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Phenolic compounds are an extremely diverse class of ubiquitous secondary metabolites produced by a variety of organisms playing different biological roles. They have numerous types of demonstrated bioactivities, including antioxidant, antimicrobial, anti-inflammatory, antitumoral, immunomodulator, neuroprotective, cardioprotective, and antidiabetic activities. Marine organisms produce a vast collection of unique phenolic structures, some of them not found in terrestrial habitats. Progress in different aspects is rapidly advancing, and this Special Issue will provide updated information and recent studies on marine phenolics. Specially, this issue is focused on their chemical characterization, elucidation of their structures, evaluation of their biological properties and mechanisms of action, efficient extraction and purification technologies, development of value-added applications, as well as formulation of novel products. Mycotoxins are secondary metabolites produced by the fungi of different species (mainly *Aspergillus*, *Fusarium*, and *Penicillium*), with toxic effects for humans and animals. These mycotoxins can contaminate food and feed. The European Union (EU) has established the maximum permitted or recommended levels for well-known mycotoxins in different foodstuffs. However, there are other mycotoxins that are not included in the regulations: the “emerging mycotoxins” (whose toxicity is still not clear), and the “modified or masked mycotoxins” (produced as a consequence of a detoxification strategy of the host plant of the fungus or during food processing). These mycotoxins could pose a risk and should also be taken into account. In order to assure consumers’ health, analytical methods for the accurate determination of mycotoxins in different food matrices and feeds are required. In this sense, liquid chromatography tandem mass spectrometry (LC–MS/MS) is a powerful tool for their unique identification and quantification. Moreover, the use of high-resolution mass spectrometry (HRMS) allows one to identify novel mycotoxins and targeted/untargeted approaches for study. This Special Issue compiles recent applications of LC–MS/MS in mycotoxin studies, as well as the development and validation of new analytical methods for their identification and quantification in different food matrices and feed, occurrence studies, and the biomonitoring of mycotoxins and their metabolites in biological fluids.

Drug metabolism/pharmacokinetics and drug interaction studies have been extensively carried out in order to secure the druggability and safety of new chemical entities throughout the development of new drugs. Recently, drug metabolism and transport by phase II drug metabolizing enzymes and drug transporters, respectively, as well as phase I drug metabolizing enzymes, have been studied. A combination of biochemical advances in the function and regulation of drug metabolizing enzymes and automated analytical technologies are revolutionizing drug metabolism research. There are also potential drug–drug interactions with co-administered drugs due to inhibition and/or induction of drug metabolic enzymes and drug transporters. In addition, drug interaction studies have been actively performed to develop substrate cocktails that do not interfere with each other and a simultaneous analytical method of substrate drugs and their metabolites using a tandem mass spectrometer. This Special Issue has the aim of highlighting current progress in drug metabolism/pharmacokinetics, drug interactions, and bioanalysis. 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 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 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.

This book contains over 400 offered papers which were presented at the 63rd International Congress of Meat Science and Technology, held in Cork, Ireland, from 13-18 August, 2017. Under the theme of nurturing locally, growing globally, areas covered in the congress included meat sustainability and the role of the of meat science in a challenging global environment, genetics and genomics, the science of meat quality, technological demands in meat processing from an Asian perspective, international best practice in animal welfare, scientific advances underpinning meat safety, emerging technologies in meat processing, meat science and impact, consumer aspects, meat biochemistry, advancements in meat packaging and the congress ended with a session on meat and health, with focus on sustaining healthy protein sources. This year also included a session dedicated to addressing specific hot topics of importance to the industry and meat scientists. These proceedings reflect the truly global nature of meat research and provide an insight into current research issues for the industry.

Designed as the primary reference for the biotechnological use of macroalgae, this comprehensive handbook covers the entire value chain from the cultivation of algal biomass to harvesting and processing it, to product extraction and formulation. In addition to covering a wide range of product classes, from polysaccharides to terpenes and from enzymes to biofuels, it systematically discusses current and future applications of algae-derived products in pharmacology, medicine, cosmetics, food and agriculture. In doing so, it brings together the expertise of

marine researchers, biotechnologists and process engineers for a one-stop resource on the biotechnology of marine macroalgae.

