

1. Record Nr.	UNINA9910578691903321
Titolo	Immunomodulators and human health / / edited by Rajesh K. Kesharwani, Raj K. Keservani, and Anil K. Sharma
Pubbl/distr/stampa	Singapore : , : Springer, , [2022] ©2022
ISBN	981-16-6379-3
Descrizione fisica	1 online resource (513 pages)
Disciplina	343.430786606
Soggetti	Biotechnology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di contenuto	<p>Intro -- Foreword -- Preface -- Neutraceuticals and Plant Metabolites -- Nanotechnology and Cancer -- Infectious and Autoimmune Diseases -- Enzyme, Hormone, and Biomolecules -- Acknowledgments -- Contents -- About the Editors -- Part I: Neutraceuticals and Plant Metabolites -- 1: Classification, Mode of Action and Uses of Various Immunomodulators -- 1.1 Introduction -- 1.2 Subtypes of Immunomodulators -- 1.2.1 Immunostimulant -- 1.2.1.1 Pharmacognostic Approaches -- 1.2.1.2 Chemistry of Phytoconstituents Used as Immunostimulants -- 1.2.1.2.1 Glycosides -- 1.2.1.2.2 Flavonoids -- 1.2.1.2.3 Coumarins -- 1.2.1.2.4 Sapogenins -- 1.2.1.2.5 Alkaloids -- 1.2.1.2.6 Thiosulphinates -- 1.2.1.2.7 Volatile Oils and Terpenoids -- 1.2.1.2.8 Polysaccharides -- 1.2.2 Immunostimulant Synthetic Drugs -- 1.2.2.1 Functions of Immunostimulants -- 1.2.2.2 Types of Immunostimulants -- 1.2.2.2.1 Levamisole (Ergamisol) -- 1.2.2.2.2 Thalidomide -- 1.2.2.3 Immunocynin -- 1.2.2.3.1 Bestatin -- 1.2.2.3.2 Bacterial Products -- 1.2.2.3.3 Recombinant Cytokines -- 1.2.2.4 Complex Carbohydrates -- 1.2.2.4.1 Glucans -- 1.2.2.4.2 Trehalose -- 1.2.2.4.3 Prebiotics -- 1.2.2.5 Immunostimulants Used in Vaccines -- 1.2.3 Immunosuppressant -- 1.2.3.1 Synthetic Drugs: Manufactured Medications -- 1.2.3.2 Immunosuppression for Organ Transplantation -- 1.2.4 Inhibitor of Lymphocyte Gene Expression -- 1.2.5 Antibodies Against Specific Immune Cell Molecules -- 1.2.5.1 Polyclonal</p>

