-323-99137-7.00004-6	Scopus



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7	New Drug Discovery Pipeline	Dr. Rupesh K. Gautam	Pharmacology	Computational Approaches in Drug Discovery, Development and Systems pharmacology	2023	978-0-323-99137-7	https://www.sciencedirect.com/book/9780323991377/computational-approaches-in-drug-discovery-development-and-systems-pharmacology	https://doi.org/10.1016/B978-0-323-99137-7.00003-4	Scopus
8	Artificial Intelligence and Machine Learning-Based New Drug Discovery Process with Molecular Modeling	Dr. Rupesh K. Gautam	Pharmacology	Bioinformatics Tools for Pharmaceutical Drug Product Development	2023	978-1119-865-117	https://onlinelibrary.wiley.com/doi/book/10.1002/9781119865728	https://doi.org/10.10102/9781119865728.ch2	Scopus
9	Biobased materials in nutraceuticals	Dr. Rupesh K. Gautam	Pharmacology	Advanced Applications of Biobased Materials	2023	978-0-323-91677-6	https://www.sciencedirect.com/book/9780323916776/advanced-applications-of-biobased-materials	https://doi.org/10.1016/B978-0-323-91677-6.00003-9	Scopus
10	Synbiotics for colon cancer	Dr. Rupesh K. Gautam	Pharmacology	Synbiotics for the Management of Cancer	2023	978-981-19-7550-9_5	https://link.springer.com/chapter/10.1007/978-981-19-7550-9_5	https://doi.org/10.1007/978-981-19-7550-9_5	Scopus
11	Currents Updates in Breast Cancer Drug	Dr. Rupesh K. Gautam	Pharmacology	Drug and Therapy Development for Triple Negative Breast Cancer	2023	978-352-73517-56	https://onlinelibrary.wiley.com/doi/book/10.1002/9783527841165	https://doi.org/10.10102/9783527841165.ch15	Scopus
12	Artificial intelligence-driven decisions in breast cancer diagnosis	Dr. Rupesh K. Gautam	Pharmacology	Drug and Therapy Development for Triple Negative Breast Cancer	2023	978-352-73517-56	https://onlinelibrary.wiley.com/doi/book/10.1002/9783527841165	https://doi.org/10.10102/9783527841165.ch8	Scopus
13	Establishing nanotechnology-based drug development for triplenegative breast cancer treatment	Dr. Rupesh K. Gautam	Pharmacology	Drug and Therapy Development for Triple Negative Breast Cancer	2023	9783-5273-5175-6	https://onlinelibrary.wiley.com/doi/book/10.1002/9783527841165	https://doi.org/10.10102/9783527841165.ch9	Scopus
14	Recent Advancement of Nanotherapeutics to Treat Breast Cancer	Dr. Rupesh K. Gautam	Pharmacology	Drug and Therapy Development for Triple Negative Breast Cancer	2023	978-35-27351-75-6	https://onlinelibrary.wiley.com/doi/book/10.1002/9783527841165	https://doi.org/10.10102/9783527841165.ch3	Scopus



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15	EXIT EXAM FOR DIPLOMA IN PHARMACY	NADEEM FAROOQUI	PHARMACEUTICS	EXIT EXAM FOR DIPLOMA IN PHARMACY	NA	2023	978-81-964986-2-7	https://www.amazon.in/Guide-Diploma-Pharmacy-EXIT-EXAM/dp/B0CHMZ86ZL?ref=sr_1_1?crid=JY3QLB5X4Z&keywords=diplo+exam+exit+bo+ok+exam+publication&oi	NO
16	Practical lab manual of human anatomy and physiology	Dr. Praveen Sharma Kuldeep Vinchurkar Rohit Sahu	HAP-I	Practical lab manual of human anatomy and physiology		2023	978-620-677943-8	https://www.amazon.co.jp/Practical-Manual-Human-Anatomy-Physiology/dp/6206779432	No
17	Text book of pharmacology-III	Dr. Niklesh Baria Ms. Navneet Kaur Dr. Praveen Sharma Mr. Manvendra	Pharmacology-III	Text book of pharmacology-III		2023	979-889-1866-317	https://www.flipkart.com/text-book-pharmacology-iii/p/itm708e9758a01cc?pid=9798891866317&mpid=product_share_pp&refid=PP_a3d1bc40-4095-49d2-ac08-https://www.taylorfrancis.com/books/edit/10.1201/9781032621135/metal-nanocomposites-nanotherapeutics-oxidative-stress-induced-metabolic-disorders-nanodita	No
18	Nanotherapeutics for breast cancer using metal nanocomposites	Dr. Rupesh K. Gautam	Pharmacology	Metal Nanocomposites in Nanotherapeutics for Oxidative Stress-Induced Metabolic Disorders		2023	978-103-262-11-35	https://www.taylorfrancis.com/books/edit/10.1201/9781032621135/metal-nanocomposites-nanotherapeutics-oxidative-stress-induced-metabolic-disorders-nanodita	Scopus
19	Nanotherapeutics for liver cancer using metal nanocomposites	Dr. Rupesh K. Gautam	Pharmacology	Metal Nanocomposites in Nanotherapeutics for Oxidative Stress-Induced Metabolic Disorders		2023	978-103-262-1135	https://www.taylorfrancis.com/books/edit/10.1201/9781032621135/metal-nanocomposites-nanotherapeutics-oxidative-stress-induced-metabolic-disorders-nanodita	Scopus
✓ 20	Everything you need to Know about high fat diets	Dr. Rupesh K. Gautam	Pharmacology	NOVA Publisher		2023	979-8-88697-601-4	NOVA Publisher	




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PHARMACOLOGY III

AS PER PCI REGULATIONS

THIRD YEAR B.PHARM

AUTHORS

Dr. Praveen Sharma
Dr. Santosh Ghule
Dr. Pritesh Paliwal
Dr. Upendra singh Bhadoriya




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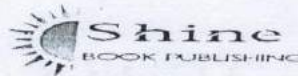
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BP602T. PHARMACOLOGY-III (THEORY)

SILENT FEATURE

Pharmacology

Pharmacological drug screening is the sequential testing of new chemical entities or extracts from biological material in isolated organs with subsequent testing on whole experimental animals. Screening Methods in Pharmacology focuses on methods of screening groups for pharmacological activities and discussions on the organization of screening programs. This book provides a descriptive approach detailing the CPCSEA, OECD and ICH guidelines to follow when screening new drug classes. It also provides a brief overview of bioassays and research methodology along with various experimental animal screening models for various diseases. This book will serve as a reference manual for graduate students in pharmacy and life sciences.