We are pleased to present this book, which is a reprint of articles from the Special Issue entitled “Extraction Strategies to Recover Bioactive Compounds, Incorporation into Food, and Health Benefits” published online in the open access journal Foods (ISSN 2304-8158) from 2019 to 2020 (available at: [https://www.mdpi.com/journal/foods/special\\_issues/extraction](https://www.mdpi.com/journal/foods/special_issues/extraction)). Firstly, this book gathers studies addressing several strategies applied to obtain bioactive products and extracts, not only from food matrices but also from agri-food byproducts, which can serve as new natural additives, nutraceuticals, and functional ingredients for pharmaceutical, cosmetics, and food industries. In particular, free and bound phenolic compounds are explored in buckwheat, sesame, and olive leafy byproducts. Overall, these studies outline new valorization methods and offer new opportunities for alternative practices in the agro-industrial sector that help to migrate toward a circular bioeconomy model. This book also presents studies that predict bioactive components in fruits through mathematical tools and support the formulation of a novel beverage rich in resveratrol, a phenolic compound whose bioactivity is well recognized.

Plants have served mankind as an important source of foods and medicines. While we all consume plants and their products for nutritional support, a majority of the world population also rely on botanical remedies to meet their health needs, either as their own “traditional medicine” or as “complementary and alternative medicine”. From a pharmaceutical point of view, many compounds obtained from plant sources have long been known to possess bio/pharmacological activities, and historically, plants have yielded many important drugs for human use, from morphine discovered in the early nineteenth century to the more recent paclitaxel and artemisinin. Today, we are witnessing a global resurgence in interest and use of plant-based therapies and botanical products, and natural products remain an important and viable source of lead compounds in many drug discovery programs. This Special Issue on “Plant Natural Products for Human Health” compiles a series of scientific reports to demonstrate the medicinal potentials of plant natural products. It covers a range of disease targets, such as diabetes, inflammation, cancer, neurological disease, cardiovascular disease, liver damage, bacterial, and fungus infection and malarial. These papers provide important insights into the current state of research on drug discovery and new techniques. It is hoped that this Special Issue will serve as a timely reference for researchers and scholars who are interested in the discovery of potentially useful molecules from plant sources for health-related applications.

This first book in this three-volume set provides comprehensive coverage of a wide range of topics in phytochemistry. With chapters from professional specialists from key institutions around the world, the volume starts with an introduction to phytochemistry and details the fundamentals. Part II discusses the state-of-the-art modern methods and techniques in phytochemical research, while Part III provides an informative overview of computational phytochemistry and its applications. Part IV presents novel research findings in the discovery of drugs that will be effective in the treatment of diseases. The chapters are drawn carefully and integrated sequentially to aid flow, consistency, and continuity.

This volume explores state-of-the-art mass spectrometric techniques. It focuses on liquid chromatography/mass spectrometry/mass spectrometry and time-of-flight/mass spectrometry to determine emerging contaminants, such as pharmaceuticals, hormones, pesticides, surfactants and unknown natural products.

We are very pleased to introduce the Book Version of our Special Issue in *Molecules* dedicated to the memory of the late Professor Dr. Charles D. Hufford. The issue has been a huge success, with 22 full-length peer-reviewed papers and a tribute by Professor Alice M. Clark. Authors, reviewers, and collaborators from many countries across the world have contributed to this endeavour, and we are truly grateful to all. This Special Issue is representative of the broad impact that “Charlie” had on the field of bioactive natural products. This Special Issue comprises papers from Professor Hufford’s former students, colleagues, and collaborators throughout the world who have utilized a wide array of state-of-the-art techniques to examine diverse natural sources to isolate and identify a variety of natural products with a wide spectrum of biological activities, including some new microbial transformations and insights into bioactive molecules. Many new bioactive compounds are described and reported here for the first time. Bioactivities reported include cytotoxicity, antimicrobial activity, anti-inflammatory activity, antileishmanial activity, antitrypanosomal activity, antimalarial activity, analgesic activity, and beneficial liver activities, just to name a few. This Special Issue will undoubtedly have a lasting impact on the field of bioactive natural products, as exemplified by the career of Dr. Hufford. Lastly, without the timely and outstanding contributions from all of you, this Special Issue would not have been possible. We thank you all very much for your contributions and your time devoted to this Special Issue in memory of a special person. Finally, we express our gratitude and thanks to the journal *Molecules* and their excellent team of expert reviewers for giving us the support and opportunity to make this Special Issue a huge success! Most ecosystem services and goods human populations use and consume are provided by microbial populations and communities. Indeed, numerous provisioning services (e.g. food and enzymes for industrial processes), regulating services (e.g. water quality, contamination alleviation and biological processes such as plant-microbial symbioses), and supporting services (e.g. nutrient cycling, agricultural production and biodiversity) are mediated by microbes. The fast development of metagenomics and other meta-omics technologies is expanding our understanding of microbial diversity, ecology, evolution and functioning. This enhanced knowledge directly translates into the emergence of new applications in an unlimited variety of areas across all microbial ecosystem services and goods. The varied topics addressed in this Research Topic include the development of innovative industrial processes, the discovery of novel natural products, the advancement of new agricultural methods, the amelioration of negative effects of productive or natural microbiological processes, as well as food security and human health, and archeological conservation. The articles compiled provide an updated, high-quality overview of current work in the field. This body of research makes a valuable contribution to the understanding of microbial ecosystem services, and expands the horizon for finding and developing new and more efficient biotechnological applications.

