



Phytochemicals in Food for Health and Wellness

Harnessing Plant Therapeutics

1st Edition - September 1, 2025 • Imprint: Academic Press

Editors: Tanmay Sarkar, Slim Smaoui, Wing-Fu Lai • Language: English

Paperback ISBN: 9780443264948 • eBook ISBN: 9780443264955

Description

Phytochemicals in Food for Health and Wellness: Harnessing Plant Therapeutics emphasizes the growing interest of the potential health benefits of phytochemicals in wellness and product development by uncovering innate bioactive compounds found in plants. Highlighting the diverse classes of phytochemicals, including flavonoids, carotenoids, polyphenols, antioxidants, and alkaloids, the book explores the sources, chemical structures, and distribution in various plants and what role they play in nutrition and disease prevention. Phytochemical and phytochemical approaches targeting immunity, obesity, cancer, respiratory, gut, cardiovascular, and eye health, and more, will be discussed. Through traditional and modern extraction methods *Phytochemicals in Food for Health and Wellness: Harnessing Plant Therapeutics* also demonstrates how plant bioactives can be used for fortifying foods for optimal nutrition, innovating in product development, and developing the use of phytochemicals in culinary and food manufacturing applications to maximize flavor and extend shelf-life.

Table of contents

1. Introduction to Phytochemicals: Nature's Hidden Gems
2. Phytochemical Sources: Exploring Plant Kingdom Diversity
3. Phytochemical Extraction Methods: From Traditional to Modern Techniques
4. Phytochemical Characterization: Analytical Tools and Techniques
5. Bioavailability of Phytochemicals: Unlocking their Absorption and Metabolism
6. Phytochemical Interactions: Synergies and Combinations for Enhanced Health Benefits
7. Antioxidant Phytochemicals: Protecting Against Oxidative Stress and Chronic Diseases
8. Anti-Inflammatory Phytochemicals: Alleviating Inflammation and Immune Responses
9. Phytochemicals and Cancer Prevention: Targeting Tumorigenesis and Cell Signaling
10. Exploring Phytochemical Approaches to Respiratory Health
11. Cardiovascular Health and Phytochemicals: Improving Heart Function and Reducing Risk
12. Phytochemicals and Brain Health: Cognitive Enhancement and Neuroprotection
13. Phytochemicals and Gut Health: Modulating Microbiota and Promoting Digestive Wellness

Chapter 5

Bioavailability of phytochemicals: unlocking their absorption and metabolism

Debashrita Majumder¹, Debasmita Bhattacharya², Tanmay Sarkar³, Dibyajit Lahiri¹ and Moupriya Nag¹

¹Department of Biotechnology, Institute of Engineering and Management Kolkata, University of Engineering and Management Kolkata, Kolkata, India, ²Department of Basic Science and Humanities, Institute of Engineering and Management Kolkata, University of Engineering and Management Kolkata, Kolkata, India, ³Department of Food Processing Technology, Malda Polytechnic, Malda, India