Distinctive features

1. Beneficial for pharmacy and life sciences graduates and researchers.
2. Provides various experimental animal screening models for various diseases.
3. Provides special guidelines for the use of animals during experimental protocols.
4. Provides a brief description of the bio assay.




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Preface

It gives us immense pleasure to present the "First Edition" of this book, which is dedicated to students and faculty of B. Pharma institutes of this country. This book is designed by a process in accordance with the requirement of the syllabus "Pharmacology-III" of the third year (6th semester) B. Pharm. course prescribed in the field "Bachelor of Pharmacy (B. Pharm) Course Regulations 2019" of Pharmacy Council of India.

Sincere efforts have been made to present the experimental details along with the preliminary experimental aspects, i.e. vehicle selection, drug dissolution and rational volume selection, preparation of solution and working standards with examples used in the experimental pharmacology. Most experimental procedures are described by giving examples with intent scaffolding experimental procedures trials during practical lessons various world organizations.

Basic concepts and basic principles were discussed for each experiment, to make the practical meaningful and useful for understanding the objective experiments. Some experiments taken with guidelines, illustration observational values for several experiments, measure overcoming errors.

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BP602 T. PHARMACOLOGY-III (theory)

45 hours

The subject is intended to impart basic knowledge about various aspects (classification, mechanism of action, therapeutic effects, clinical use, side effects and contraindications) of drugs affecting the respiratory and gastrointestinal system, infectious diseases, immunopharmacology, and further, emphasis on the principles of toxicology and chronopharmacology.

Objectives: After completing this course, the student should be able to:

1. understand the mechanism of action of the drug and its importance in the treatment of various infectious diseases
2. understand the principles of toxicology and the treatment of various poisonings and appreciate the correlation of pharmacology with related medical sciences.

Course content:

UNIT-I 10 hrs

1. Pharmacology of drugs acting on the respiratory system

Antiasthmatic drugs
Medicines used in the treatment of COPD
Expectorants and antitussives
Nasal decongestants
Respiratory stimulants

2. Pharmacology of drugs acting on the gastrointestinal tract

Antiulcer substances.
Medicines for constipation and diarrhea.
Stimulants and appetite suppressants.
Digestives and carminatives.
Emetics and antiemetics.

UNIT-II 10 hrs

3. Chemotherapy

General principles of chemotherapy.
Sulfonamides and co-trimoxazole.
Antibiotics— Penicillins, cephalosporins, chloramphenicol, macrolides, quinolones and fluoroquinolones, tetracycline and aminoglycosides

UNIT III 10 Hours

3. Chemotherapy

- a. Antitubercular substances
- b. Antileprotic substances



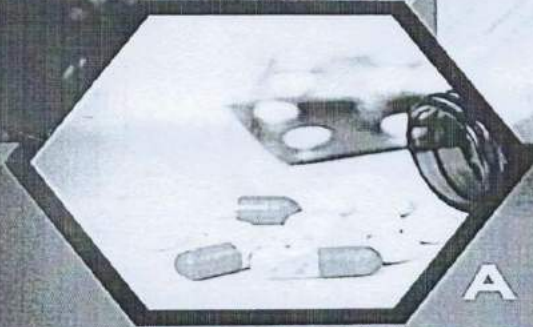
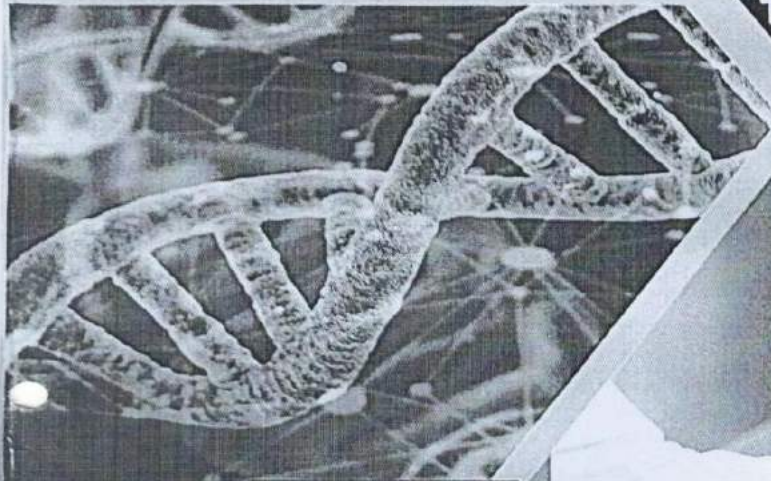

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**THIRD YEAR B.PHARM
SEMESTER- VI**



**A TEXTBOOK OF
PHARMACOLOGY III**

As Per PCI Regulations

**Dr. Praveen Sharma
Dr. Santosh D. Ghule
Dr. Pritesh Paliwal
Dr. Upendra Singh Bhadoriya**



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About the Authors

Mr. Rohit Doke is an accomplished researcher and educator in the field of pharmacy, currently working as an Assistant Professor at Vardhaman College of Pharmacy, Vidya Nagar, Raipur. He has completed his M.Phil. in Pharmaceutics from the esteemed Dr. D. Y. Patil Institute of Pharmaceutical Science and Research, Pimpri, and a Ph.D. from the Maharashtra Institute of Pharmaceutical Science and Research. He is currently pursuing a Doctor of Philosophy with a passion for pharmacology and an unwavering commitment to academic excellence. He has made significant contributions to the field during his 4 years of academic experience. He has published more than 25 research and review articles in national and international journals and 2 patents to his credit. He has also published 1 book. He works in the Graduate Pharmacy Institute, 'The IIP' Raipur, showcasing his comprehensive understanding of pharmaceutical sciences and competitive exams. His areas of interest include neuroscience, drug delivery, and clinical pharmacokinetics. He is proud to continue making valuable contributions to the advancement of pharmaceutical education.



