Bioassay Methods in Natural Product Research and Drug Development

Green Solvent Extraction Techniques Development and Metabolite Profiling in Medicinal Plants

Application and Characterization of Surfactants

Medicinal and Aromatic Plants of South America Vol. 2

Herbs, Spices and Medicinal Plants

Green Technologies for Extraction of Egyptian Medicinal Plants

These are just a few examples that illustrate the chemical diversity and use of phenolic compounds, the topic of 'Phenolic Compound Biochemistry'. This book is written for researchers, instructors, advanced undergraduate students and beginning graduate students in the life sciences who wish to become more familiar with these and many other intriguing aspects of phenolic compounds. Topics covered include nomenclature, chemical properties, biosynthesis, including an up-to-date overview of the genetics controlling phenolic metabolism, isolation and characterization of phenolic compounds, phenolics used in plant defense, and the impact of phenolics on human health. The book is written in an accessible style, and assumes only basic knowledge of organic chemistry, biochemistry and cell physiology. More than 300 chemical structures and reaction schemes illustrate the text. Wilfred Vermerris is Associate Professor of Agronomy at the University of Florida Genetics Institute in Gainesville, FL. His research focuses on the genetic control of phenolic compounds that impact agro-industrial processing of crop plants. Ralph Nicholson is Professor of Botany and Plant Pathology at Purdue University in West Lafayette, IN. He is an expert on phenolic compounds involved in the plant’s defense against pathogenic fungi and bacteria.

Tannins are one of the polyphenols group found in plants and are mainly studied because of their structural properties and bioactive behavior. Every year new findings concerning their properties and functions are made, and today concerns are mainly focused on how they can be used efficiently in the wood, food, textile, health, and pharmaceutical industries. Thus, the aim of this book is to present the most updated information on the structural properties of tannins, their food sources and variations, biological properties, and health, among other important issues. In addition, the most recent methods used for their isolation, quantifications, and industrial applications will also be covered.

Green Technologies for Extraction of Egyptian Medicinal Plants

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Health Benefits of Secondary Phytochemicals from Plant and Marine Sources

Natural Products Isolation: Second Edition presents a practical overview of just how natural products can be extracted, prepared, and isolated from the source material. Maintaining the main theme and philosophy of the first edition, this second edition incorporates all the new significant developments in this field of research. The chapters are divided into four distinct sections: introduction, extraction, chromatography, and special topics. This second edition provides substantial background information for natural product researchers and will prove a useful reference guide to all of the available techniques.

The Benefits of Plant Extracts for Human Health

Bioassay Methods in Natural Product Research and Drug Development contains the proceedings from the Phytochemical Society of Europe's very successful symposium on this topic, held August 24-27, 1997 in Uppsala, Sweden. In this volume, leading academic and industrial scientists discuss novel methods for assaying natural products to find new structure-activity relationships. Of key importance in this process is the availability and reliability of specific bioassay methods, but chapters also discuss chemical and biological diversity and how to dereplicate natural product extracts to increase efficiency in lead discovery. Anti-tumor, HIV-inhibitory, antiprotozoal, anti-infective and immunomodulatory natural products are discussed. Various industrial projects are presented for the first time. This volume bridges the gap between academic and industrial research and scientists, and should be required reading in drug companies and faculties of pharmacy, as well as serving scientists in pharmacognosy, pharmacology, phytochemistry, natural products and drug discovery.

Water Extraction of Bioactive Compounds

This volume provides information on how to select and screen plants for their medicinal properties. It describes phytopharmacological techniques for extracting and qualitatively and quantitatively analyzing a plant's phytochemicals. After a detailed in vitro investigation including nutritional and anti-nutritional analyses, medicinal properties were tested with various in vivo models for anti-inflammatory, analgesic, anti-pyretic, anti-cancer and anti-diabetic properties, as well as wound healing, neurodegenerative diseases, etc. Compound identification and purification techniques include, among others, TLC and column chromatography, as well as molecular docking with specific proteins.

