

Functional Foods: Benefits, Uses, Types of Functional Foods

Anam Aijaz

Ph.D scholar, SKUAST – K, Shalimar Srinagar

*Corresponding Author: adaaaajaz@gmail.com

Functional foods are the food industry's response to the consumer's demand for foods that are both attractive and healthy. Healthy diets offer a number of proven benefits: epidemiological and clinical studies show that a diet rich in fruits, vegetables, unrefined grains, fish, and low-fat dairy products, and low in saturated fats and sodium can reduce the risk of coronary heart disease and hypertension and perhaps even of some types of cancer. Some people have changed their diet accordingly, and have benefited from it with a much lower risk of heart disease. However, for most consumers it is a struggle to meet dietary guidelines. This is where industry steps in with special foods that promise to improve health and well-being with less effort and sacrifice.

What are functional foods?

Functional foods are ingredients that offer health benefits that extend beyond their nutritional value. Some types contain supplements designed to improve health. The concept originated in Japan in the 1980s when government agencies started approving foods with proven benefits in an effort to better the health of the general population. Some examples include foods fortified with vitamins, minerals, probiotics, or fibre. Nutrient-rich ingredients like fruits, vegetables, nuts, seeds, and grains are often considered functional foods as well. Oats, for instance, contain a type of fibre called beta glucan, which has been shown to reduce inflammation, enhance immune function, and improve heart health.

Examples of functional foods

Functional foods are generally separated into two categories: conventional and modified. Conventional foods are natural, whole-food ingredients that are rich in important nutrients like vitamins, minerals, antioxidants, and heart-healthy fats. Meanwhile, modified foods have been fortified with additional ingredients, such as vitamins, minerals, probiotics, or fibre, to increase a food's health benefits. Here are some examples of conventional functional foods:

- Fruits: berries, kiwi, pears, peaches, apples, oranges, bananas
- Vegetables: broccoli, cauliflower, kale, spinach, zucchini
- Nuts: almonds, cashews, pistachios, macadamia nuts, Brazil nuts
- Seeds: chia seeds, flax seeds, hemp seeds, pumpkin seeds
- Legumes: black beans, chickpeas, navy beans, lentils
- Whole grains: oats, barley, buckwheat, brown rice, couscous
- Seafood: salmon, sardines, anchovies, mackerel, cod
- Fermented foods: tempeh, kombucha, kimchi, kefir, sauerkraut
- Herbs and spices: turmeric, cinnamon, ginger, cayenne pepper
- Beverages: coffee, green tea, black tea. Here are some examples of modified functional foods:
- fortified juices
- fortified dairy products, such as milk and yogurt
- fortified milk alternatives, such as almond, rice, coconut, and cashew milk
- fortified grains, such as bread and pasta
- fortified cereal and granola

Benefits of Functional Foods

Functional foods offer various potential health benefits that can help prevent nutrient deficiencies and promote overall well-being. These foods are typically rich in essential nutrients such as vitamins, minerals, healthy fats, and dietary fiber. Incorporating a diverse range of functional foods into your diet, both conventional and fortified options, can ensure you receive the necessary nutrients, safeguarding against deficiencies. Fortified foods, have played a significant role in reducing nutrient deficiencies on a global scale. For instance, the

introduction of iron-fortified wheat flour in Jordan drastically lowered the rates of iron deficiency anaemia among children. Fortification has been instrumental in preventing other conditions resulting from nutrient deficiencies, including rickets, goiter, and birth defects. Many functional foods are abundant in antioxidants, which help combat harmful free radicals, shielding cells from damage and reducing the risk of chronic conditions like heart disease, cancer, and diabetes. Some are excellent sources of omega-3 fatty acids, a type of healthy fat known to reduce inflammation, enhance cognitive function, and support heart health. Others are high in dietary fibre, which can improve blood sugar control and protect against various conditions, including diabetes, obesity, heart disease, and stroke. Fiber may also reduce the risk of digestive disorders like diverticulitis, stomach ulcers, and acid reflux. For infants and children, proper growth and development require specific essential nutrients. A diet rich in nutrient-dense functional foods ensures these nutritional needs are met. Additionally, fortified foods with specific nutrients like B vitamins, such as folic acid, are crucial for growth and development. Folic acid is essential for fetal health and can significantly reduce the risk of neural tube defects. Other vital nutrients found in functional foods, including omega-3 fatty acids, iron, zinc, calcium, and vitamin B12, play pivotal roles in supporting proper growth and development in children.

Uses

A well-rounded, healthy diet should be rich in a variety of functional foods. These foods not only supply your body with the vitamins and minerals it needs but also support overall health. Fortified functional foods can also fit into a balanced diet. In fact, they can help fill any gaps in your diet to prevent nutrient deficiencies, as well as enhance health by boosting your intake of important nutrients like vitamins, minerals, fibre, heart-healthy fats, or probiotics. The bottom-line Functional foods are a category of food associated with several powerful health benefits. They can not only prevent nutrient deficiencies but also protect against disease and promote proper growth and development.