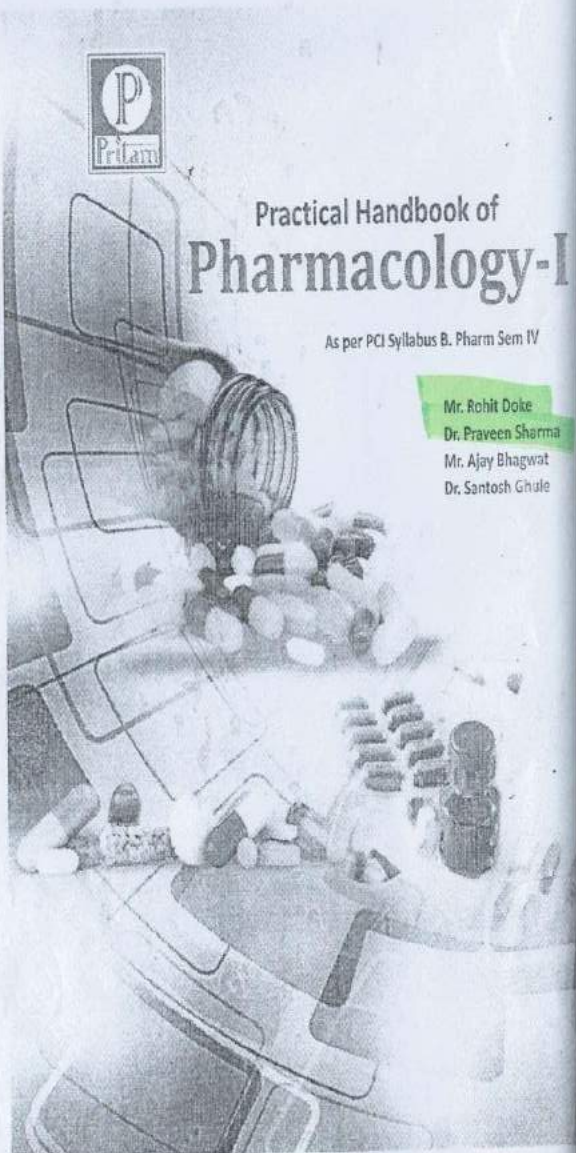
Dr. Praveen Sharma M. Pharm., Ph.D. is working as Professor at Indore Institute of Pharmacy (IIP) Indore, India (NAAC A Grade Accredited). He has 25 years of teaching experience. He has completed Master of Pharmacy in Pharmacology from Acharya and S.M. Joshi College of Pharmacy, Mumbai, Bangalore. He has completed his doctorate from JNU, Raipur. He is actively involved in research activities in Pharmacology of acute & chronic hepatitis. 40 research papers were published in national and international journals. He is active member of IAP, IAH, IPR, IPR, IPR, IPR & IPR.



Mr. Ajay Bhagwat is a graduate from the Maharashtra Institute of Pharmacy, Mumbai. He is currently working as an Assistant Professor in the Department of Pharmacy, Vardhaman College of Pharmacy, Vidya Nagar, Raipur. He has completed his M.Phil. in Pharmaceutics from the esteemed Dr. D. Y. Patil Institute of Pharmaceutical Science and Research, Pimpri. He is currently pursuing a Doctor of Philosophy with a passion for pharmacology and an unwavering commitment to academic excellence. He has made significant contributions to the field during his 4 years of academic experience. He has published more than 25 research and review articles in national and international journals and 2 patents to his credit. He has also published 1 book. He works in the Graduate Pharmacy Institute, 'The IIP' Raipur, showcasing his comprehensive understanding of pharmaceutical sciences and competitive exams. His areas of interest include neuroscience, drug delivery, and clinical pharmacokinetics. He is proud to continue making valuable contributions to the advancement of pharmaceutical education.



Dr. Santosh Ghule is a graduate from the Maharashtra Institute of Pharmacy, Mumbai. He is currently working as an Assistant Professor in the Department of Pharmacy, Vardhaman College of Pharmacy, Vidya Nagar, Raipur. He has completed his M.Phil. in Pharmaceutics from the esteemed Dr. D. Y. Patil Institute of Pharmaceutical Science and Research, Pimpri. He is currently pursuing a Doctor of Philosophy with a passion for pharmacology and an unwavering commitment to academic excellence. He has made significant contributions to the field during his 4 years of academic experience. He has published more than 25 research and review articles in national and international journals and 2 patents to his credit. He has also published 1 book. He works in the Graduate Pharmacy Institute, 'The IIP' Raipur, showcasing his comprehensive understanding of pharmaceutical sciences and competitive exams. His areas of interest include neuroscience, drug delivery, and clinical pharmacokinetics. He is proud to continue making valuable contributions to the advancement of pharmaceutical education.



Practical Handbook of Pharmacology-I

As per PCI Syllabus B. Pharm Sem IV

Mr. Rohit Doke
Dr. Praveen Sharma
Mr. Ajay Bhagwat
Dr. Santosh Ghule

Practical Handbook of Pharmacology I



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Dr. D. K. Mishra

Dr. Dinesh Kumar Mishra has nearly 20 years of research and teaching experience at both undergraduate and postgraduate levels. He is a leading scientist and academician. He did his graduation, post-graduation and doctorate in Pharmacy from Dr. H. S. Gour Central University, Sagar (M.P.). He has supervised more than 50 M. Pharm and 02 Ph.D. research projects. He has over 100 research publications to his credit, published in International and National Journals with more than 4000 citations and h-index 35. He is recipient of Prof. G. P. Talwar Young Scientist Award, INSA visiting fellowship and among the top 2% scientist in Elsevier list. He is member of many professional societies and editorial boards as well as reviewer of many International and National Journals. His research interest is novel drug delivery systems especially vesicular systems, transdermal drug delivery, vaccines and 3D printing technology. He has authored 06 books and 20 book chapters at National and International level. Presently, he is working as Professor and Principal, Indore Institute of Pharmacy (NAAC "A" accredited), Indore (M.P.).