Phenolic Compound Biochemistry

Essentials of Botanical Extraction: Principles and Applications provides a unique, single source of valuable information on the various botanical extraction methods available, from conventional to the use of green and modern extraction technologies including ultrasound, microwaves, pressurized liquids, and supercritical fluids. Most extracts obtained from botanicals are often poorly characterized with unidentified active or inactive constituents. A wise selection of an extraction strategy is vital to drug discovery from medicinal plants as extraction forms the basic first step in medicinal plant research. This book also explores the mathematical hypotheses and innovations in botanical extractions and analyzes different post extraction operations so that dependency on serendipity is reduced and the same be converted into programmed drug discovery. Reviews the history and current state of natural product drug discovery and development, highlighting successes and current issues Explains the application of chemometric tools in extraction process design and method development Introduces process intensification as applied to the processing of medicinal plant extracts for rapid and cost-effective extraction

Herbs, Spices and Medicinal Plants

This book covers interesting research topics and the use of natural resources for medical treatments in some severe diseases. The most important message is to have native foods which contain high amount of active compounds that can be used as a medicinal plant. Most pharmaceutical drugs were discovered from plants, and still ongoing research will have to predict such new active compounds as anti-diseases. I do believe this book will add significant knowledge to medical societies as well as can be used for postgraduate students.

Capsicum

This book is a printed edition of the Special Issue "Plant Extracts in Skin Care Products" that was published in Cosmetics

Traditional Herbal Medicine Research Methods

Phytochemicals from medicinal plants are receiving ever greater attention in the scientific literature, in medicine, and in the world economy in general. For example, the global value of plant-derived pharmaceuticals will reach $500 billion in the year 2000 in the OECD countries. In the developing countries, over-the-counter remedies and "ethical phytomedicines," which are standardized toxicologically and clinically defined crude drugs, are seen as a promising low cost alternatives in primary health care. The field also has benefited greatly in recent years from the interaction of the study of traditional ethnobotanical knowledge and the application of modern phytochemical analysis and biological activity studies to medicinal plants. The papers on this topic assembled in the present volume were presented at the annual meeting of the Phytochemical Society of North America, held in Mexico City.
Phytochemistry of Medicinal Plants

While there are many books available on methods of organic and biochemical analysis, the majority are either primarily concerned with the application of a particular technique (e.g., paper chromatography) or have been written for an audience of chemists or for biochemists working mainly with animal tissues. Thus, no simple guide to modern methods of plant analysis exists and the purpose of the present volume is to fill this gap. It is primarily intended for students in the plant sciences, who have a botanical or a general biological background. It should also be of value to students in biochemistry, pharmacognosy, food science and ‘natural products’ organic chemistry. Most books on chromatography, while admirably covering the needs of research workers, tend to overwhelm the student with long lists of solvent systems and spray reagents that can be applied to each class of organic constituent. The intention here is to simplify the situation by listing only a few specially recommended techniques that have wide currency in phytochemical laboratories. Sufficient details are provided to allow the student to use the techniques for themselves and most sections contain some introductory practical experiments which can be used in classwork.

Plant Extracts in Skin Care Products

The latest research on the health benefits and optimal processing technologies of herbs and spices. This book provides a comprehensive overview of the health benefits, analytical techniques used, and effects of processing upon the physicochemical properties of herbs and spices. Presented in three parts, it opens with a section on the technological and health benefits of herbs and spices. The second part reviews the effect of classical and novel processing techniques on the properties of herbs/spices. The third section examines extraction techniques and analytical methodologies used for herbs and spices. Filled with contributions from experts in academia and industry, herbs, spices, and medicinal plants: processing, health benefits, and safety offers chapters covering thermal and non-thermal processing of herbs and spices, recent developments in high-quality drying of herbs and spices, conventional and novel techniques for extracting bioactive compounds from herbs and spices, and approaches to analytical techniques. It also examines purification and isolation techniques for enriching bioactive phytochemicals, medicinal properties of herbs and spices, synergy in whole-plant medicine, potential applications of polyphenols from herbs and spices in dairy products, biotic and abiotic safety concerns, and adverse human health effects and regulation of metal contaminants in terrestrial plant-derived food and phytopharmaceuticals. Covers the emerging health benefits of herbs and spices, including their use as anti-diabetics, anti-inflammatory agents, and anti-oxidants. Reviews the effect of classical and novel processing techniques on the properties of herbs and spices. Features informed perspectives from noted academics and professionals in the industry Part of Wiley’s new IFST Advances in Food Science series. Herbs, spices, and medicinal plants is an important book for companies, research institutions, and universities active in the areas of food processing and the agri-food environment. It will appeal to food scientists and engineers, environmentalists, and food regulatory agencies.

Phytochemical Methods

Pharmacognosy is a term derived from the Greek words for drug (pharmakon) and knowledge (gnosis). It is a field of study within Chemistry focused on natural products isolated from different sources and their biological activities. Research on natural products began more than a hundred years ago and has continued up to now with a plethora of research groups discovering new ideas and novel active constituents. This book compiles the latest research in the field and will be of interest to scientists, researchers, and students.

