

What you need to know about...

New Food Words — Phytochemicals, Functional Foods, and Nutraceuticals

Recent scientific research has focused on food components that have possible health benefits beyond traditional nutritional value. Scientists and food manufacturers have coined several terms to describe these physiologically active components and the foods that contain them.

It is easy to be confused by the number of terms and the various definitions that are used, sometimes interchangeably, in this emerging field. No legal, universally-accepted definitions for functional foods or nutraceuticals exist in the United States. The following definitions are currently commonly accepted.

Phytochemical

“Phyto” comes from the Greek word for plant. “Phytochemical” could refer to every naturally-occurring chemical in plants. In practice, however, nutritionists use “phytochemical” to refer to naturally-occurring components of plants that have physiological effects in humans. Phytochemicals might prevent or delay chronic degenerative diseases and enhance human health. One group of plant chemicals is called “phytoestrogens” because they act like human estrogens. Phrases like “chemopreventive agents” are sometimes used to describe phytochemicals thought to reduce risk for certain types of cancer. Because most of the components currently of interest for

health maintenance and disease prevention are found in plants, general terms like “functional foods” are sometimes used interchangeably with “phytochemicals.”

Here are three examples of phytochemicals.

Genistein—a component of soy associated with reduced risk of breast cancer

Lycopene—a vitamin-A-like compound found in tomatoes and associated with reduced risk of prostate cancer and heart disease

Catechins—compounds found in green tea that may reduce risk for cancer and heart disease

Functional food

This is a generic term for foods that have been linked to health benefits. The Institute of Medicine’s Food and Nutrition Board¹ has defined functional foods as “any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains.” While most research and food product development efforts have focused on plant foods, several physiologically-active components in foods from animal sources also are being studied. Thus, functional foods can be from either plant or animal sources.

The concept of functional foods has somewhat different connotations in different countries. In Japan, for example, functional foods are defined based on their use of natural ingredients. In the United States, however, the functional foods concept can include ingredients that are products of biotechnology.

Nutraceutical

One definition of nutraceutical is any substance that may be considered a food or part of a food and provides medical or health benefits, including the prevention and treatment of disease. Under this broad definition, nutraceuticals might be isolated nutrients like vitamin E; dietary supplements of any kind; processed foods; herbal products; or genetically engineered foods. While some individuals and groups use nutraceutical as an umbrella term, others restrict the meaning to isolated active compounds or dietary supplements.

The International Food Information Council² commissioned focus group studies with consumers in 1996 and 1997 to assess awareness and acceptance of functional food concepts, gauge reaction to current and potential sources of functional components, and evaluate reactions to terminology. While participants showed high awareness of the concept of functional foods, they also were confused as to what is or

is not considered a functional food. Consumers in these studies preferred the term “functional food” over alternatives such as “designer foods,” “pharmafoods,” “nutraceuticals,” or “phytochemicals.” The study suggested that while classifying foods with functional characteristics may be important to food manufacturers and others within the food industry, these terms are not necessary for consumer acceptance of the new products. The studies indicated that consumers accept information on functional foods as long as it is backed by credible sources and sound science.

In the United States functional foods or nutraceuticals are not regulated as such because they are not legally defined product categories. The federal Food and Drug Administration (FDA) regulates functional foods under the rules applying to conventional foods while dietary supplements are regulated under the provision of the Dietary Supplement Health and Education Act. The boundaries between conventional foods and dietary supplements can sometimes seem confusing because dietary supplements can be marketed in food form as long as they are labeled as a dietary supplement and not represented as a conventional food.

Summary

The list of food components that may protect human health has grown rapidly in the past decade; however much more research is needed to understand

- the health benefits that these components can offer,
- how these benefits can be delivered in foods,
- safe amounts of the components, and
- potential interactions among the foods, components, and prescribed and over-the-counter drugs.

Future research should clarify which foods or groups of foods play particular roles in health maintenance; for example, why eating fruits and vegetables is associated with reduced chronic disease.

Meanwhile, the important message for consumers continues to be that there are no magic foods that will make up for an otherwise poor diet or other poor health behaviors such as smoking or lack of exercise. Knowledge of the positive effects of foods on health is evolving, and care must be taken not to over-promote based on potential, but as yet unproven, health benefits.

For additional information

Check these Internet sites.

American Dietetic Association position paper
www.eatright.org/aphytochemicals.html

Institute of Food Technologists scientific status summary paper
www.ift.org/resource/index.html

Guide to Dietary Supplements
www.extension.iastate.edu/nutrition/supplements

Check these publications.

All are available from ISU Extension county offices and on the ISU Extension publications page:
www.extension.iastate.edu/Pages/pubs

PM-1790 *What You Need to Know about Health Claims on Foods*

PM-1855 *The Health Value of Fruits and Vegetables*

PM-1798 *What You Need to Know about the Health Benefits of Functional Foods*

¹ *The Institute of Medicine's Food and Nutrition Board* is an agency of the National Academy of Sciences, which was founded by Congress in 1863 to advise the government on scientific and technological matters.

² *The International Food Information Council* is a non-profit organization founded in 1985 whose mission is to communicate science-based information on food safety and nutrition. Supported by the broad-based food, beverage, and agricultural industries, this organization does not represent any one product or company.

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