

Natural Compounds In Cancer Therapy Promising Nontoxic Antitumor Agents From Plants Other Natural Sources

Natural Bio-active Compounds Novel Compounds from Natural Products in the New Millennium Colorectal Cancer Natural Products and Cancer Drug Discovery Free Radicals, Antioxidants and Diseases Evaluating Alternative Cancer Therapies Organoselenium Compounds in Biology and Medicine Natural Compounds as New Cancer Treatments pH-Interfering Agents as Chemosensitizers in Cancer Therapy Cytotoxicity Cytoskeleton Biodiversity, Natural Products and Cancer Treatment Phenolic Compounds Cancer Preventive and Therapeutic Compounds Natural Products and Cancer Signaling: Isoprenoids, Polyphenols and Flavonoids Cancer Treatment Drug Discovery from Natural Products Anticancer plants: Properties and Application Natural Products in Cancer Prevention and Therapy Natural Products for Cancer Chemoprevention Functional Foods in Cancer Prevention and Therapy Cancer Drug Design and Discovery Anticancer Agents from Natural Products Phytochemicals Treating Cancer with Herbs Polymeric Nanoparticles as a Promising Tool for Anti-cancer Therapeutics Natural Compounds in Cancer Therapy Natural Products for Cancer Prevention and Therapy Natural Products and Drug Discovery Evidence-based Herbal Medicine Medicinal Chemistry of Anticancer Drugs Anticancer Plants: Clinical Trials and Nanotechnology A Global

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Scientific Vision Prevention, Diagnosis, and Treatment of Lung Cancer Anticancer Plants: Natural Products and Biotechnological Implements Functional Foods in Cancer Prevention and Therapy Cancer Biology Anti-cancer Drugs Biotechnology and Production of Anti-Cancer Compounds Biodiversity, Natural Products and Cancer Treatment Using Old Solutions to New Problems

Natural Bio-active Compounds

Colorectal cancer (CRC) is a major health problem because it represents around 10% of all cancers and achieves a worldwide estimate of 1.4 million newly diagnosed cases annually, resulting in approximately 700,000 deaths. Approximately 19-31% of patients present liver metastases. At diagnosis, a further 23-38% will develop extra-hepatic disease. Over the past decade, the widespread use of modern chemotherapeutic and biological agents, combined with laparoscopic surgical techniques, has improved the prognosis of metastatic CRC. A better understanding of the biology of the tumor, along with high efficiency of diagnostic and therapeutic methods, as well as the spread of screening programs, will improve the survival of the CRC patients in the near future.

Novel Compounds from Natural Products in the New Millennium

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This book is the first of its kind in bringing together biodiversity, chemical ecology, phytochemistry and cancer therapy. The highlight of the book is an exhaustive compilation of scientific data on biodiversity of medicinal plants, biodiversity and metagenomics, chemical ecology of medicinal plants, chemical ecology of marine organisms, natural products from terrestrial microbial organisms with activity towards cancer cells, marine organisms, ethnopharmacology and phytotherapy, contribution of African flora in world fight against cancer, natural products derived from terrestrial plants with activity towards cancer cells and established anticancer drugs from natural origin. The book discusses the state-of-the-art of each topic to serve as reference resource tools for graduate students as well as scientists and scholars in pharmaceutical sciences, pharmacology, organic chemistry and biochemistry, pharmacognosy, phytochemistry, ethnomedicine and ethnopharmacology, complementary and alternative medicine, medical and public health sciences and others. It includes cutting-edge developments in anticancer discovery from both medicinal plants and organisms. Contents: Biodiversity of Medicinal Plants (Kirsten Yacoub, Katharina Cibis and Corinna Risch) Biodiversity and Metagenomics (Eva-Maria Surmann and Thomas Efferth) Chemical Ecology of Medicinal Plants (Christian Kersten, Stephanie Lenz and Janina Wich) Chemical Ecology of Marine Organisms (André Antunes and Thomas Efferth) Natural Products from Terrestrial Microbial Organisms with Cytotoxic Cell Cycle Inhibitors (Theresa Dreis, Caroline Gartner, Julia Krebs and Mathias Schneider) Marine Compounds