Ms. Nayany Sharma

Ms. Nayany Sharma has nearly 8 years of teaching experience at both undergraduate and postgraduate levels. She completed her Post-Graduation from Mahakal Institute of Pharmaceutical Studies, Ujjain (M.P.), and pursuing Ph.D. from Geetanjali University Udaipur (Raj.). She has supervised many research projects for postgraduate and undergraduate students. She attended several national and international conferences organized in the pharmaceutical field. She has many publications to her credit. She is a life member of many professional societies. She has done many short courses offered by different organizations. Her research interest is novel drug delivery systems. Presently, she is working as an Assistant Professor, Pharmaceutics, at Indore Institute of Pharmacy, Indore (M.P.).



Mr. K. Vinchurkar

Mr. Kuldeep Vinchurkar has nearly 10 years of research and teaching experience at both undergraduate and post-graduate levels. He is a leading scientist and academician. He did his post-graduation from Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur (M.H) and pursuing a Ph.D. from School of Pharmacy, Devi Ahilya Vishwavidyalaya, Indore (M.P.). He has supervised more than 15 M. Pharm research projects. He attended several national and international conferences organized in pharmaceutical field. He has over 25 research and review publications to his credit published in international and national journals. He is a life member of many professional societies as well as a reviewer of many International and National journals. He has done several certification courses from foreign universities like University of Minnesota, University of California, Irvine, etc. He received "Academic Excellence" award from Mr. S. N. Pathan (ex-vice chancellor Nagpur University) during B. Pharm level. He received "Best Scientific Poster" award in pharmaceutics division in annual national convention of Association of Pharmaceutical Teachers of India (APTICON - 2015), Indore M.P. He received "Outstanding Assistant Professor" award in pharmaceutics category, in IPA MP STATE Award Ceremony, 2021, Indore, M.P. His research interest is 3D printing, novel drug delivery systems especially gastroretentive drug delivery. Presently, he is working as Assistant Professor, Pharmaceutics, Indore Institute of Pharmacy, Indore (M.P.).



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B. PHARM Fourth Semester

According To The New Syllabus as Prescribed by: Pharmacy Council of India

PHYSICAL PHARMACEUTICS-II

Dr. D. K. Mishra | Ms. Nayany Sharma | Mr. K. Vinchurkar

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Contents

Chapters	Page No.
1. Microbiological Quality Control in Pharmaceutical Industry <i>(Shalini Sehgal and Sunita Aggarwal)</i>	01-10
2. New Anti-Diabetic Drugs for Treatment of Type-II Diabetes: A Comprehensive Overview <i>(Rekha Bisht)</i>	11-28
3. Anti-Cancer Drugs Screening Methods and their Recent Advances <i>(Santhi Krupa Dasari)</i>	29-43
4. Solid Dispersion: An Application for Enhancing Bioavailability <i>(Sriranga T., Sreenivasa G.M., Anni Nandisha, Naveen S. Banakar, K.S. Anusha and Chetan Kumar Vasnad)</i>	45-67
5. Antibacterial Activity of <i>Calystegia sepium</i> , <i>Dacryodes edulis</i> and <i>Carica papaya</i> and their Synergistic Effects with Amoxicillin and Serum <i>(Jean-De-Dieu Tamokou, Jules-Arnaud Mboutchom Fosso, Abdel Jélil Njouendou, Steve Endeguele Ekom e-1 Irene Clinda Kengne)</i>	69-93
6. Autosomal Dominant Polycystic Kidney Disease <i>(Dr. Cyril Sajjan, Dr. Varun Singh Saggi, Dr. Rajesh Hadia, Dr. Hemraj Singh Rajput, Dilsar Gohil, Forum Bhatt and Krupa Joshi)</i>	95-106
7. Green Metrics for Analytical Techniques <i>(Dr. Yenduri Suvarna and Dr. Naga Prashant K)</i>	107-125


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Chapter - 2

New Anti-Diabetic Drugs for Treatment of Type-II Diabetes: A Comprehensive Overview

Rekha Bisht

Abstract

Type 2 diabetes mellitus (T2DM) is a chronic metabolic disease that is characterized by an escalation in blood sugar levels. More than 400 million people are affected by this life-threatening disease worldwide and it is estimated that there will be around 640 million people with T2DM worldwide in 2040. It is of utmost importance to bring in lifestyle changes to attain significant metabolic control in diabetes along with appropriate pharmacological treatment. To have significant control of blood sugar levels, doctors should be familiar with the recent advancement in various types of anti-diabetic drugs available in the market. The physician should focus on the selection of the most effective, safe, and well-tolerated anti-diabetic drugs to accomplish the goal of glycemic control and to avoid the long-term complication of diabetes such as retinopathy, nephropathy, etc. The prime emphasis of the present review is to focus on the gamut of currently available anti-diabetic drugs for the management of T2DM and also present a brief overview of their mechanism of action in controlling blood sugar levels.

Keywords: Type 2 diabetes mellitus, macrovascular complications, microvascular complication

Introduction

Diabetes mellitus is a metabolic disorder characterized by chronic hyperglycemia with disturbances of carbohydrate, fat and protein metabolism resulting directly from insulin resistance, inadequate insulin secretion, or excessive glucagon secretion ^[1, 2, 3] (Blair M, 2016; Bisht R, 2019; Yitbarek GY, 2021).