Antibodies Antithymocyte Globulin (ATG) -- 1.2.5.1.1 Mechanism of Action -- 1.2.5.1.2 Therapeutic Uses -- 1.2.5.1.3 Adverse Effects -- 1.2.5.2 Monoclonal Antibodies: Muromunab (Anti-CD3 Antibodies, OKT3) -- 1.2.5.2.1 Mechanism of Action -- 1.2.5.2.2 Therapeutic Uses -- 1.2.5.2.3 Adverse Effects -- 1.2.6 Inhibitors of Immune Cell Adhesion -- 1.2.6.1 Efalizumab -- 1.2.6.1.1 Mechanism of Action. 1.2.6.1.2 Pharmacokinetics -- 1.2.6.1.3 Therapeutic Uses -- 1.2.7 Tolerogens or Inhibitors of Immune Cells -- 1.2.8 Inhibitors of Lymphocyte Gene Expression to Reduce Inflammatory Response -- 1.2.8.1 Mechanism of Action -- 1.2.8.2 Therapeutic Uses -- 1.2.8.3 Adverse Effects -- 1.2.9 Inhibitors of Lymphocyte Signalling to Prevent Immune Cell Activation and Proliferation: Calcineurin Inhibitors -- 1.2.9.1 Cyclosporine -- 1.2.9.1.1 Pharmacokinetics -- 1.2.9.1.2 Therapeutic Uses -- 1.2.9.1.3 Adverse Effects -- 1.2.9.2 Tacrolimus -- 1.2.9.2.1 Mechanism of Action -- 1.2.9.2.2 Pharmacokinetics -- 1.2.9.2.3 Therapeutic Uses -- 1.2.9.2.4 Adverse Effects -- 1.2.10 Mammalian Target of Rapamycin (mTOR) Inhibitors: Sirolimus -- 1.2.10.1 Mechanism of Action -- 1.2.10.2 Pharmacokinetics -- 1.2.10.3 Therapeutic Uses -- 1.2.10.4 Adverse Effects -- 1.2.11 Cytotoxic Agents to Reduce Lymphocyte Proliferations -- 1.2.11.1 Antimetabolites: Azathioprine -- 1.2.11.1.1 Mechanism of Action -- 1.2.11.1.2 Therapeutic Uses -- 1.2.11.1.3 Adverse Effects -- 1.2.11.2 Mycophenolate Mofetil -- 1.2.11.2.1 Mechanism of Action -- 1.2.11.2.2 Pharmacokinetics -- 1.2.11.2.3 Therapeutic Uses -- 1.2.11.2.4 Adverse Effects -- 1.2.12 Alkylating Agents -- 1.2.12.1 Cyclophosphamide -- 1.2.12.1.1 Mechanism of Action -- 1.2.12.1.2 Therapeutic Uses -- 1.2.12.1.3 Adverse Effects -- 1.2.13 Cytokine Inhibitors (Anticytokine Antibodies) -- 1.2.13.1 TNF- Inhibitors -- 1.2.13.2 Etanercept -- 1.2.13.3 Infliximab -- 1.2.13.4 Adalimumab -- 1.2.14 Miscellaneous: Immunostimulants -- 1.2.14.1 Bacillus Calmette-Guerin (BCG) -- 1.2.14.1.1 Mechanism of Action -- 1.2.14.1.2 Therapeutic Uses -- 1.2.14.1.3 Adverse Effects -- 1.2.14.2 Levamisole -- 1.2.14.2.1 Therapeutic Uses -- 1.2.14.2.2 Adverse Effects -- 1.2.14.3 Thalidomide -- 1.2.14.3.1 Mechanism of Action -- 1.2.14.3.2 Therapeutic Uses. 1.2.14.3.3 Adverse Effects -- 1.2.15 Recombinant Cytokines -- 1.2.15.1 Isoprinosine -- 1.2.15.1.1 Mechanism of Action -- 1.2.15.1.2 Therapeutic Uses -- 1.2.15.1.3 Adverse Effects -- 1.2.15.2 Immunocynin -- 1.2.15.3 Therapeutic Uses -- 1.2.15.4 Adverse Effects -- 1.3 Conclusion -- References -- 2: Potential Role of Herbs and Spices on the Immune System -- 2.1 Introduction -- 2.2 Immunity and the Immune System -- 2.3 Spices/Herbs and Their Active Components -- 2.4 Role of Spices as Effective Immune Mediators -- 2.4.1 Turmeric -- 2.4.2 Ginger -- 2.4.3 Garlic -- 2.4.4 Black Cumin -- 2.4.5 Cinnamon -- 2.4.6 Cardamom -- 2.4.7 Fenugreek -- 2.4.8 Guduchi -- 2.4.9 Panax Notoginseng -- 2.4.10 Ashwagandha -- 2.5 Other Herbs and its Immune Response -- 2.6 Dietary Intake and Bioavailability -- 2.7 Market Share Insights of Spices/Herbs -- 2.8 Conclusion and Future Directions -- References -- 3: Immune Boosting Activity of Nutraceuticals and Functional Foods -- 3.1 Introduction -- 3.2 Nutraceuticals and Functional Foods -- 3.2.1 Nutraceuticals -- 3.2.2 Functional Foods -- 3.2.3 Types of Functional Foods -- 3.3 The Immune System -- 3.3.1 Innate Immunity -- 3.3.2 Adaptive Immunity -- 3.3.3 The Gut Immune System and Its Microbiota -- 3.3.4 Immunomodulation -- 3.3.4.1 Immunoadjuvants -- 3.3.4.2 Immunostimulants -- 3.3.4.3 Immunosuppressant -- 3.3.5 Modulation of Immune Function by Foods -- 3.4 Immunomodulatory Properties of Probiotics -- 3.4.1 Mechanism of Probiotics' Action -- 3.4.2