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(Jennifer Honek and Thomas Efferth) Ethnopharmacology and Phytotherapy (Ariane Löhnert, Susanne Löhnert, Viktoriya Mogilevskaya and Sandra Schick) Contribution of African Flora in a Global Fight Against Cancer (Victor Kuete and Thomas Efferth) Natural Products Derived from Terrestrial Plants with Activity Towards Cancer Cells (Sonia Falenska, Ina Kirmes, Stephanie Kletting, Irini Karagianni and Karen Duffy) Established Anticancer Drugs from Natural Origin (Clara Becker, Kerstin Hoffmann, Laura Hoffmann, Tanya King, Franziska Faulstich, Katrin Viertel, Victor Kuete and Thomas Efferth) Readership: Graduate students and scientists in pharmaceutical sciences, pharmacology, organic chemistry, biochemistry, pharmacognosy, phytochemistry, ethnomedicine & ethnopharmacology, complementary & alternative medicine, public health. Key Features: This book is the first of its kind bringing together biodiversity, chemical ecology, phytochemistry and cancer therapy The book provides the state-of-the-art in anticancer discovery from medicinal plants The book also provides the state-of-the-art in anticancer discovery from marine organisms Keywords: Biodiversity; Cancer; Marine Products; Natural Products; Established Drugs

Colorectal Cancer

The book Cytotoxicity is aimed to be an essential reading to all medical students, biologists, biochemists and professionals involved in the field of toxicology. This book is a useful and ideal guide for novice researchers interested in learning

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research methods to study cytotoxic bioactive compounds. The parts of this book describe the replacement and different applications of the cytotoxic agents. All chapters are written by paramount experts in cytotoxicity research. This will hopefully stimulate more research initiatives, funding, and critical insight into the already increasing demand for cytotoxicity researches that have been evidenced worldwide.

Natural Products and Cancer Drug Discovery

Chemoprevention of Esophageal Squamous Cell Carcinoma with Berries, by Gary D. Stoner and Li-Shu Wang Cancer Prevention by Different Forms of Tocopherols, by Chung S. Yang and Nanjoo Suh Cancer Chemopreventive and Therapeutic Potential of Guggulsterone, by Inas Almazari and Young-Joon Surh Inhibition of UVB-Induced Nonmelanoma Skin Cancer: A Path from Tea to Caffeine to Exercise to Decreased Tissue Fat, by Allan H. Conney, You-Rong Lou, Paul Nghiem, Jamie J. Bernard, George C. Wagner and Yao-Ping Lu Cancer Chemoprevention and Nutri-Epigenetics: State of the Art and Future Challenges, by Clarissa Gerhauser A Perspective on Dietary Phytochemicals and Cancer Chemoprevention: Oxidative Stress, Nrf2, and Epigenomics, by Zheng-Yuan Su, Limin Shu, Tin Oo Khor, Jong Hun Lee, Francisco Fuentes and Ah-Ng Tony Kong Keap1-Nrf2 Signaling: A Target for Cancer Prevention by Sulforaphane, by Thomas W. Kensler, Patricia A. Egner, Abena S. Agyeman, Kala Visvanathan, John D. Groopman, Jian-Guo Chen, Tao-Yang

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Chen, Jed W. Fahey and Paul Talalay Chemoprotection Against Cancer by Isothiocyanates: A Focus on the Animal Models and the Protective Mechanisms, by Albená T. Dinkova-Kostova Human Cancer Chemoprevention: Hurdles and Challenges, by Vaqar Mustafa Adhami and Hasan Mukhtar Personalizing Lung Cancer Prevention Through a Reverse Migration Strategy, by Kathryn A. Gold, Edward S. Kim, Ignacio I. Wistuba and Waun K. Hong Natural-Agent Mechanisms and Early-Phase Clinical Development, by Janet L. Wang, Kathryn A. Gold and Scott M. Lippman

Free Radicals, Antioxidants and Diseases

Bioactive compounds produced by natural sources, such as plants, microbes, endophytic fungi, etc., can potentially be applied in various fields, including agriculture, biotechnology and biomedicine. Several bioactive compounds have proved to be invaluable in mediating plant-microbe interactions, and promoting plant growth and development. Due to their numerous health-promoting properties, these compounds have been widely used as a source of medication since ancient times. However, there is an unprecedented need to meet the growing demand for natural bioactive compounds in the flavor and fragrance, food, and pharmaceutical industries. Moreover, discovering new lead molecules from natural sources is essential to overcoming the rising number of new diseases. In this regard, natural bioactive compounds hold tremendous potential for new drug

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discovery. Therefore, this field of research has become a vital area for researchers interested in understanding the chemistry, biosynthetic mechanisms, and pharmacological activities of these bioactive metabolites. This book describes the basics of bioactive plant compounds, their chemical properties, and their pharmacological biotechnological properties with regard to various human diseases and applications in the drug, cosmetics and herbal industries. It offers a valuable asset for all students, educators, researchers, and healthcare experts involved in agronomy, ecology, crop science, molecular biology, stress physiology, and natural products.