This Special Issue of *Marine Drugs* gathers recent investigations on the proteomes, metabolomes, transcriptomes, and the associated microbiomes of marine jellyfish and polyps, including bioactivity studies of their compounds and more generally, on their biotechnological potential, witnessing the increasingly recognized importance of Cnidaria as a largely untapped Blue Growth resource for new drug discovery. These researches evoke the outstanding ecological importance of cnidarians in marine ecosystems worldwide, calling for a global monitoring and conservation of marine biodiversity, so that the biotechnological exploitation of marine living resources will be carried out to conserve and sustainably use the natural capital of the oceans.

Due to increasing global food needs as a result of population growth, the use of new food sources has gained interest in the last decade. However, the inclusion of new foods in our diet, as well as the increased interest of the population in consuming foods with better nutritional properties, has increased the need for adequate food analytical methods. This monographic issue presents innovative methods of chemical analysis of foods, as well as the nutritional and chemical characterization of foods whose consumption is expected to increase worldwide in the coming years.

The conversion of lignocellulosic biomass into renewable fuels and other commodities has provided an appealing alternative towards supplanting global dependence on fossil fuels. The suitability of multitudes of plants for deconstruction to useful precursor molecules and products is currently being evaluated. These studies have probed a variety of phenotypic traits, including cellulose, non-cellulosic polysaccharide, lignin, and lignin monomer composition, glucose and xylose production following enzymatic hydrolysis, and an assessment of lignin-carbohydrate and lignin-lignin linkages, to name a few.

These quintessential traits can provide an assessment of biomass recalcitrance, enabling researchers to devise appropriate deconstruction strategies. Plants with high polysaccharide and lower lignin contents have been shown to breakdown to monomeric sugars more readily. Not all plants contain ideal proportions of the various cell wall constituents, however. The capabilities of biotechnology can alleviate this conundrum by tailoring the chemical composition of plants to be more favorable for conversion to sugars, fuels, etc. Increases in the total biomass yield, cellulose content, or conversion efficiency through, for example, a reduction in lignin content, are pathways being evaluated to genetically improve plants for use in manufacturing biofuels and bio-based chemicals. Although plants have been previously domesticated for food and fiber production, the collection of phenotypic traits prerequisite for biofuel production may necessitate new genetic breeding schemes. Given the plethora of potential plants available for exploration, rapid analytical methods are needed to more efficiently screen through the bulk of samples to hone in on which feedstocks contain the desired chemistry for subsequent conversion to valuable, renewable commodities. The standard methods for analyzing biomass and related intermediates and finished products are laborious, potentially toxic, and/or destructive. They may also necessitate a complex data analysis, significantly increasing the experimental time and add unwanted delays in process monitoring, where delays can incur in significant costs. Advances in thermochemical and spectroscopic techniques have enabled the screening of thousands of plants for different phenotypes, such as cell-wall cellulose, non-cellulosic polysaccharide, and lignin composition, lignin monomer composition, or monomeric sugar release. Some instrumental methods have been coupled with multivariate analysis, providing elegant chemometric predictive models enabling the accelerated identification of potential feedstocks. In addition to the use of high-throughput analytical methods for the characterization of feedstocks based on phenotypic metrics, rapid instrumental techniques have been developed for the real-time monitoring of diverse processes, such as the efficacy of a specific pretreatment strategy, or the formation of end products, such as biofuels and biomaterials. Real-time process monitoring techniques are needed for all stages of the feedstocks-to-biofuels conversion process in order to maximize efficiency and lower costs by monitoring and optimizing performance. These approaches allow researchers to adjust experimental conditions during, rather than at the conclusion, of a process, thereby decreasing overhead expenses. This Frontiers Research Topic explores options for the modification of biomass composition and the conversion of these feedstocks into biofuels or biomaterials and the related innovations in methods for the analysis of the composition of plant biomass, and advances in assessing up- and downstream processes in real-time. Finally, a review of the computational models available for techno-economic modeling and lifecycle analysis will be presented.