Types of functional foods

1. **Fortified product:** A diet that's fortified with extra nutrients. Example's; Fruit juices fortified with vitamin C.
2. **Enhanced product:** A food that has new nutrients incorporated that are not usually present in a specific food. Example's; Margarine with plant sterol ester, probiotics, prebiotics.
3. **Modified product:** A food that has extracted, reduced or replaced a deleterious component with another substance with beneficial effects. Example's; Fibre's as fat releasers in meat and ice-cream products.
4. **Unaltered product:** Foods that naturally contain an increased nutrient or component content. Example's; Natural foods.
5. **Upgraded product:** A food that has been naturally improved by one of the components by unique growing conditions, new feed composition, genetic handling or in other ways. Example's; Eggs with increased Omega-3 content achieved by altered chicken feed.

Can functional foods promote health?

Functional foods, while often more expensive than regular options, can be justified if they promote health. They hold the potential to fund nutrition research, similar to how pharmaceutical profits support drug development. The food industry possesses the expertise to create healthy foods that cater to consumer preferences, making them more likely to sell.

A successful model of industry-sponsored research is the development of foods enriched with plant stanols or sterols, which can lower LDL cholesterol levels. Functional foods can also assist consumers in meeting recommended dietary intakes, addressing nutrient deficiencies, and promoting public health. For example, iodized salt has been a successful public health initiative in India, eradicating goitre and other iodine deficiency disorders. However, the list of functional foods with proven health benefits remains relatively short, and many foods with health claims lack scientific validation. Safety concerns are growing, particularly with the

indiscriminate addition of botanicals to foods. Some herbs, such as *Hypericum perforatum*, can interact with drugs, raising safety issues. The FDA and other regulatory bodies have issued advisories and recommendations regarding the safety of functional foods, urging the development of clear regulations and safety information requirements for food labels. The border between foods and dietary supplements can be blurry, and some structure/function claims for dietary supplements remain unregulated. These claims can be misleading and may not require as much scientific evidence as explicit health claims.

Regulations need to be clearer and more stringent, ensuring that claims on functional foods are accurate and safe. Although the food industry can benefit from the sales of these products, the priority should be the health and safety of consumers. Proper legislation and oversight are essential to establish trust and protect public health in the functional food industry.

Regulation of functional foods

Many countries have established regulations to protect consumers from misleading health claims on food products. The United States and the European Union, for example, prohibit claims that foods can cure diseases, although the U.S. allows claims that foods can reduce the risk of disease. In Europe, stating that nutrients reduce disease risk is presently illegal, but this is under reconsideration. The distinction between foods and dietary supplements is sometimes blurry. In the U.S., dietary supplements can carry unregulated structure/function claims, which are largely the responsibility of manufacturers for accuracy. This has raised concerns about the limited evidence required for supplement claims. Both the U.S. and European Union are moving towards allowing claims for foods to reduce disease risk factors, subject to evaluation by appropriate authorities. The EU's system for nutrition and health claims is complex, with varying rules among member states. In all these regions, "nutrient content" and "structure-function" claims are allowed, requiring less evidence than explicit health claims. These claims can be misleading to consumers. Manufacturers may use these claims to reposition unhealthy foods as healthy, which can lead

to misunderstandings. The existing regulations leave room for misleading health claims, and some companies may exploit this ambiguity. While some responsibility falls on the industry, regulatory systems need to be clearer and more stringent. In contrast, mandatory food fortification measures are based on solid research, are well-regulated, effective, and safe, and reach the entire population, unlike functional foods, which may be accessible primarily to specific demographics.

What evidence should we demand for functional foods?

Well-established systems for evaluating health claims in food exist in various countries, such as the "Significant Scientific Agreement" criteria in the United States, the Dutch Code of Practice, and the UK Joint Health Claims Initiative. These evaluations should be mandatory for any claims, explicit or implied, that a food promotes health.

The criteria for assessing the safety and effectiveness of functional foods don't need to be as strict as those for drugs, given the fundamental difference between food ingredients and pharmaceuticals. Food components have been part of the human diet for centuries. Research often involves studying associations between diet and health in populations, generating leads for health-promoting foods. However, controlled experiments are also necessary to demonstrate a functional food ingredient's effectiveness and safety, particularly for less common components or higher dosages.

Clinical trials showing disease reduction in humans (phase III trials) are sometimes deemed expensive, but the food industry could afford them, provided the results benefit sales or profit margins. Governments can play a role in incentivizing research by offering the prospect of health claims if trials are successful, not exclusively to the funding company. This encourages competition and research collaboration.

Proper legislation is crucial to ensure the success of evidence-based functional foods. If a claim is scientifically validated, manufacturers should be

allowed to advertise it. Conversely, false claims should be subject to legal action. This framework promotes the development and promotion of genuinely beneficial functional foods while protecting consumers from misleading claims.

Do functional foods have a future?

On a short-term basis, functional foods do have a future. There is plenty of demand. In 1999, United States consumers spent about \$15 billion for dietary supplements and \$16 billion for functional foods. However, the system for ensuring the validity

of health claims in the United States is eroding, and regulations in most of the rest of the world are even weaker. As a result, consumers are exposed to unfounded claims and allusions to health benefits of foods and supplements. But, that is not a solid basis for long-term commercial success. Sooner or later, consumers will realize that they have been misled. This may explain why the sales of dietary supplements in the United States have seen some decline since their peak years of the mid late 1990s. If governments do not set clear and strict standards for efficacy and safety of functional foods, then the field has no real future.

* * * * *