Evaluating Alternative Cancer Therapies

A handbook of practical, objective, and clinically oriented information on the use of herbalism in health care. Potentially useful herbal medicines are differentiated from the many popular herbs of dubious value. A report card format allows quick reading and easy access to relevant information. Herbs are graded, with grades determined by usefulness, effectiveness, availability, and safety. Handbook size—can be carried in lab coat. Analyses—based on controlled studies, or meta-analyses or systematic reviews of the primary literature. Sections of each report card include: Uses; Pharmacology; Clinical Trials; Adverse Effects; Preparations and Dose; Contraindications, Interactions, and Warnings; Conclusion and Recommendations; References. An appendix lists and reviews other herbal

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medicine information resources Nonherbal dietary supplements also are addressed in a separate section.

Organoselenium Compounds in Biology and Medicine

pH Interfering Agents as Chemosensitizers In Cancer Therapy, Volume Thirteen, provides a detailed overview of the chemosensitizers for the treatment of cancer spanning from biochemical and structural features to pharmacology and drug-design, including technological applications. The book is structured with innovative outlines and a distinction between experimental and clinical results. The continuous discovery and assessment of the role played by old/new synthetic drugs, natural compounds and technological applications has led to the urgent need of classification in terms of biological activity, mechanism of action, clinical outcomes, cancer cell lines sensible to the treatment, and potentialities to better orient research in this field. Moreover, all the aspects relevant for medicinal chemistry (drug design, structure-activity relationships, permeability data, cytotoxicity, appropriate statistical procedures, and molecular modeling studies) are strictly considered. Presents a broad view of the topic according to a medicinal chemistry-based approach beyond syntheses and biological assays, focusing on SAR studies, chemoinformatic, drug targeting and molecular modeling Explains the mechanism of action of the chemosensitizers by means of schemes and figures to facilitate comprehension Discusses novel targets to explore new possibilities that

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enhance research in the field

Natural Compounds as New Cancer Treatments

We are in constant search for new therapeutic options to cure cancer. In this book, you can find out how scientists throughout the world deal with this problem. Readers will learn how to engage nature, chemical synthesis, and cell machinery to design new anticancer agents. Nature has already been very generous in providing us different compounds which are in widespread application. Starting from these resources, various synthetic processes are applied to create synthetic drugs which can be then obtained in large quantities. Also, the cell by itself provides different possibilities to meet the constantly increasing requirements for successful therapy. Explore the book and find out what are the new ways to fight cancer.

pH-Interfering Agents as Chemosensitizers in Cancer Therapy

There is continuing interest in natural products as sources of potentially new and exciting chemical compounds. This book brings together the knowledge, perspectives and research findings of a varied group of scientists on a wide range of topics, from microarrays, genetics and bioinformatics to yeast-based technologies and enzyme studies.

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Cytotoxicity

Cancer is a major cause of deaths all around the globe. Although numerous anticancer drugs are available, most of them are expensive and have serious side effects. Natural compounds are usually non-toxic and inexpensive. Many such compounds have been identified and explored for their health benefits for centuries, and several nutritional factors derived from natural products have attracted considerable attention as therapeutic agents for the prevention and treatment of cancer. Based on current available research, this book focuses on chemopreventive and anti-cancer activities of different natural/dietary compounds present in fruits, vegetable, spices, legumes, nuts, grains, and cereals. Contributions from authors around the world highlight the potential use of such derivatives against cancer treatment by presenting updated information of their biochemical mechanisms. Information in this book is intended for researchers, clinicians, patients, academicians, industrialists, and students seeking updated and critical information for their experimental plans (including clinical trials). The book also creates awareness among cancer patients, nutritionists and laymen about cost effective therapeutic alternatives available for cancer therapy.

Cytoskeleton

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A complete systematic approach to treating cancer from a holistic perspective.

Biodiversity, Natural Products and Cancer Treatment

Lung cancer is the number one cause of cancer deaths around the world. This devastating disease takes strength not only in people who smoke but also in poor people that eat polluted food and use heating sources, and in those exposed naturally to toxic compounds present in indoor and outdoor environments. Lung cancer patients and their families wait actions from the science that give not only answer to their demands but also a light of hope at the moment of receiving the diagnosis. This book meets the experience of several researchers who dedicate many hours a day to find not only the cure of lung cancer but also the way to convert the pathology of this chronic disease. In 12 chapters, the lectures will give information related to the relationship of lung cancer and smoking habit, the crucial role of the image technology for diagnosis of lung cancer, and a molecular vision of prevention, diagnosis, and treatment of lung cancer. The authors with a clinic and/or lab vision and with a great spirit to collaborate with the science and with each past, present, and future patient and their families have dedicated many hours to write each chapter. Probably, the final answer to find the cure of lung cancer is not in this book. However, the lectures will give scientific information that will contribute in the near future improvement to the life quality of the patients.