Methods and Techniques in Ethnobiology and Ethnoecology

Capsicum, also known as chili or bell pepper, is one of the most economically important vegetable crops worldwide due to its antioxidant, anti-inflammatory, and anticancer properties. This book provides information on many aspects of this plant, such as its botanical information, nutritional values, bioactive compounds, pharmacology, cultivation, its use in treating diseases, and its applications in the food and pharmaceutical industries.

Phytochemicals in Human Health

First published in 1975. This title presents a series of vivid insights and images, explaining the problems in the field, the machinery and techniques, science and economics, and what it means to the farmer. The book depicts and explains the sophisticated techniques with which the farmer tackles the problems of soil and season, within the beautiful and ancient rhythm of lambing and haymaking, pasture and dairy, seed time and harvest. This title will be of great interest to not only students of agriculture, but those interested in the history of farming.

Phytopharmaceutical Technology

A collection of test procedures for assessing the identity, purity, and content of medicinal plant materials, including determination of pesticide residues, arsenic and heavy metals. Intended to assist national laboratories engaged in drug quality control, the manual responds to the growing use of medicinal plants, the special quality problems they pose, and the corresponding need for international guidance on reliable methods for quality control. Recommended procedures - whether involving visual inspection or the use of thin-layer chromatography for the qualitative determination of impurities - should also prove useful to the pharmaceutical industry and pharmacists working with these materials.
Pharmacognosy

With increasing energy prices and the drive to reduce CO2 emissions, food industries are challenged to find new technologies in order to reduce energy consumption, to meet legal requirements on emissions, product/process safety and control, and for cost reduction and increased quality as well as functionality. Extraction is one of the promising innovation themes that could contribute to sustainable growth in the chemical and food industries. For example, existing extraction technologies have considerable technological and scientific bottlenecks to overcome, such as often requiring up to 50% of investments in a new plant and more than 70% of total process energy used in food, fine chemicals and pharmaceutical industries. These shortcomings have led to the consideration of the use of new "green" techniques in extraction, which typically use less solvent and energy, such as microwave extraction. Extraction under extreme or non-classical conditions is currently a dynamically developing area in applied research and industry. Using microwaves, extraction and distillation can now be completed in minutes instead of hours with high productivity, reducing the consumption of solvent, simplifying manipulation and work-up, giving higher purity of the final product, eliminating post-treatment of waste water and consuming only a fraction of the energy normally needed for a conventional extraction method. Several classes of compounds such as essential oils, aromas, anti-oxidants, pigments, colours, fats and oils, carbohydrates, and other bioactive compounds have been extracted efficiently from a variety of matrices (mainly animal tissues, food, and plant materials). The advantages of using microwave energy, which is a non-contact heat source, includes more effective heating, faster energy transfer, reduced thermal gradients, selective heating, reduced equipment size, faster response to process heating control, faster start-up, increased production, and elimination of process steps. This book will present a complete picture of the current knowledge on microwave-assisted extraction (MAE) of bioactive compounds from food and natural products. It will provide the necessary theoretical background and details about extraction by microwaves, including information on the technique, the mechanism, protocols, industrial applications, safety precautions, and environmental impacts.

Mandala Pattern Adult Coloring Book

The latest research on the health benefits and optimal processing technologies of herbs and spices This book provides a comprehensive overview of the health benefits, analytical techniques used, and effects of processing upon the physicochemical properties of herbs and spices. Presented in three parts, it opens with a section on the technological and health benefits of herbs and spices. The second part reviews the effect of classical and novel processing techniques on the properties of herbs/spices. The third section examines extraction techniques and analytical methodologies used for herbs and spices. Filled with contributions from experts in academia and industry, the book covers a wide range of topics from the extraction and processing of herbs and spices to the application of extraction techniques in the chemical and food industries. This book is a valuable resource for researchers, practitioners, and students in the fields of food science, biotechnology, and natural product extraction.

Green Extraction of Natural Products

This new book deals with recent advanced research on natural products and health-promoting foods that work to reduce the risk of diseases while enhancing overall well-being. Plant-based functional foods are known to contain compounds (also referred to as phytochemicals) in the leaves, stems, flowers, and fruits of certain plants. These plant products are drawing the attention of researchers because of their demonstrated beneficial effects against disease, particularly diabetes, hypertension, cancer, neurodegenerative diseases, among others. The medicinal and nutritional use of plant secondary metabolites is a hot topic and has been receiving extensive attention from both health professionals and the public. This book presents new information on the extraction of bioactive compounds from plants, plant-based drugs, and the innovative use of plant-based drugs for human health.