The effects of diabetes mellitus include long-term damage, dysfunction, and failure of various organs. Diabetes mellitus may present with characteristic symptoms such as thirst, polyuria, blurring of vision and




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Computational Approaches in Drug Discovery, Development and Systems Pharmacology

2023, Pages 139-158

Chapter 4 - Artificial intelligence (AI) and machine learning in the treatment of various diseases

Pooja Mittal ^a, Rajat Goyal ^b, Ramit Kapoor ^c, **Rupesh Kumar Gautam ^d**

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Abstract

Artificial Intelligence (AI) and Machine Learning (ML) have significant ability in improving the health care research. The adoption of AI-driven technologies can aid in the elimination of health disparities and reduce the load on healthcare systems. It is being implemented in various sectors such as pharmaceutical drug discovery, development, drug repurposing, improved drug therapy, clinical trials, and drug designing. The use of AI in these field can enhance the precision and accuracy and can reduce the human errors and make the work easier and more convenient. By using AI in drug designing and development, we can easily identify the targets and can develop the target susceptible drugs only, which will reduce the wastage of time and money. Computer systems are clearly speedier when it comes to calculations and analytic skills, yet they could not indeed make judgments on their own, since they lack the capacity to do so. Today, AI has a broad range of usage in nearly every sector, which appears to be beneficial and is displacing human professions that may be deemed unfavorable.

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Computational Approaches in Drug Discovery, Development and Systems Pharmacology

2023, Pages 159-182

Chapter 5 - Pharmacophore modeling

Maheshkumar Borkar ^a, Arati Prabhu ^a, Abhishek Kanugo ^b, Rupesh Kumar Gautam ^c

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<https://doi.org/10.1016/B978-0-323-99137-7.00004-6>

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Abstract

Pharmacophore modeling is an important part of “computer-aided drug design (CADD)” and has led to numerous successful research outcomes. It contributed significantly in the rational drug design approach. The pharmacophore model abstracts crucial structural attributes of a molecule that are crucial for pharmacological activity, along with their relative positions in three-dimensional space. There are various ligand- and structure-based methods that have been developed for improved pharmacophore modeling and fruitfully applied in de novo design, lead optimization, virtual screening, off-target and target identification, side effect, and ADME-tox modeling. Current chapter gives a comprehensive impression of pharmacophore modeling, focus on various types of pharmacophores, methodology development, and its vast spectrum of applications.

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PharmacoNet: Accelerating Large-Scale Virtual Screening by Deep Pharmacophore Modeling

2023, arXiv



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Computational Approaches in Drug Discovery, Development and Systems Pharmacology

2023, Pages 197-222

Chapter 7 - New drug discovery pipeline

Pooja Mittal ^a, Hitesh Chopra ^a, Komal Preet Kaur ^b, **Rupesh Kumar Gautam ^c**

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<https://doi.org/10.1016/B978-0-323-99137-7.00003-4>

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Abstract

The pharmaceutical industry strives to bring new medicines to market via complicated drug research and development operations. The discovery process includes target and hit identification, lead creation and optimization, and candidate selection. All of these are part of the development process. The sector is presently under pressure from stringent regulations, environmental concerns, and patent expiry revenue. To consistently provide excellent medications and business, academia, and government research organizations must collaborate more. This chapter overviews steps involved in lifespan of drug molecule from cradle to market. Drug discovery and development process takes about 12–15 years in whole to cover its journey from a laboratory to a market with approvals and billions of dollars are involved in this process. In this chapter, acquainted review of the various methods for lead identification, target identification to clinical trial phases is summarized.

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Artificial Intelligence and Machine Learning-Based New Drug Discovery Process with Molecular Modelling

sha Rani, Kavita Munjal, Rajeev K. Singla, **Rupesh K. Gautam**

Book Editor(s): Vivek Chavda, Krishnan Anand, Vasso Apostolopoulos

First published: 07 February 2023

<https://doi.org/10.1002/9781119865728.ch2>

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Summary

Drug development is a time-consuming, expensive and extremely risky procedure. Up to 90% of drug concepts are discarded due to challenges such as safety, efficacy and toxicity resulting in significant losses for the investor. The use of artificial intelligence (AI), namely machine learning and deep learning algorithms, to improve the drug discovery process is one technique that has arisen in recent years. AI has been effectively used in drug discovery and design. This chapter includes these machine learning approaches in depth, as well as their applications in medicinal chemistry. The current state-of-the-art of AI supported pharmaceutical discovery is discussed, including applications in structure and ligand-based virtual screening, *de novo* drug design, drug repurposing and factors related, after introducing the basic principles, along with some application notes, of the various machine learning algorithms. Finally, obstacles and limits are outlined, with an eye towards possible future avenues for AI-supported drug discovery and design.

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Computational Approaches in Drug Discovery, Development and Systems Pharmacology

2023, Pages 139-158

Chapter 4 - Artificial intelligence (AI) and machine learning in the treatment of various diseases

Pooja Mittal^a, Rajat Goyal^b, Ramit Kapoor^c, Rupesh Kumar Gautam^d

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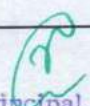
Artificial Intelligence (AI) and Machine Learning (ML) have significant ability in improving the health care research. The adoption of AI-driven technologies can aid in the elimination of health disparities and reduce the load on healthcare systems. It is being implemented in various sectors such as pharmaceutical drug discovery, development, drug repurposing, improved drug therapy, clinical trials, and drug designing. The use of AI in these field can enhance the precision and accuracy and can reduce the human errors and make the work easier and more convenient. By using AI in drug designing and development, we can easily identify the targets and can develop the target susceptible drugs only, which will reduce the wastage of time and money. Computer systems are clearly speedier when it comes to calculations and analytic skills, yet they could not indeed make judgments on their own, since they lack the capacity to do so. Today, AI has a broad range of usage in nearly every sector, which appears to be beneficial and is displacing human professions that may be deemed unfavorable.