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Phenolic Compounds

The ultimate source of information on the design of new anticancer agents, emphasizing small molecules, this newest work covers recent notable successes resulting from the human genome and cancer genomics projects. These advances have provided information on targets involved in specific cancers that are leading to effective medicines for at least some of the common solid tumors. Unique sections explain the basic underlying principles of cancer drug development and provide a practical introduction to modern methods of drug design. Appealing to a broad audience, this is an excellent reference for translational researchers interested in cancer biology and medicine as well as students in pharmacy, pharmacology, or medicinal and biological chemistry and clinicians taking oncology options. * Covers both currently available drugs as well as those under development * Provides a clinical perspective on trials of new anticancer agents * Presents drug discovery examples through the use of case histories

Cancer Preventive and Therapeutic Compounds

Phenolic compounds as a large class of metabolites found in plants have attracted attention since long time ago due to their properties and the hope that they will show beneficial health effects when taken as dietary supplements. This book

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presents the state of the art of some of the natural sources of phenolic compounds, for example, medicinal plants, grapes or blue maize, as well as the modern methods of extraction, quantification, and identification, and there is a special section discussing the treatment, removal, and degradation of phenols, an important issue in those phenols derived from the pharmaceutical or petrochemical industries.

Natural Products and Cancer Signaling: Isoprenoids, Polyphenols and Flavonoids

Natural Compounds in Cancer Therapy is a classic reference work for patients and medical professionals interested in use of nontoxic botanical compounds in the treatment of cancer. It offers a snapshot of the field circa 2001, and its insights are still pertinent today. Natural Compounds in Cancer Therapy is among the first books to discuss the use of natural products against cancer from a systems biology perspective.

Cancer Treatment

The current book entitled Free Radicals, Antioxidants, and Diseases gives an idea of detecting free radicals in vivo by newer techniques and provides insights into

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the roles played by various antioxidants in combating diseases caused by oxidative stress. The chapters included in this volume showcase new investigation in this field by the research groups around the world.

Drug Discovery from Natural Products

Cancer Treatment: Conventional and Innovative Approaches is an attempt to integrate into a book volume the various aspects of cancer treatment, compiling comprehensive reviews written by an international team of experts in the field. The volume is presented in six sections: i) Section 1: Cancer treatment: Conventional and innovative pharmacological approaches; ii) Section 2: Combinatorial strategies to fight cancer: Surgery, radiotherapy, backytherapy, chemotherapy, and hyperthermia; iii) Section 3: The immunotherapy of cancer; iv) Section 4: Multidisciplinary in cancer therapy: nutrition and beyond; v) Section 5: Supportive care for cancer patients; vi) Section 6: Perspectives in cancer biology and modeling. Ultimately, we hope this book can enlighten important issues involved in the management of cancer, summarizing the state-of-the-art knowledge regarding the disease control and treatment; thus, providing means to improve the overall care of patients that daily battle against this potentially lethal condition.

Anticancer plants: Properties and Application

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Global dietary recommendations emphasize the consumption of plant-based foods for the prevention and management of chronic diseases. Plants contain many biologically active compounds referred to as phytochemicals or functional ingredients. These compounds play an important role in human health. Prior to establishing the safety and health benefits of these compounds, they must first be isolated, purified, and their physico-chemical properties established. Once identified, their mechanisms of actions are studied. The chapters are arranged in the order from isolation, purification and identification to in vivo and clinical studies, there by covering not only the analytical procedures used but also their nutraceutical and therapeutic properties.

Natural Products in Cancer Prevention and Therapy

Cancer is one of the leading causes of death in human beings. Though several synthetic medicines are used to treat cancer, they are largely inefficient and unsafe. In contrast, plants, which have been used for medicinal purposes since time immemorial, have proved to be useful in fighting cancer, with natural compounds from plants and their derivatives offering safe and effective treatment and management for several types of cancer. Plants such as *Catharanthus roseus*, *Podophyllum peltatum*, *Taxus brevifolia*, *Camptotheca acuminata*, *Andrographis paniculata*, *Crateva nurvala*, *Croton tonkinensis*, *Oplopanax horridus* etc., are important source of chemotherapeutic compounds. These plants have proven their

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value in the treatment of cancer and various other infectious diseases, and several common anticancer compounds such as taxol, podophyllotoxins, camptothecin, vinblastine, vincristine, homoharringtonine etc. have been isolated and purified from these medicinal plants. Unfortunately, many of these anticancer plants have become endangered due to ruthless and irresponsible harvesting practices. Hence, there is a need to conserve these species and to propagate them on a large scale using plant tissue culture. Alternatively, plant cell tissue and organ culture biotechnology could be adopted to produce these anticancer compounds without the need for cultivation. A better grasp and continuing exploration of these isolated molecules and products could provide a powerful alternative means of reducing cancer risk. "Anticancer Plants: Volume 3, Clinical Trials and Nanotechnology" provides a timely review of concepts and experimental data on the application of anticancer plants and their compounds in clinical trials, and on the use of nanotechnology in cancer therapy.