Production of Antimicrobial Substances by Probiotics -- 3.5  
Immunomodulatory Properties of Prebiotics -- 3.5.1 Mechanism of Prebiotics' Action -- 3.6 Immunomodulatory Properties of Nutraceuticals from Selected Plants and Phytochemicals -- 3.7 Bioactive Polysaccharides -- 3.7.1 Mechanism of Action -- 3.8 Immunomodulatory Properties of Mushrooms.  
3.8.1 Immunomodulatory Properties of Polysaccharopeptides Extracts from Coriolus Versicolor -- 3.8.1.1 Mechanism of Action -- 3.8.1.1.1 Induction of a Predominantly pro-Inflammatory Cytokine Profile -- 3.8.1.1.2 Effect of PSP on Immune Cell Populations -- 3.8.1.1.3 Effects on Adaptive and Innate Immune Responses -- 3.8.1.1.4 Induction of Superoxide Dismutase (SOD) -- 3.9 Immunomodulatory Compounds from Microalgae -- 3.10 Immunomodulation Activity of Functional Fatty Acids -- 3.10.1 Monounsaturated Fatty Acids (MUFA) -- 3.10.2 Polyunsaturated Fatty Acids (PUFA) -- 3.11 Conclusions -- References -- 4: Antioxidants and Immunomodulation -- 4.1 Introduction -- 4.2 Free Radical Generation -- 4.3 Antioxidants as Immunomodulators -- 4.3.1 Mechanism of Antioxidants -- 4.3.2 Classification of Antioxidants -- 4.3.2.1 Natural Antioxidants -- 4.3.2.1.1 Enzymatic Antioxidants -- 4.3.2.1.2 Nonenzymatic Antioxidants -- 4.3.2.1.3 Low-Molecular-Weight Antioxidants -- 4.3.2.1.4 High-Molecular-Weight Proteins -- 4.3.2.2 Plant-Derived Antioxidants -- 4.3.2.2.1 Medicinal Plants and Spices Having Antioxidants -- 4.3.2.3 Synthetic Antioxidants -- 4.4 Medicinal and Immunomodulatory Applications of Antioxidants -- 4.4.1 Significance of Antioxidants in Red Cells -- 4.4.2 Treatment of Acute Central Nervous System Injury Using Antioxidants -- 4.4.3 Use of Antioxidants in Cancer Therapy -- 4.5 Conclusion -- References -- Part II: Nanotechnology and Cancer -- 5: Nanotechnology and Immunomodulators in Cancer -- 5.1 Introduction -- 5.1.1 Immune Cell Functions in Cancer -- 5.1.2 Immunoediting: The Response of the Immune System to Tumor Growth -- 5.1.2.1 Elimination Phase -- 5.1.2.2 Equilibrium Phase -- 5.1.2.3 Escape Phase -- 5.1.3 The Importance of TME (Cancer Immunity Phenotypes) -- 5.1.3.1 Immune-Desert Phenotype -- 5.1.3.2 Immune-Excluded Phenotype -- 5.1.3.3 Inflamed Phenotype.  
5.2 Overview on Actual Immunotherapy in Cancer -- 5.2.1 Cytokines -- 5.2.2 Immune Checkpoint Inhibitors (ICIs) -- 5.2.2.1 Mechanism of Action of Immune Checkpoints (ICs) -- 5.2.2.1.1 PD-1 -- 5.2.2.1.2 CTLA-4 -- 5.2.2.1.3 Clinical Trials with Checkpoint Inhibitors -- 5.2.2.2 New Immune Checkpoints -- 5.2.2.2.1 Co-Stimulatory Targets -- GITR and GITRL -- 4-1BB and 4-1BBL -- OX40 and OX40L -- 5.2.2.2.2 Inhibitory Targets -- LAG-3 (Lymphocyte Activation Gene 3) -- VISTA (B7-H5) -- TIM-3 -- TIGIT -- 5.2.3 Vaccines -- 5.2.4 Cellular Adoptive Immunotherapy -- 5.2.5 Mechanisms of Resistance to Immune Checkpoint Blockades in Cancer -- 5.2.5.1 Tumor-Derived Resistance -- 5.2.5.1.1 The Lack of Antigenic Proteins on the Tumor Cell Surface -- 5.2.5.1.2 Modulations and Mutations in the Oncogenic Signaling Pathway -- 5.2.5.1.3 PD-L1 Expression -- 5.2.5.2 Innate PD-1 Resistance (IPRES) -- 5.2.5.2.1 Epigenetic Modifications -- 5.2.5.2.2 Absence of Antigen Presentation -- 5.2.5.2.3 T Cell-Based Resistance -- 5.2.5.2.4 Absence of T Cells -- 5.2.5.2.5 Inhibitory Immune Checkpoints -- 5.2.5.2.6 Impaired Formation of T Cell Memory -- 5.2.5.3 Tumor Microenvironment-Determined Resistance -- 5.2.5.3.1 Immunosuppressive Cells -- 5.2.5.3.2 Immunosuppressive Molecules -- 5.2.5.3.3 Aberrant Regulation of Signaling Pathways -- 5.2.5.4 Microbiome Modulation -- 5.3 Nanotechnologies in Cancer Immunotherapy -- 5.3.1 The Value of EPR Effect in Nano-Immunotherapy -- 5.3.2 Nanoparticles Designed for Modeling Cancer

Immunotherapy -- 5.3.2.1 Classification of Nanotechnologies for  
Cancer Immunotherapy -- 5.3.2.1.1 Polymeric Nanoparticles --  
5.3.2.1.2 PLGA -- 5.3.2.1.3 Dendrimers -- 5.3.2.1.4 Lipid Nanocarriers  
-- 5.3.2.1.5 Micelles -- 5.3.2.1.6 Metal NPs -- Gold Nanoparticles  
(AuNPs) -- Iron Oxide Nanoparticles -- 5.3.2.1.7 Inorganic Nonmetallic  
NPs -- Mesoporous Silica NPs (MSNs).  
Carbon Nanotubes (CNTs).

---