This book is mainly for researchers interested in the new developments and applications of metabolomics. It is also important for physicians using metabolomic approaches in the diagnosis of diseases or treatment, and for postgraduate students starting their research projects on metabolomics. The book is divided into two sections as indicated from its title, namely: new insights into biology and new insights into medicine. It gives examples of the different applications of metabolomics from the production of biosurfactants by marine microorganisms to the applications of data from fecal metabolomics, serum metabolomics, and metabolomics of microbiota, as well as the use of Chinese medicines for cancer treatment. Overall, this is a well-written book, containing some very interesting research avenues and cutting-edge approaches. Finally, the editing of this book was of special interest to me and I hope that readers will also find it stimulating.

The re-use of industrial food residues is essential in the general framework of rational waste handling and recycling, which aims at the minimizing environmental impact of food production and producing functional food ingredients. Agri-food processing waste has long been considered a valuable biomass with a significant polyphenol load and profile. Polyphenols, aside from being powerful antioxidants that confer inherent stability to a variety of foods, may possess versatile bioactivities including anti-inflammatory and chemopreventive properties. The valorization of agri-food waste as a prominent source of polyphenols stems from the enormous amount of food-related material discharged worldwide and the emerging eco-friendly technologies that allow high recovery, recycling, and sustainable use of these materials. This book addresses the concept of recovering natural polyphenolic antioxidants from waste biomass generated by agri-food and related industrial processes and presents state-of-the-art applications with prospect in the food, cosmetic, and pharmaceutical industries.

Zacarías León's thesis describes the development and validation of analytical methods to estimate the processes set in motion by percutaneous absorption of UV filters in sunscreen cosmetic products. León describes these methods in both in vitro and non-invasive in vivo methodologies. Currently dermatologists recommend the use of sunscreen products not only under conditions of extreme exposure to the sun but also in daily situations. However the chemical compounds in these products contain may lead to undesired processes and cause induced toxicity, estrogenic effects and endocrine activity. León establishes methods to investigate these effects and provides valuable information on the undesired side effects associated with the use of UV filters found in sunscreen products. The work in this thesis has led to a number of publications in renowned analytical chemistry journals.

This book contains original papers and reviews on carbohydrate research in medicine, authored by participants of the 29th International Carbohydrate Symposium, where this topic had a special emphasis. The focus on biological events involving carbohydrates and glycoconjugates has delivered reliable approaches for disease treatment and diagnosis. Research on carbohydrate-based compounds for therapeutic applications is illustrated in various contributions, namely those covering the development of novel agents against Alzheimer's disease, e.g. the neuroprotective C-glycosylated flavones and the isonucleoside-based cholinesterase inhibitors. New imino sugar glucosidase inhibitors are also disclosed, a class of compounds with potential for diabetes, Gaucher disease or cancer treatment. Also the development of a useful synthetic method towards multivalent glycoclusters of biomedical interest is here highlighted. The relevance of glycomimetics in drug discovery and the progress on carbohydrates in early diagnosis and cancer treatment are reviewed. Noteworthy is the chitosan-based delivery system for drug oral administration, a new biomaterial-based approach to improve bioavailability. Another study on the conformation of Streptococcus capsular polysaccharide backbones by molecular modelling provides useful information for bacterial immunotherapeutic approaches. All original contributions and reviews clearly demonstrate the potential of glycosciences for innovation in medicinal (glyco)chemistry and pharmaceutical research.

This book is the first example in presenting LC-MS strategies for the analysis of peptides and proteins with detailed information and hints about the needs and problems described from experts on-the-job. The best advantage is -for sure- the practical insight of experienced analysts into their novel protein analysis techniques. Readers starting in 'Proteomics' should be able to repeat each experiment with own equipment and own protein samples, like clean-up, direct protein analysis, after (online) digest, with modifications and others. Furthermore, the reader will learn more about strategies in protein analysis, like quantitative analysis, industrial standards, functional analysis and more.