Natural Products for Cancer Chemoprevention

Medicinal Chemistry of Anticancer Drugs, Second Edition, provides an updated treatment from the point of view of medicinal chemistry and drug design, focusing on the mechanism of action of antitumor drugs from the molecular level, and on the relationship between chemical structure and chemical and biochemical reactivity of antitumor agents. Antitumor chemotherapy is a very active field of

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research, and a huge amount of information on the topic is generated every year. Cytotoxic chemotherapy is gradually being supplemented by a new generation of drugs that recognize specific targets on the surface or inside cancer cells, and resistance to antitumor drugs continues to be investigated. While these therapies are in their infancy, they hold promise of more effective therapies with fewer side effects. Although many books are available that deal with clinical aspects of cancer chemotherapy, this book provides a sorely needed update from the point of view of medicinal chemistry and drug design. Presents information in a clear and concise way using a large number of figures Historical background provides insights on how the process of drug discovery in the anticancer field has evolved Extensive references to primary literature

Functional Foods in Cancer Prevention and Therapy

Organoselenium shows incredible promise in medicine, particularly cancer therapy. This book discusses organoselenium chemistry and biology in the context of its therapeutic potential, taking the reader through synthetic techniques, bioactivity and therapeutic applications. Divided into three sections, the first section describes synthetic advances in bioactive selenium compounds, revealing how organoselenium compound toxicity, redox properties and specificity can be further tuned. The second section explains the biophysics and biochemistry of organoselenium compounds, as well as selenoproteins. The final section closes

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with several chapters devoted to therapeutic and medicinal applications of organoselenium compounds, covering radioprotectors, anticancer agents and antioxidant behaviour. With contributions from leading global experts, this book covers recent advances in the field and is an ideal reference for those researching organoselenium compounds.

Cancer Drug Design and Discovery

Plants, marine organisms, and microorganisms have evolved complex chemical defense and signaling systems that are designed to protect them from predators and provide other biological benefits. These organisms thus produce substances containing novel chemotypes that may have beneficial effects for humans. As collection methods improve and new screen

Anticancer Agents from Natural Products

The cytoskeleton is a highly dynamic intracellular platform constituted by a three-dimensional network of proteins responsible for key cellular roles as structure and shape, cell growth and development, and offering to the cell with "motility" that being the ability of the entire cell to move and for material to be moved within the cell in a regulated fashion (vesicle trafficking). The present edition of Cytoskeleton

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provides new insights into the structure-functional features, dynamics, and cytoskeleton's relationship to diseases. The authors' contribution in this book will be of substantial importance to a wide audience such as clinicians, researchers, educators, and students interested in getting updated knowledge about molecular basis of cytoskeleton, such as regulation of cell vital processes by actin-binding proteins as cell morphogenesis, motility, their implications in cell signaling, as well as strategies for clinical trial and alternative therapies based in multitargeting molecules to tackle diseases, that is, cancer.

Phytochemicals

Cancer remains one of the main causes of morbidity and mortality worldwide. Although many pharmacological and clinical advances have been made, there is a constant need for new molecules to improve the overall options for treatment. Natural compounds from animal, microbial, vegetal, or fungal origin represent countless sources of new compounds that can be used as anticancer drugs, provided their activity, bioavailability, and toxicity are adequate. This book aims to compile both original articles and reviews that cover the most recent advances in the use of natural compounds for cancer treatment, and provide new objectives and advice for future research in the field of biological activity of natural compounds.

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Treating Cancer with Herbs

This book discusses cancers and the resurgence of public interest in plant-based and herbal drugs. It also describes ways of obtaining anti-cancer drugs from plants and improving their production using biotechnological techniques. It presents methods such as cell culture, shoot and root culture, hairy root culture, purification of plant raw materials, genetic engineering, optimization of culture conditions as well as metabolic engineering with examples of successes like taxol, shikonin, ingenol mebutate and podophylotoxin. In addition, it describes the applications and limitations of large-scale production of anti-cancer compounds using biotechnological means. Lastly, it discusses future economical and eco-friendly strategies for obtaining anti-cancer compounds using biotechnology.

Polymeric Nanoparticles as a Promising Tool for Anti-cancer Therapeutics

Natural compounds from a variety of natural resources including plants have emerged as important source of anticancer drug development. This special issue will highlight the significant advance in elucidating mechanisms of action of these natural compounds, focusing especially on isoprenoids and polyphenols/flavonoids. Informs and updates on all the latest developments in the field Contributions from

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leading authorities and industry experts

Natural Compounds in Cancer Therapy

This book, *Natural Products and Cancer Drug Discovery*, is written by leading experts in natural products in cancer therapy. The first two sections describe new applications of common herbs and foods for treatment of cancer. Section 3 deals with the development of new chemotherapeutics from Cannabis and endophytic fungi. Section 4 presented formulations of natural products for treatment of malignant melanoma. Made-to-order anticancer therapy from natural products using computational and tissue engineering approaches is addressed in the fifth section. It is our hope that this book may motivate readers to approach the evidence of anticancer natural products with an open mind and thereby spark an interest in making further contributions to the cancer treatment efforts.