Plant Secondary Metabolites for Human Health

Naturally present bioactive compounds in plants are referred to as "Phytochemicals" and are being studied extensively for their role in human health. Studies have shown that they can have an important role to play in the prevention and management of several human diseases. Recognizing the increasing interest in this area, this book is being published in response to the need for more current information globally about phytochemicals and their role in human health. Chapters of the book are authored by internationally recognized authors who are experts in their respective field of expertise. The chapters represent both original research as well as up-to-date and comprehensive reviews. We are sure that the book will be an important reference source meeting the needs of a wide range of interest groups.
Tannins

Aloe Vera is a semi tropical plant. It is one of the oldest known medicinal plants gifted by nature, Aloe Vera often called Miracle plant known by many names. It contains more than two hundred tonic ingredients including essential amino acids, enzymes, glucose and more. Also contains the most essential components required by the human body. It is grown wild in hedge rows in dry soil conditions and almost all parts of India. It can be grown even under constant drought conditions. Commercial cultivation and utilization of this plant with the application of technology can be of great value. There are various benefits of this plant; it is used to support the natural healing of skin that has been damaged. A common usage is to soothe sunburned skin. Aloe Vera can also be made into juices, gels, powders and is often added to products. For example it can be found in cosmetics, shampoos, lotions and many other common household Aloe Vera products. The many benefits of Aloe Vera are not fully researched as of yet. Processing of Aloe Vera gel derived from the leaf pulp of the plant, has become a big industry worldwide due to the application in the food industry. It has been utilized as a resource of functional food, especially for the preparation of health drinks which contain Aloe Vera gel and which have no laxative effects. Given the exponentially growing demand for it in the international market, it presents the finest commercial opportunity among the various medicinal plants. Also, India is among the few countries gifted with the unique geographical features essential for cultivation of Aloe Vera and other high potential medicinal plants. Some fundamentals of this book are chemical investigations of different parts of the leaf, agro technique: Aloe Vera, economics of cultivation per hectar, aloe (Aloe Vera) investment opportunity, specialty raw material market for cosmetics/toiletries, strategy for capacity creation and marketing, influence of Aloe Vera on the glycol amino glycans in the matrix of healing dermal wounds in rats, effects of low molecular constituents from Aloe Vera gel on oxidative metabolism and bactericial activities of human neutrophils, Aloe Vera & aids research, anti diabetic activity of aloe: preliminary, aloe reduction in ulcers, erosions & hemorrhages, extraction process, processing steps, extraction process of aloe gel and powder etc. This book highlights such technical details to guide and encourage new entrepreneurs. It is very useful book for consultants, farmers, students of Agricultural universities, libraries etc.

Pharmacological Assays of Plant-Based Natural Products

This new volume, Health Benefits of Secondary Phytochemicals from Plant and Marine Sources, looks at a selection of important issues and research topics on phytochemicals in plant-based therapeutics, covering bioactive compounds from both plant and marine sources. Natural products and their bioactive compounds are increasingly utilized in preventive and therapeutic medication, as pharmaceutical supplements, as well as in functional foods and nutraceuticals, all of which have potentially positive effects on health and have preventive and curative properties for various diseases and health conditions. The first section of the book, on Bioactive Compounds from Plant Sources, describes the concept of extraction of bioactive molecules from plant sources, both conventional and modern extraction techniques, available sources, biochemistry, structural composition, and potential biological activities. Advanced extraction techniques, such as enzyme-assisted, microwave-assisted, ultrasound-assisted, pressurized liquid extraction, and super critical extraction techniques, are described in detail.

A Reference Book on Total Phenolics of Some Medicinal Plant Extracts

This volume, as the seventh of the series Medicinal and Aromatic Plants of the World, deals with the medicinal and aromatic plant (MAPs) treasures of the so-called Southern Cone, the three southernmost countries (Argentina, Chile and Uruguay) of South America. Similarly to the previous volumes of the series, the main focus is to collect and provide information on major aspects of botany, traditional usage, chemistry, production / collection practices, trade and utilization of this specific group of plants. The contributors, who are recognized professionals of the domain, have collected and present state of the art information on 41 species. Most of these are not only of interest from the scientific point of view, but hold also a potential for the prospective utilization of the decreasing, occasionally overexploited / endangered medicinal plant resources of this huge continent. The book is expected to serve as a source of information also on some less known or less studied species. As such the volume is expected to support future research and public health professionals.