Percutaneous Absorption of UV Filters Contained in Sunscreen Cosmetic Products  
Development of Analytical Methods  
Springer Science & Business Media

Wine yeast and bacteria have been extensively characterized in terms of physiological and metabolic traits largely in pure culture analyses. Winemaking practices derived from this basic knowledge have undoubtedly improved wine quality. Phylogenetic studies and genome comparisons in extensive collections have revealed the processes of evolution and adaptation of the two main microbial species, *Saccharomyces cerevisiae* and *Oenococcus oeni*, present in wine. However, grapes and grape juice contain a variety of microorganisms and these principal agents of fermentation are in fact part of a complex microbial community that evolves dynamically in a special niche. Thanks to the new methods of analysis, the complexity of the microbiota can be measured in any sample of must or wine. In addition, there is greater appreciation of diversity within the main species present in wine. Intraspecific diversity has been evaluated in yeast and bacteria species and strains can be typed even in the mixture of

selected or indigenous strains. Descriptions of microbial profiles in all the regions of the world suggest that the microbiota is a significant element of terroir or regional signature. It is no longer enough to simply describe what is present. It is important to consider evolution, physiology and metabolism taking into account microbial interactions within the community. Research in wine microbiology has also expanded our understanding of the participation and role of non-Saccharomyces organisms in winemaking, and refined knowledge on microbial spoilage. However, it is challenging to go from the simple description of these phenomena to their interpretation. The greatest difficulty lies in analyzing the functioning of the extraordinary complex system of yeast and bacteria present during different stages of the fermentation. Interactions in the very particular environment of fermenting grape induce alternations of relative populations' dominances and declines with subsequent impacts on wine composition. Some mechanisms have been identified or suggested, but much remains to be done. The recent advent of inoculation with non-Saccharomyces in oenological practice, sometimes leading to inconstant results, reflects the profound gaps that exist in knowledge of the complexity of fermentation and wine microbial ecosystems. Understanding how the microbial community works is expected to provide a sound basis before using fermentation helpers and starters, taking into account the indigenous microbiota. It will also aid in monitoring and understanding native or uninoculated fermentations that rely on the complex interactions of grape, winery and fermentation biota for their aroma and flavor profile. The aim of this Research Topic was to bring together current knowledge on several key aspects of wine microorganism biology: i) Evolution / co-evolution of yeasts and bacteria in their process of domestication and adaptation to the oenological niche. ii) Mechanisms of interactions between species and strains, both on grapes and in grape must. iii) Metabolism and physiology of yeast and bacteria in interactions with each other and with the environment, considering to what extent expected objectives (typicity, lower alcohol, etc..) can be reached by using selected strains. iv) Development of novel technologies or approaches for the assessment of changes in a dynamic microbial community and the linking of such changes to wine flavor and aroma properties. v) Diversity, ecology, physiology and metabolism of *B. bruxellensis*. Damage from this spoilage agent is not effectively prevented because we do not fully understand the biology of this species, particularly in interaction with other yeast and bacteria. Each chapter presents advances in these areas of study. Research in wine microbiology, particularly in the wine microbiome and its impacts on wine composition is enhancing our understanding of the complexities and dynamics of microbial food and beverage ecosystems.

Plants have been exposed to multiple environmental stressors on long-term (seasonal) and short-term (daily) basis since their appearance on land. However, the frequency and the intensity of stress events have increased much during the last three decades because of climate change. Plants have developed, however, a multiplicity of modular and highly integrated strategies to cope with challenges imposed by novel, usually harsher environments. These strategies include migration, acclimation and adaptation. Twelve articles in this research topic exactly focus on the relative significance of these response mechanisms for the successful acclimation of plants to a wide range of novel environmental pressures. Four articles, additionally, explore how plants respond to severe stress conditions resulting from the concurrent action of multiple stressors. Ten articles mostly examine how morpho-anatomical, physiological and biochemical-related traits integrate when plants suffer from 'novel' threats, such as solid, gaseous, and electromagnetic pollutants. Suitable physiological indicators for developing conservation strategies are described in the last two works. This research topic highlights that bottom-up, as well as, top-down approaches will be necessary to develop in near future in the study of plants' responses to environmental pressures

This book covers the most up-to-date photoaffinity labeling method to tackle the key loop module involved in the binding process of a bioactive small molecule to its host protein. The book introduces rational points for preparing powerful photoaffinity probes, keys for the efficient analysis of labeled products, and recent successful applications for protein probing. Regarding drug design, the unique topics of the book are the special consideration of the crosslinking potential of recent probes and their application of important receptor proteins. This book presents emerging technologies of photoaffinity labeling to readers who are working in the fields of proteomics, molecular recognition, and drug discovery and development.