Natural Products for Cancer Prevention and Therapy

Polymeric Nanoparticles as Promising Tool for Anti-cancer Therapeutics provides an understanding of polymeric compounds and their use in cancer therapies. The book begins by giving an overview of the current status, future challenges and potential utilization of polymeric nanoparticles. It then covers specific polymeric

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nanoparticles through contributions from world-renowned experts and researchers. Chapters examine specific polymeric nanoparticles, their development as potential targeted delivery systems, and cancer characteristics that can be targeted for therapy development. The book synthesizes current research trends in the field, thus enhancing existing knowledge of nanomedicine, drug delivery and therapeutic intervention strategies in human cancers. Users will find this to be an ideal reference for research scientists and those in the pharmaceutical and medical fields who are working to develop novel cancer therapies using nanoparticle-based delivery systems. Explores the development of polymeric nanoparticle systems for the purpose of cancer therapy Presents thoroughly analyzed data and results regarding the usage of polymeric nanoparticles-based platforms for the diagnosis and treatment of cancer Highlights various cancer characteristics that can be targeted for therapeutic development using polymeric nanoparticles

Natural Products and Drug Discovery

Evidence-based Herbal Medicine

Natural Products and Drug Discovery: An Integrated Approach provides an applied overview of the field, from traditional medicinal targets, to cutting-edge molecular

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techniques. Natural products have always been of key importance to drug discovery, but as modern techniques and technologies have allowed researchers to identify, isolate, extract and synthesize their active compounds in new ways, they are once again coming to the forefront of drug discovery. Combining the potential of traditional medicine with the refinement of modern chemical technology, the use of natural products as the basis for drugs can help in the development of more environmentally sound, economical, and effective drug discovery processes. *Natural Products & Drug Discovery: An Integrated Approach* reflects on the current changes in this field, giving context to the current shift and using supportive case studies to highlight the challenges and successes faced by researchers in integrating traditional medicinal sources with modern chemical technologies. It therefore acts as a useful reference to medicinal chemists, phytochemists, biochemists, pharma R&D professionals, and drug discovery students and researchers. Reviews the changing role of natural products in drug discovery, integrating traditional knowledge with modern molecular technologies Highlights the potential future role of natural products in preventative medicine Supported by real world case studies throughout

Medicinal Chemistry of Anticancer Drugs

The medicinal use of plants, animals and microorganisms has been a part of human evolution and likely began before recorded history. Is it possible that this

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knowledge can be used to create powerful new drugs and solve some of the human health problems facing us today? This book is a collection of an expert team of agronomists, chemists, biologists and policy makers who discuss some of the processes involved in developing a naturally-sourced bioactive compound into a drug therapy. These experts define a natural compound and elucidate the processes required to find, extract and define a naturally-derived bioactive molecule. Finally, they describe the necessity for understanding the fundamental mechanisms of disease before applying bioactive molecules in bioassay-guided drug discovery platforms.

Anticancer Plants: Clinical Trials and Nanotechnology

Functional Foods in Cancer Prevention and Therapy presents the wide range of functional foods associated with the prevention and treatment of cancer. In recent decades, researchers have made progress in our understanding of the association between functional food and cancer, especially as it relates to cancer treatment and prevention. Specifically, substantial evidence from epidemiological, clinical and laboratory studies show that various food components may alter cancer risk, the prognosis after cancer onset, and the quality of life after cancer treatment. The book documents the therapeutic roles of well-known functional foods and explains their role in cancer therapy. The book presents complex cancer patterns and evidence of the effective ways to control cancers with the use of functional foods.

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This book will serve as informative reference for researchers focused on the role of food in cancer prevention and physicians and clinicians involved in cancer treatment. Discusses the role of functional foods in cancer therapy Presents research-based evidence of the role of herbs and bioactive foods in cancer treatment and prevention Provides the most current, concise, scientific information regarding the efficacy of functional foods in preventing cancer and improving the quality of life Explores antioxidants, phytochemicals, nutraceuticals, herbal medicine and supplements in relation to cancer prevention and treatment Contains a clinical approach to the use of functional foods to prevent and treat cancer Emphasizes the role and mechanism of functional foods, including the characterization of active compounds on cancer prevention and treatment

