

FUNCTIONAL FOODS: TECHNICAL, INSTITUTIONAL AND MARKET INNOVATION

Nicholas Kalaitzandonakes¹

In recent years, nutraceuticals and functional foods have become part of our vocabulary and, increasingly, part of our menu. Derivatives of cranberries, tomatoes, soybeans and oats have been connected to specific health benefits, from prevention of particular cancers to reduction of blood cholesterol. Generic food products have been supplemented with healthful ingredients (e.g., orange juice fortified with calcium and vitamins). New branded food products with explicit health claims have also been introduced in the market, including yogurt and fermented drinks with probiotic bacteria that improve digestion, and margarines that lower blood cholesterol.

Such market developments follow an explosion in scientific and technical advances that, among other things, have begun to clarify the link between nutrition and healthful living. Biotechnology is playing a key role in these developments. For one, biotechnology research is helping clarify the function of genes and their contribution to health and disease. For another, it is elucidating the role of food nutrients on metabolic functions and therefore on disease and health. Biotechnology is also providing the tools for customizing the nutritional/antinutritional factor content in foods, thereby enhancing their positive effects on the physiological functions of the human body. In this issue, Burn and Kishore explain in some detail these developments and provide specific examples of research on "food as medicine."

Linking food and natural ingredients to health impacts is, of course, not novel. For centuries, experiential knowledge distilled and passed on from one generation to the next has pointed to such linkages, often with success. Scientific discoveries, however, significantly improve on traditional experiential knowledge development. Structured scientific methods increase the rate of new knowledge accumulation and improve its accuracy. Furthermore, scientific discoveries focus on the bioactive molecular components of food rather than on whole foods. In this way, the content of important bioactive ingredients (or vitalins as Burn and Kishore propose) may be increased, decreased or stabilized for improved "functionality" and health impacts.

As with any radical technical innovation, institutional innovation must follow. In the case of nutraceuticals, regulations must be adapted or renewed to minimize risks and protect consumers from dubious claims. This is particularly important for nutraceuticals and functional foods

¹ *Nicholas Kalaitzandonakes is an Associate Professor of Agribusiness in the Department of Agricultural Economics at the University of Missouri-Columbia and the Editor of AgBioForum. © 2000 AgBioForum.*

whose healthful qualities can not be assessed directly by the consumers. Governments must also decide on the degree of intellectual property protection that will be allowed to such new product concepts and underlying discoveries. Socially optimal schemes of intellectual property right protection must provide incentives for increased discovery and allow for equitable distribution of benefits among the producers and consumers of food and knowledge. At the same time, all relevant institutional changes must succeed in their objectives without imposing undue private or public costs and inefficiencies. In this issue, Unnevehr and Hasler describe the evolution of the United States (U.S.) regulatory framework, which was designed to facilitate timely approval of health claims and relevant labeling for foods with functionality. In their review, they point to inherent challenges in such evolution.

Many consumers seem interested in the concept of nutraceuticals and functional foods. They generally recognize the linkage of nutrition and health and are willing to adjust their diet in order to improve personal health. As populations in developed countries have continued to grow more affluent, older and more health-conscious, interest in healthful diets has continued to increase. In this issue, David Schmidt provides multiyear empirical evidence, from focus groups and survey research, on consumer attitudes towards health and nutrition as well as on consumer understanding of functional foods. Schmidt points to the informational challenges confronting functional foods and suggests relevant communication strategies.

Not all consumers are equally well informed about the specific linkages of nutrition and health or about functional foods. Similarly, not all consumers are equally interested in actively pursuing a "healthful" diet even when they do have access to relevant information. Individual attitudes towards food, nutrition and health along with demographic factors are key influences of food consumption patterns and market demand for functional foods. Within this context, food and drug companies involved in the development and marketing of functional foods must match an unarticulated and emergent consumer demand with their product development capabilities. Furthermore, they must position functional food products to relevant consumer segments and devise effective branding and distribution strategies. In this issue, Linda Gilbert discusses the attitudes of specific demographic segments in the U.S. towards nutrition and functional foods, and, their implications for relevant marketing strategies.

Over the last few years, there have been both notable successes and failures in market introductions of functional foods around the globe. This pattern will likely continue in the short run as consumers, producers and regulators move up the learning curve. In this transitional period, institutional and market innovation may be as important as technical innovation itself for leveraging the potential of functional foods.