The evaluation of the presence of mycotoxins in different matrices is achieved through different analytical tools (including quantitative or qualitative determinations). Studies of mycotoxin isolation, using chromatographic equipment coupled to spectrometry detectors (QTrap-MS/MS, MS/MS tandem, QTOF-MS/MS), are the most useful tools to control their presence. All these studies represent key steps in the establishment of the limits of detection, limits of quantification, points of identification, accuracy, reproducibility, and repeatability of different procedures. The maximum permitted or recommended levels for mycotoxins in different matrices are within a wide range (including the levels tolerated by infants and animals). In addition, decontaminated strategies, as well as control and evaluation of exposure, are demanded by authorities and food safety systems. These authorities are not only concerned with the determination of mycotoxin presence but also with the toxicological effects of mycotoxins, and in vivo or in vitro assays are necessary for a complete evaluation. In fact, these assays are the basis for the control and prevention of population exposure to mycotoxins in dietary exposure studies. The most recent surveys focused on regulated mycotoxins (aflatoxins, fumonisins, trichothecenes, and zearalenones) and emerging toxins, such as enniatins and beauvericin in adult consumers, while very few studies have monitored mycotoxin levels in infant products. This Book of Toxins comprises 11 original contributions and one review. New findings regarding presence of mycotoxins in aromatic and medicinal plants, mango and orange juice, juices, pulps, jams, and beer, from Morocco, Pakistan, and Portugal are reported. In these studies, innovative techniques to study their presence has been developed, including liquid chromatography coupled with time-of-flight mass spectrometry to analyse mycotoxins and conjugated mycotoxins. Novel strategies to detect mycotoxin presence and comparisons the characteristics of a rapid quantitative analysis of different mycotoxins (deoxynivalenol, ochratoxin A, patulin, sterigmatocystin, and zearalenone) are also presented using acetyl- and butyrylcholinesterases and photobacterial strains of luminescent cells. Additionally, toxicological effects of zearalenone metabolites and beauvericin on SH-SY5Y neuronal cells are presented. One important point in the control of mycotoxins is related to decontaminated strategies, and in this sense the efficacy of potentially probiotic fruit-derived *Lactobacillus* isolates in removing aflatoxin M1 (AFM1) is presented. Other mycotoxin decontaminated techniques included in this book are electron beam irradiation (EBI) and degradation of zearalenone and ochratoxin A using ozone. Finally, a review that summarizes the newly discovered macrocyclic trichothecenes and their bioactivities over the last decade is included.

Human milk is uniquely tailored to meet infants' specific nutritional requirements. However, it is more than just "milk". This dynamic and bioactive fluid allows mother–infant signalling over lactation, guiding the infant in the developmental and physiological processes. It exerts protection and life-long biological effects, playing a crucial role in promoting healthy growth and optimal cognitive development. The latest scientific advances have provided insight into different components of human milk and their dynamic changes over time. However, the complexity of human milk composition and the synergistic mechanisms responsible for its beneficial health effects have not yet been unravelled. Filling this knowledge gap will shed light on the biology of the developing infant and will contribute to the optimization of infant feeding, particularly that of the most vulnerable infants. Greater understanding of human milk will also help in elucidating the best strategies for its storage and handling. The increasing knowledge on human milk's bioactive compounds together with the rapidly-advancing technological achievements will greatly enhance their use as prophylactic or therapeutic agents. The current Special Issue aims to welcome original works and literature reviews further exploring the complexity of human milk composition, the mechanisms underlying the beneficial effects associated with breastfeeding, and the factors and determinants involved in lactation, including its promotion and support.