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Advanced Applications of Biobased Materials

Food, Biomedical, and Environmental Applications

2023, Pages 245-262

Chapter 8 - Biobased materials in nutraceuticals

Rajat Goyal^a, Shruti Aggarwal^b, Vipin Saini^a, Rupesh K. Gautam^c, Shakeel Ahmed^{d e f}

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Abstract

Nutraceuticals as health-promoting agents have been receiving greater consideration from both the scientific community and the public in recent years. They are obtained from diverse resources, having a broad range of favorable impacts on biological systems. Incorporating nutraceuticals into food products is an easy way to develop a wide range of functional foods that can help consumers meet their health and wellness needs. The efficacy of nutraceuticals, on the other hand, is dependent on their bioavailability. Due to the robust public concern about plastic wastes, the production of biobased polymers is gaining more significance in the research industry. Biobased nutraceuticals are produced from sustainable natural resources that are extracted as a part of biomaterials or are formed by bioprocessing. This chapter focuses on biobased nutraceutical products, precisely on the status of nutraceuticals, the classification, functions, and properties of individual categories of nutraceuticals, the designing and formulation of delivery systems for nutraceutical products, and the evaluation of the bioaccessibility and bioavailability of nutraceutical products, and provides a glimpse on the recent patents granted on nutraceuticals.

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Synbiotics for the Management of Cancer pp 115–133

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Synbiotics in Colon Cancer

[Hitesh Chopra](#), [Rajat Goyal](#), [Atif Amin Baig](#), [Sonia Arora](#), [Kamal Dua](#) & [Rupesh K. Gautam](#)

Chapter | [First Online: 26 March 2023](#)

159 Accesses



Principal
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Abstract

It's no secret that cancer is a major cause of mortality in the globe. There are various types of cancer identified. Colon cancer (CCa) is the most well-understood multistep malignancy in molecular genetics. Intestinal mucosal neoplastic polyps are the first signs of carcinogenesis. A polyp's histology is critical in determining whether or not it is cancerous. Histological classifications such as hyperplastic and adenomatous are both common. More glandular cells with less mucus but no hyperchromatic or stratification are seen in hyperplastic polyps histologically (Tsai and Lu 1995). It is normal for adenomatous nuclei to be large, and tightly packed in a palisading pattern. Viciform villi create a frond in the villus adenomas, which



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Artificial Intelligence-Driven Decisions in Breast Cancer Diagnosis

Amit Gangwal, Rupesh K. Gautam

Book Editor(s): Pravin Kendrekar, Vinayak Adimule, Tara Hurst

First published: 16 June 2023

<https://doi.org/10.1002/9783527841165.ch8>

Summary

Artificial intelligence (AI) is a disruptive innovation, involving the development and deployment of algorithms to classify data, and to find the abstract relationships between different data points. AI, its subtype machine learning (ML), and advanced version of ML that is deep learning (DL) have shown commendable progress in the last decade in various fields like marketing, banking, e-commerce platforms, streaming platforms, self-driving cars, retrosynthesis of chemicals, clinical trials, drug discovery, and others. This remarkable change has been attributed to the availability of high-speed internet, the internet of things, the huge amount of data, and most importantly cutting-edge computation tools like graphics processing units (GPUs), referred to as GPUs. Although the success of AI in medical imaging is limited initially, now stakeholders are focusing on the deployment of full-fledged AI systems by riding on the success of convolutional neural networks (CNNs) in other areas like image identification through computer vision, generation of an entirely new set of images, and videos based on training and testing datasets. Breast cancer is one of the most common cancers in women worldwide. Various diagnostic tools are there to conform positive or negative cases, still, sure-shot reliance on these tools is doubtful owing to unintentional flaws in scan interpretation by radiologists. Here, in such circumstances, experts are now leveraging AI to aid humans with faster, accurate, and bias-free interpretation much to the relief of patients. In this chapter, how AI is shaping and redefining entire mammogram interpretation has been elaborated besides throwing light on classical tools for diagnosis and interpretation of breast cancer.

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Chapter 3

Recent Advancement of Nanotherapeutics to Treat Breast Cancer

Devesh U. Kapoor, Rajat Goyal, Rajiv R. Kukkar, **Rupesh K. Gautam**

Book Editor(s): Pravin Kendrekar, Vinayak Adimule, Tara Hurst

First published: 16 June 2023

<https://doi.org/10.1002/9783527841165.ch3>

(4)

Summary

The second biggest worldwide death is due to breast cancer; approx. 8.6 million were diagnosed with breast cancer in 2018. With this intensifying global burden, in the twenty-first century cancer prevention in females is one of the utmost thoughtful health challenges. Regardless of improvements in breast tumor therapeutic approaches, the quick recurrence of tumors and metastasis in patients exhibited that people develop resistance against the chemotherapeutic medication. Nanotechnology provides a noteworthy alternative to delivering anticancer drugs safely and efficiently. With the help of various nanoformulations, one can target the specific organ, the accumulation of drugs at the specific target site, and diminish the cytotoxicity. An effective therapeutic approach to treating breast cancer involves the conjugation of targeting ligands with nanocarriers. The nano nutraceuticals also showed promising results against breast cancer treatment. The growth in nanotherapeutics offers significant potential against breast cancer therapies and pharmaceutical research.

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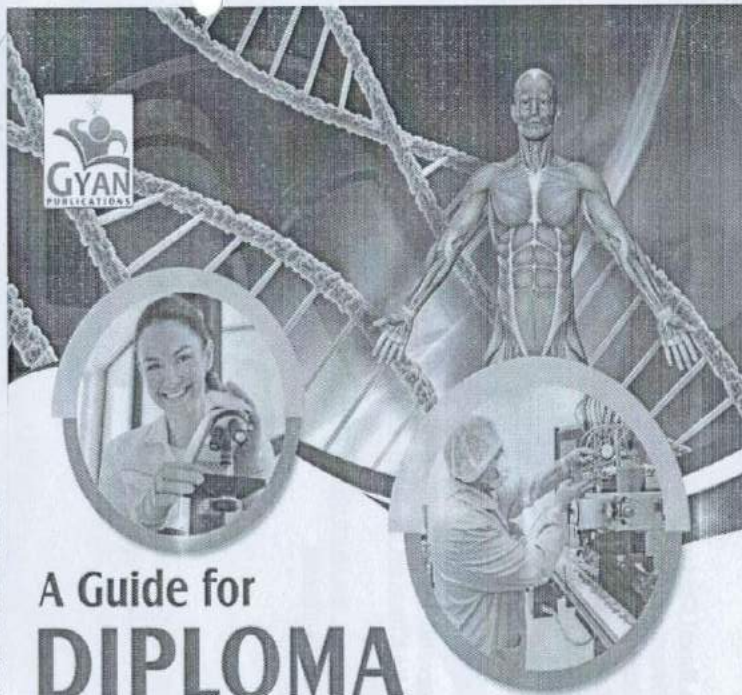