A Global Scientific Vision Prevention, Diagnosis, and Treatment of Lung Cancer

Cancer is one of the leading death cause of human population increasingly seen in recent times. Plants have been used for medicinal purposes since immemorial times. Though, several synthetic medicines are useful in treating cancer, they are inefficient and unsafe. However, plants have proved to be useful in cancer cure. Moreover, natural compounds from plants and their derivatives are safe and effective in treatment and management of several cancer types. The anticancer

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plants such as *Catharanthus roseus*, *Podophyllum peltatum*, *Taxus brevifolia*, *Camptotheca acuminata*, *Andrographis paniculata*, *Crateva nurvala*, *Croton tonkinensis*, *Oplopanax horridus* etc., are important source of chemotherapeutic compounds. These plants have proven their significance in the treatment of cancer and various other infectious diseases. Nowadays, several well-known anticancer compounds such as taxol, podophyllotoxins, camptothecin, vinblastine, vincristine, homoharringtonine etc. have been isolated and purified from these medicinal plants. Many of them are used effectively to combat cancer and other related diseases. The herbal medicine and their products are the most suitable and safe to be used as an alternative medicine. Based on their traditional uses and experimental evidences, the anticancer products or compounds are isolated or extracted from the medicinally important plants. Many of these anticancer plants have become endangered due to ruthless harvesting in nature. Hence, there is a need to conserve these species and to propagate them in large scale using plant tissue culture. Alternatively, plant cell tissue and organ culture biotechnology can be adopted to produce these anticancer compounds without cultivation. The proper knowledge and exploration of these isolated molecules or products could provide an alternative source to reduce cancer risk, anti-tumorigenic properties, and suppression of carcinogen activities. Anticancer plants: Volume 1, Properties and Application is a very timely effort in this direction. Discussing the various types of anticancer plants as a source of curative agent, their pharmacological and nutraceutical properties, cryo-preservation and recent trends to understand the

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basic cause and consequences involved in the diseases diagnosis. We acknowledge the publisher, Springer for their continuous inspiration and valuable suggestions to improvise the content of this book. We further extend our heartfelt gratitude to all our book contributors for their support, and assistance to complete this assignment. I am sure that these books will benefit the scientific communities including academics, pharmaceuticals, nutraceuticals and medical practitioners.

Anticancer Plants: Natural Products and Biotechnological Implements

This book is a printed edition of the Special Issue "Natural Products for Cancer Prevention and Therapy" that was published in Nutrients

Functional Foods in Cancer Prevention and Therapy

The fourth edition of this classic text provides a thorough, yet concise review of the cellular and molecular mechanisms involved in the transformation of normal into malignant cells, the invasiveness of cancer cells into host tissues, and the metastatic spread of cancer cells in the host organism. It defines the fundamental pathophysiologic changes that occur in tumor tissue and in the host animal or patient. Each chapter discusses the historical development of a field, citing the key

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experimental advances to the present day, and evaluates the current evidence that best supports or rules out concepts of the molecular and cellular mechanisms regulating cancer cell behavior. For all the areas of fundamental cancer research, an effort has been made to relate basic research findings to the clinical disease states. The book is well written and well illustrated, with schematic diagrams and actual research data to demonstrate points made in the text. There is also an extensive, up-to-date bibliography, making the book valuable to scientists, and to physicians, students, and nurses interested in the field of cancer biology. The topics covered include pathologic characterization of human tumors, epidemiology of human cancer, regulation of cell proliferation and differentiation, cellular and molecular phenotypic characteristics of the cancer cell, mechanisms of carcinogenesis, tumor initiation and promotion, viral carcinogenesis, oncogenes and oncogene products, growth factors, chromosomal alterations in cancer, mechanisms of tumor metastasis, host-tumor interactions, fundamental aspects of tumor immunology, and the advances in cancer cell biology that will lead to improved diagnosis and treatment of cancer in the future.

Cancer Biology

This volume provides summarized scientific evidence of the different classes of plant-derived phytochemicals, their sources, chemical structures, anticancer properties, mechanisms of action, methods of extraction, and their applications in

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cancer therapy. It also discusses endophyte-derived compounds as chemopreventives to treat various cancer types. In addition, it provides detailed information on the enhanced production of therapeutically valuable anticancer metabolites using biotechnological interventions such as plant cell and tissue culture approaches, including in vitro-, hairy root- and cell-suspension culture; and metabolic engineering of biosynthetic pathways. Anticancer Plants: Natural Products and Biotechnological Implements - Volume 2" explores the natural bioactive compounds isolated from plants as well as fungal endophytes, their chemistry, and preventive effects to reduce the risk of cancer. Moreover, it highlights the genomics/proteomics approaches and biotechnological implementations. Providing solutions to deal with the challenges involved in cancer therapy, the book benefits a wide range of readers including academics, students, and industrial experts working in the area of natural products, medicinal plant chemistry, pharmacology, and biotechnology.

