

Uncovering the Chemical Benefits of Medicinal Plants and Functional Foods Presents New Challenges and Untold Opportunities

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Many beneficial plants recognized as having medicinal properties or as producing aromatic compounds of interest produce a complex array of substances, some of which have recognizable benefits, but many of which have extended physiological effects in animal systems, the basis of which is little understood. Introduction of the new, open access journal "Medicinal and Aromatic Plants" by the OMICS Publishing Group recognizes the rise in popularity of herbal medicine, functional foods and nutraceuticals in society today, and the demand by consumers to provide well documented and substantive scientific proof of benefits attributed to these plants and their constituents [1]. Researchers in the area are being drawn to examine the complexities of secondary metabolites, response to stress, environmental adaptation, and plant diversity in an effort to confirm and/or negate quality of the plants used and suitability of the many herbal remedies and functional foods currently available [2,3].

Development of rapid, high throughput approaches to DNA sequencing, and use of microarrays to profile synthesis and regulation within plants, is providing new tools that promise to increase our knowledge of how living systems work. Our ability to assess increasing amounts of information on DNA composition of related species is allowing better insight into their evolutionary origins and regulatory processes, and precipitating new questions relating to variation in developmental programming, regulation of transcription and translation, as well as the genetic basis of variation in phenotypic expression in response to environment. In addition, epigenetic contributions to hard wired genetic traits, as well as post transcriptional and post translational modification to regulation of synthetic processes, are opening the door to a new understanding of the diversity of life and potential applications of these plants. This flood of new information is generating many new challenges, not only in processing of the volumes of data involved, but in conceptualization of the mixed processes and biochemical pathways.

Genomic, proteomic and metabolomic studies are expanding our horizons, and providing us with new opportunities to explore large aggregates of information in new ways that challenge our imaginations, and are opening doors to new ventures in business and industry. We are being challenged to develop new approaches to analyze large data sets and mathematical tools that will allow us to dissect, visualize and come to a better understanding of collective biological "interactomes" that are likely to provide critical information on environmental adaptation and have potential to reveal new cures for disease, and may lead to a healthier life [4].

In a climate of limited funding and resources, it is becoming even more important to have open access to information that can provide widespread input on ideas, and facilitate collective contributions to our understanding of these complex systems. We invite researchers to seriously look at the challenges presented by the study of medicinal and aromatic plants, and to frequent publications within this journal as a way of discovering the benefits that these plants offer and the academic if not business opportunities they present. Let us embrace the challenges and be imaginative as we look at the opportunities presented.

References

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