Microwave-assisted Extraction for Bioactive Compounds

This book starts with a general introduction to phytochemistry, followed by chapters on plant constituents, their origins and chemistry, but also discussing animal-, microorganism- and mineral-based drugs. Further chapters cover vitamins, food additives and excipients as well as xenobiotics and poisons. The book also explores the herbal approach to disease management and molecular pharmacognosy and introduces methods of qualitative and quantitative analysis of plant constituents. Phytochemicals are classified as primary (e.g. carbohydrates, lipids, amino acid derivations, etc.) or secondary (e.g. alkaloids, terpenes and terpenoids, phenolic compounds, glycosides, etc.) metabolites according to their metabolic route of origin, chemical structure and function. A wide variety of primary and secondary phytochemicals are present in medicinal plants, some of which are active phytomedicines and some of which are pharmaceutical excipients.

Old Farms and New Farming

“Natural Products Chemistry: Biomedical and Pharmaceutical Phytochemistry focuses on the development of biochemical, biomedical and their applications. It highlights the importance of accomplishing an integration of engineering with biology and medicine to understand and manage the scientific, industrial, and clinical aspects. It also explains both the basic science and the applications of biotechnology-derived pharmaceuticals, with special emphasis on their clinical use. The biological background provided enables readers to comprehend the major problems in biochemical engineering and formulate effective solutions. This title also expands upon current concepts with the latest research and applications, providing both the breadth and depth researchers need. The book also introduces the topic of natural products chemistry with an overview of key concepts. This book is aimed at professionals from industry, academicians engaged in chemical science or natural product chemistry research, and graduate-level students.”

Aromatic and Medicinal Plants

The surfactants are among the materials that have a significant importance in everyday life of human. The rapid growth in science and technology has opened new horizons in a very wide range, in which the surfactants play a major and vital role. Hence, the increasing number of applications as well as arising environmental issues has made this relatively old topic still a hot research theme. In the first section of this book, some of the applications of...
surfactants in various fields such as biology and petroleum industry, as well as their environmental effects, are described. In Section 2 some experimental techniques used for characterization of the surfactants have been discussed.

**Natural Products Isolation**

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.

**Quality Control Methods for Medicinal Plant Materials**

Nature has always been, and still is, a source of food and ingredients that are beneficial to human health. Nowadays, plant extracts are increasingly becoming important additives in the food industry due to their antimicrobial and antioxidant activities that delay the development of off-flavors and improve the shelf life and color stability of food products. Due to their natural origin, they are excellent candidates to replace synthetic compounds, which are generally considered to have toxicological and carcinogenic effects. The efficient extraction of these compounds from their natural sources and the determination of their activity in commercialized products have been great challenges for researchers and food chain contributors to develop products with positive effects on human health. The objective of this Special Issue is to highlight the existing evidence regarding the various potential benefits of the consumption of plant extracts and plant-extract-based products, with emphasis on in vivo works and epidemiological studies, the application of plant extracts to improving shelf life, the nutritional and health-related properties of foods, and the extraction techniques that can be used to obtain bioactive compounds from plant extracts.

**Therapeutic Use of Medicinal Plants and their Extracts: Volume 2**

Useful throughout history for their medical as well as other benefits, plant-derived compounds have gained particular importance recently, due to environmental factors. The isolation and characterization of plant products, the identification of their role in the plant, and ways of synthesizing identical compounds or more potent analogues are covered. Also includes methods of culturing plant tissues and genetic engineering as a means of increasing the yield of desired substances from plants. Special emphasis is placed on plants previously unknown to Western scientists.

**Phenolic Compounds**

The aim of this book to describe the extraction of phenolic compounds from different extracts of medicinal plants by using different extraction techniques and quantification methods. The phenolic compounds are well known phytochemicals found in all plants and these are responsible for antioxidant activity. Phenolic compounds are classified as simple phenols or poly phenols based on the number of phenol units in the molecule. Bio Chemical methods are used to detect the presences of phenol while different techniques like soxhlet extraction, micro wave-assisted extraction, and ultra sound-assisted extraction and quantification methods like spectrophotometric, high pressure liquid chromatography, gas chromatography methodologies are utilized in plant based products.