Anti-cancer Drugs

At least half a million American cancer patients are using complementary and alternative medicine therapies such as dietary programmes, supplements, imagery and herbs, but little has been done to evaluate these therapies or to provide information about them to the public. As North American cancer rates in recent decades have risen so that a person's lifetime risk is now over one in three, the

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questions that patients and clinicians have about alternative treatments have continued to grow. How can patients and clinicians make sense of the various options?

Biotechnology and Production of Anti-Cancer Compounds

Functional Foods in Cancer Prevention and Therapy presents the wide range of functional foods associated with the prevention and treatment of cancer. In recent decades, researchers have made progress in our understanding of the association between functional food and cancer, especially as it relates to cancer treatment and prevention. Specifically, substantial evidence from epidemiological, clinical and laboratory studies show that various food components may alter cancer risk, the prognosis after cancer onset, and the quality of life after cancer treatment. The book documents the therapeutic roles of well-known functional foods and explains their role in cancer therapy. The book presents complex cancer patterns and evidence of the effective ways to control cancers with the use of functional foods. This book will serve as informative reference for researchers focused on the role of food in cancer prevention and physicians and clinicians involved in cancer treatment. Discusses the role of functional foods in cancer therapy Presents research-based evidence of the role of herbs and bioactive foods in cancer treatment and prevention Provides the most current, concise, scientific information regarding the efficacy of functional foods in preventing cancer and improving the

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quality of life Explores antioxidants, phytochemicals, nutraceuticals, herbal medicine and supplements in relation to cancer prevention and treatment Contains a clinical approach to the use of functional foods to prevent and treat cancer Emphasizes the role and mechanism of functional foods, including the characterization of active compounds on cancer prevention and treatment

Biodiversity, Natural Products and Cancer Treatment

This book is the first of its kind in bringing together biodiversity, chemical ecology, phytochemistry and cancer therapy. The highlight of the book is an exhaustive compilation of scientific data on biodiversity of medicinal plants, biodiversity and metagenomics, chemical ecology of medicinal plants, chemical ecology of marine organisms, natural products from terrestrial microbial organisms with activity towards cancer cells, marine organisms, ethnopharmacology and phytotherapy, contribution of African flora in world fight against cancer, natural products derived from terrestrial plants with activity towards cancer cells and established anticancer drugs from natural origin. The book discusses the state-of-the-art of each topic to serve as reference resource tools for graduate students as well as scientists and scholars in pharmaceutical sciences, pharmacology, organic chemistry and biochemistry, pharmacognosy, phytochemistry, ethnomedicine and ethnopharmacology, complementary and alternative medicine, medical and public health sciences and others. It includes cutting-edge developments in anticancer

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discovery from both medicinal plants and organisms. Contents: Biodiversity of Medicinal Plants (Kirsten Yacoub, Katharina Cibis and Corinna Risch) Biodiversity and Metagenomics (Eva-Maria Surmann and Thomas Efferth) Chemical Ecology of Medicinal Plants (Christian Kersten, Stephanie Lenz and Janina Wich) Chemical Ecology of Marine Organisms (André Antunes and Thomas Efferth) Natural Products from Terrestrial Microbial Organisms with Cytotoxic Cell Cycle Inhibitors (Theresa Dreis, Caroline Gartner, Julia Krebs and Mathias Schneider) Marine Compounds (Jennifer Honek and Thomas Efferth) Ethnopharmacology and Phytotherapy (Ariane Löhnert, Susanne Löhnert, Viktoriya Mogilevskaya and Sandra Schick) Contribution of African Flora in a Global Fight Against Cancer (Victor Kuete and Thomas Efferth) Natural Products Derived from Terrestrial Plants with Activity Towards Cancer Cells (Sonia Falenska, Ina Kirmes, Stephanie Kletting, Irini Karagianni and Karen Duffy) Established Anticancer Drugs from Natural Origin (Clara Becker, Kerstin Hoffmann, Laura Hoffmann, Tanya King, Franziska Faulstich, Katrin Viertel, Victor Kuete and Thomas Efferth) Readership: Graduate students and scientists in pharmaceutical sciences, pharmacology, organic chemistry, biochemistry, pharmacognosy, phytochemistry, ethnomedicine & ethnopharmacology, complementary & alternative medicine, public health. Key Features: This book is the first of its kind bringing together biodiversity, chemical ecology, phytochemistry and cancer therapy The book provides the state-of-the-art in anticancer discovery from medicinal plants The book also provides the state-of-the-art in anticancer discovery from marine organisms Keywords: Biodiversity; Cancer; Marine

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Products; Natural Products; Established Drugs

Using Old Solutions to New Problems

An integrated review of the most recent trends in natural products drug discovery and key lead candidates that are outstanding for their chemistry and biology in novel drug development.

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