

## Phytochemistry and Functional Food: The Needs of Healthy Life

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Getting nutrients for the physical activities, growth, and maintenance of body from food is essential for all of the living organisms. Human being continues to increase its knowledge and understanding about the food and their role in maintaining and optimizing health. It is well-established now that intake of nutrients in appropriate quantity is essential for a healthy life. Certain nutrient becomes essential to be taken up under a particular deficiency condition or for a specific purpose/gain. However, for the benefits to be gained/validated or the claims to be made, a strong and reliable regulatory framework is required based on the scientific evidence. For the functional food to deliver its potential health benefits, the product must contain the ingredients in the quantity and form described in the health statements and claims. With the scientific and technological advancements in the fields of health and nutrition, increasingly more focus is directed toward personalized nutrition or nutrigenomics. Although increasing the availability of healthy foods has become a necessity in today's world, the regulatory framework is needed to protect consumers' right. Making the consumers aware of the health benefits of functional foods available in the market is critically important. Food is inevitable for living organisms, and humankind has always been interested in search and research on food materials. Ever since the domestication of plants, considerable progress has been made in agriculture due to the behavioral/social changes in human being from food gathering to farming. Domestication followed by the selection of plants with desirable traits, breeding varieties for higher yield, tolerance to abiotic & biotic stresses, better quality and nutrition, and the technological advancements have enabled a significant increase in food grain production. Global population is expected to reach 9 billion by 2050. This increase (2 to 3 billion people) in global population over the next 35 years

would require increasing the food production by 70%. To feed the ever-growing population, we need to produce more food and feed from less per capita arable land, water, and other natural resources availability of which is shrinking day-by-day. Providing ample food and feed to the global populations is only the preliminary challenge; the major challenges would be to produce these in a safe and sustainable manner under the increasingly unfavorable environmental conditions. The global climate change is resulting in adverse climatic conditions which not only affect the productivity of crop and animal husbandry but the quality of the produces is also affected adversely. In the present century, we must not only bother about producing sufficient food to fill the stomach of burgeoning global population but also to produce nutritious foods to provide a healthy diet to the population. This is why phytochemistry and functional foods have become important areas of research and development.

The Scientific community continues to understand the potential of foods and their role in maintaining and optimizing health. However, the strong and reliable body of scientific research is needed to confirm the health benefits of a particular food/component, and effective and efficient regulatory network would be required for the functional foods to be produced and delivered to the public for potential health benefits. There are opportunities for research in nutritional science to establish a convincing relationship between a food or a food component and an improved state of health, well-being or reducing the risk of disease. This presents a great challenge to the scientists in enabling the consumers to adopt functional food now and nutrigenomics in the future. Communication with the potential consumers about the health benefits is also critically important so that they have the knowledge to make informed choices of the foods they eat, enjoy, and those available in the market which can be used for specific purposes.