**Polyphenols in Plants**

Extraction processes are essential steps in numerous industrial applications from perfume over pharmaceutical to fine chemical industry. Nowadays, there are three key aspects in industrial extraction processes: economy and quality, as well as environmental considerations. This book presents a complete picture of current knowledge on green extraction in terms of innovative processes, original methods, alternative solvents and safe products, and provides the necessary theoretical background as well as industrial application examples and environmental impacts. Each chapter is written by experts in the field and the strong focus on green chemistry throughout the book makes this book a unique reference source. This book is intended to be a first step towards a future cooperation in a new extraction of natural products, built to improve both fundamental and green parameters of the techniques and to increase the amount of extracts obtained from renewable resources with a minimum consumption of energy and solvents, and the maximum safety for operators and the environment.

**Phytochemicals**

Water Extraction of Bioactive Compounds: From Plants to Drug Development draws together the expert knowledge of researchers from around the world to outline the essential knowledge and techniques required to successfully extract bioactive compounds for further study. The book is a practical tool for medicinal chemists, biochemists, pharmaceutical scientists and academics working in the discovery and development of drugs from natural sources. The discovery and extraction of bioactive plant compounds from natural sources is of growing interest to drug developers, adding greater fuel to a simultaneous search for efficient, green technologies to support this. Particularly promising are aqueous based methods, as water is a cheap, safe and abundant solvent. The book is a detailed guide to the fundamental concepts and necessary equipment needed to successfully undertake such processes, supported by application examples and highlighting the most influential variables. Part 1 begins with a thorough introduction to plants as sources of drugs, highlighting strategies for the discovery of novel bioactive constituents of botanicals, the need for standardization and a move toward more rational and greener techniques in the field, the development of plant-based extraction processes and pretreatments for the efficient extraction. Part 2 then reviews a broad range of available techniques, including sections on conventional hot water extraction and pressurized hot water extraction in a range of settings. Intensified processes are then discussed in detail, including sections on microwave-assisted processes, ultrasound-assisted processes and enzyme assisted extraction. Covers the theoretical background and range of techniques available to researchers, helping them to select the most appropriate extraction method for their needs. Presents up-to-date and cutting edge applications by international experts. Highlights current use and future potential for industrial scale applications. Offers a thorough introduction to
plants as sources of drugs, highlighting strategies for the discovery of novel bioactive constituents of botanicals

**Ingredients Extraction by Physicochemical Methods in Food**

Phenolic compounds comprise a broad class of natural products formed mainly by plants, but also microorganisms and marine organisms that have the capacity to form them. Nowadays the interest in these compounds has increased mainly due to their diverse chemical structure and wide biological activity valuable in the prevention of some chronic or degenerative diseases. The functional foods are a rich source of these phytochemicals, and this is the starting point for this book, which shows the state of the art of the phenolic compounds and their biological activity. This book integrates eleven chapters that show the state of the art of diverse biological activity of the phenolic compounds, present in some crops or fruits.

**Natural Products Chemistry**

Drugs from plants are a major contribution to world health. Their production involves machinery, workers, quality control, standards, and legislation. Phytopharmaceutical Technology is a practical reference volume that provides the basic information necessary to select and operate machinery and to process plant products through to the desired liquid, solid, or powdered drug form. As a result, much of the book is devoted to the production process. Topics discussed include plants and plant parts; converting plants to medicinal forms; tips on handling incoming plant materials, including quality, pests, residues, analytical techniques and legislation; solvents for extraction, chemical data and notes regarding selection and use; and production processes, including grading (sorting), size reduction (comminution), extraction, concentration, purification, and drying. The book also contains details regarding the dozens of types of machinery that can be used, as well as drawings, including cross-sections and schematics of the working action. Quality assurance, standardization, and regulation is also discussed. Phytopharmaceutical Technology is a handy reference tool for engineers and industrial chemists in the plant drug processing industry, as well as excellent reading for university students.

**Bioactive Compounds from Plants**

This book introduces the methodology for collection and identification of herbal materials, extraction and isolation of compounds from herbs, in vitro bioassay, in vivo animal test, toxicology, and clinical trials of herbal research. To fully understand and make the best use of herbal medicines requires the close combination of chemistry, biochemistry, biology, pharmacology, and clinical science. Although there are many books about traditional medicines research, they mostly focus on either chemical or pharmacological study results of certain plants. This book, however, covers the systematic study and analysis of herbal medicines in general – including chemical isolation and identification, bioassay and mechanism study, pharmacological experiment, and quality control of the raw plant material and end products.

**Essentials of Botanical Extraction**

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