Analysis of Pesticide in Tea: Chromatography-Mass Spectrometry Methodology is a comprehensive book, providing serial, rapid, high-throughput analytical methods for determining more than 600 pesticides

in tea. There are increasing numbers of strict limit standards for pesticide residues in edible agricultural products in countries all over the world. The threshold for pesticide residues in tea is high for international trade. At present, 17 countries and international organizations have stipulated MRL levels for over 800 pesticide residues in tea. All methods described in this book are validated by an independent, U.S.-based organization (AOAC International), and all indexes have satisfied AOAC International's criteria. China has a history of 5000 years in growing tea and is a large tea producer with 80 million people involved in tea growing. China exports tea to over 100 countries worldwide, enjoying a high reputation for quality and variety. Covers a wide range of research activities that are highly appropriate to current research methods Reflects the most recent research in nearly all cases, providing an excellent compilation of feasible methods needed for official analysis Describes methods that are internationally validated by an independent, U.S.-based organization (AOAC International) Authored by Dr. Pang, who is internationally recognized in the area of pesticide residues and other contaminants in foods

This book discusses theoretical approaches to the taxonomy of biological systems and theory and mathematical approaches to the problem of plant diversity, cultivation, and the environment. Particular attention is given to theoretical and practical problems of soil and the environmental sustainability of phytocoenosis, with the goal to enhance the productivity of agricultural crops: cereals, legumes, vegetables, and fruit. Providing valuable information on the distribution of chemical elements in the soil–plant system and on the migration of chemical elements in the food chain, this book looks at the composition of the soil and the distribution of elements in the soil–plant system that are manifested as adaptations of plant organism to environmental conditions. With chapters written by acknowledged scientists in the field of genetics, plant selection, ecology, and agro-economy, the book attempts, in many cases, to find consensus between the need to address ways to decrease the excess load on the environment and the need to provide adequately for the human population in agro-developed countries. This book also presents precision farming techniques, including the introduction of differentiated agrochemicals and considering variability of soil fertility and crop conditions. An important element for the conservation and adaptation of plant organism to environmental conditions is the use of physiologically active compounds.

For the past 40 years, metal-based drugs have been widely used for the treatment of cancer. Cisplatin and follow-up drugs carboplatin (Paraplatin™) and oxaliplatin (Eloxatin™) have been the gold standard for metallodrugs in clinical settings as antineoplastic agents. While effective, these drugs (either alone or in combination therapy) have faced a number of clinical challenges resulting from their limited spectrum of activity, high toxicity leading to significant side effects, resistance, poor water solubility, low bioavailability and short circulating time. In the past 10 years, various unconventional non-platinum metal-based agents have emerged as a potential alternative for cancer treatment. These compounds are highly effective and selective in cancers resistant to cisplatin and other chemotherapeutic agents. Research in this area has recently exploded with a relevant number of patents and clinical trials, in addition to reports in scientific journals. Furthermore, in parallel to the synthesis of coordination and organometallic compounds comprising many different metals and unconventional platinum-based derivatives, researchers are focused on optimizing mechanistic and pharmacological features of promising drug candidates. This Special Issue aims to highlight the latest advances in anticancer metallodrugs with a focus on unconventional anticancer agents, as well as novel activation, targeting and delivery strategies aimed at improving their pharmacological profile.

Many things have been said and written on the skeletal and non-skeletal effects of vitamin D, but the largest recent interventional studies are generally negative. How should we thus position ourselves in 2020? Should we say “stop” or “not yet”? Indeed, the aging of the population, as well as new challenges and discoveries, is still triggering interest in this old molecule. In this Special Edition of Nutrients, we invited top experts to give their opinion on this important debate. We also encouraged scientists to submit their latest research on nutritional requirements in the general population and in high-risk groups, as well as treatment strategies, epidemiology, analytical updates and new devices for vitamin D measurement and the effect of vitamin D on bone and extra-skeletal health. As readers will see, this Special Issue reinforces the high prevalence of vitamin deficiency and insufficiency in the general population and supports the safety of this low-cost molecule, revealing new perspectives regarding the extra-skeletal effects of vitamin D.

Lysosomes are key subcellular organelles that regulate the cell function. Many of the essential activities of the cell are dependent on lysosomes. Dysfunction is linked to multiple diseases - storage disorders, neurodegeneration, immunological diseases and cancer. This book discusses concepts and methods used to study lysosome ion and small molecule transport. The contents will not only attract accomplished investigators in need of a broad review and synthesis of this important subject but will also appeal to young investigators and trainees needing to acquire comprehensive knowledge and technical skills working with lysosomal ion channels and small molecule transporters. Key selling features: Summarizes the endocellular role that lysosomes play with respect to cellular waste disposal Reviews essential cellular functions of lysosomes Explores how lysosome dysfunction is the cause of many metabolic disorders Examines how lysosomes are involved in storage diseases Describes various technologies and methods used in lysosome research

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