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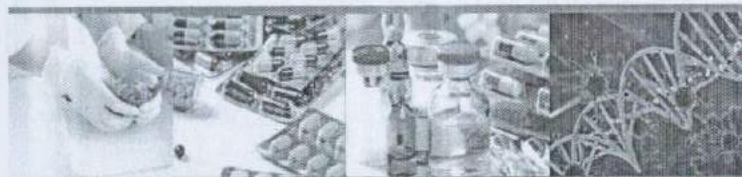
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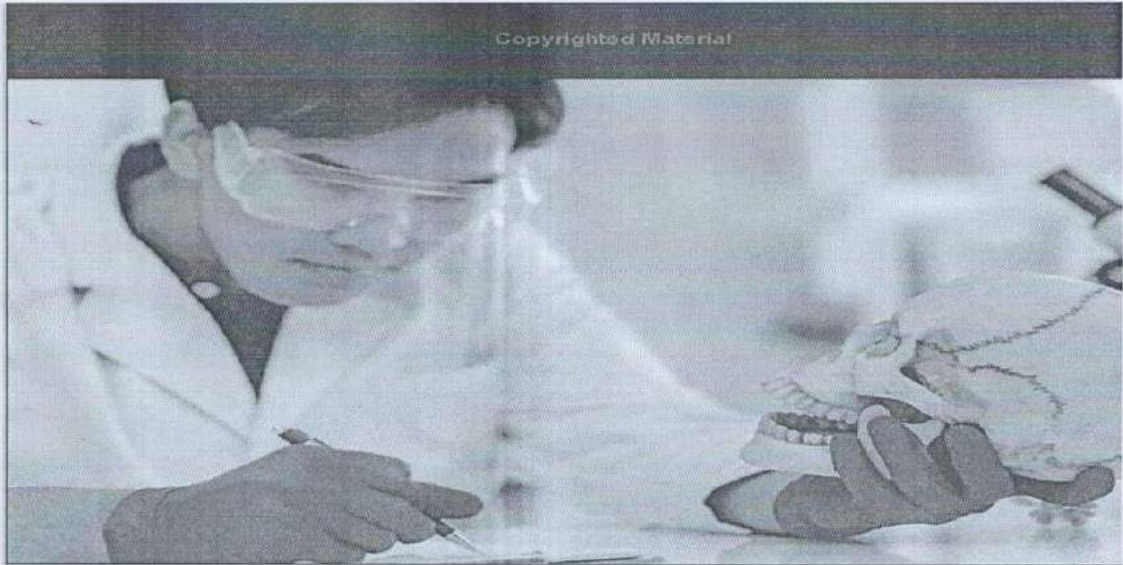
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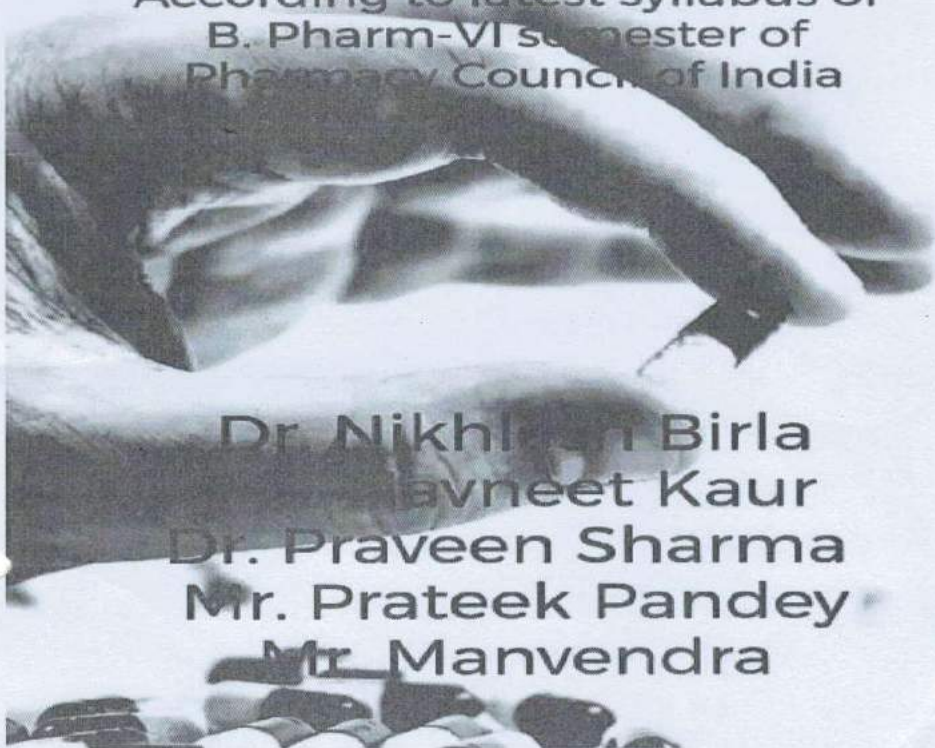


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18



Chapter

Nanotherapeutics for breast cancer using metal nanocomposites

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Role of Block Copolymers in the Treatment of Brain Disorders

Chitesh Malhotra & Rupesh K. Gautam

Chapter | First Online: 30 November 2023

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Abstract

Copolymers are considered high potential nanomedicines that regulate the distribution as well as the function of therapeutic agents in the body by altering the biological carriers. Various pre-clinical and clinical studies depict that copolymeric formulations provide a wide range of therapeutic advantages by altering the physicochemical properties. Copolymers displayed a wide range of applications in neurodegenerative disorders like Alzheimer's disease. Drug formulation involving copolymers showed marked improvement in drug solubility and reduces the adverse effects either by complexation or dose reduction. Copolymers such as PEG-PLA, PLGA-PEG, triblock copolymers, and Poloxamers are used presently for the development of

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Pharmacogenetics: A New Approach for the Selection of the Right Drug

[Hitesh Malhotra](#) , [Abhishek Dabra](#), [Preeti Peeyush Kaushik](#), [Anjoo Kamboj](#) & [Rupesh Gautam](#)


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Abstract

Pharmacogenetics is the study of genes and the way an individual will respond to a particular drug. It is an advanced branch of medicine where the knowledge from pharmacology and genomics was utilized for the safe and effective prescription as per the individual genetic structure. The Human Genome Project was initiated to develop and learn the association of genes and their effect on physiology as well as drug response. Diversity in genetic makeup is responsible for alteration in therapeutic efficacy as well as the toxic profile of the drug. Besides, studying the genetic structure of the patient also enlightens about the future perspectives of drug response. Unfortunately, till now this novel


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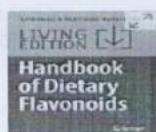
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Handbook of Dietary Flavonoids pp 1–50

Home > Handbook of Dietary Flavonoids > Living reference work entry

Eupatilin: Sources, Extraction, Derivatives, and Pharmacological Activity

Dhitesh Malhotra, Aditya Ashri, Rajeev K. Singla & Rupesh K. Sautam

Living reference work entry | First Online: 24 August 2023

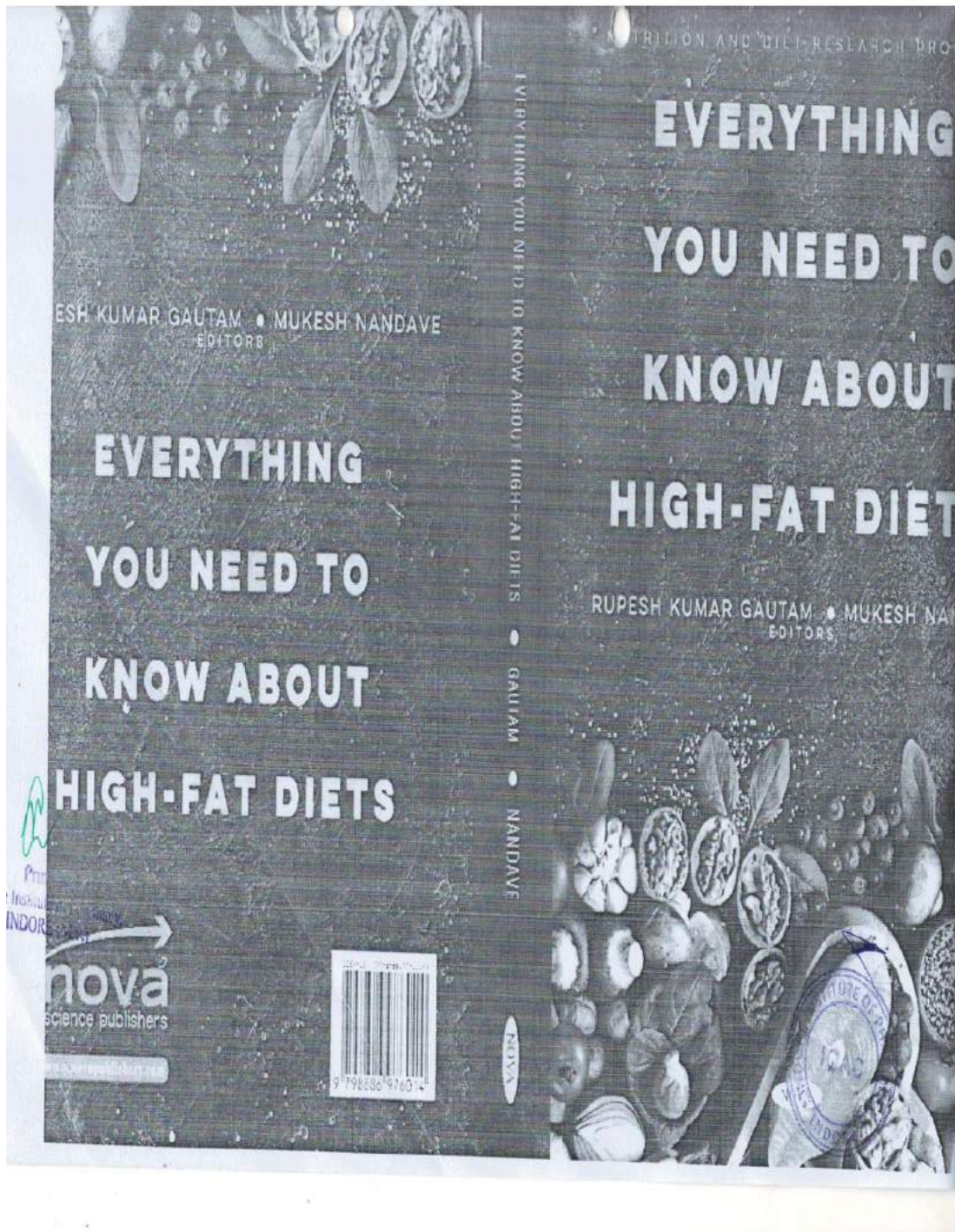
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Abstract

Eupatilin (5,7-dihydroxy-3',4',6-trimethoxyflavone) is a pharmacologically active flavone obtained from several medicinal plants. Because it is a natural flavone, it has been discovered to be a major ingredient in the seeds, flowers, leaves, and stems of several plants, making it a therapeutic representative. Eupatilin is reported to have a variety of pharmacological characteristics, including anticancer, antioxidant, neuroprotective, antiallergic, cardioprotective, and anti-inflammatory properties. It has also been linked to the regulation of multiple cell-signaling pathways involved in proliferation, inflammation, and a variety of other diseases. It is

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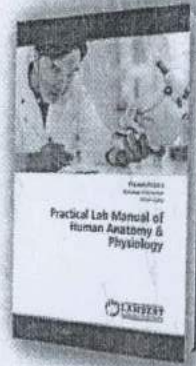






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	14 Pages	19 Hours	15 Minutes	40 Sessions
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