

# Functional foods: a taste for success

The market for functional foods that make specific health claims is expected to grow rapidly in the next few years. However, food processors must resist the temptation to try and make all foods functional.

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**F**unctional foods are considered to be a major potential growth area for the food industry. The market is currently estimated to be worth in excess of €3.3bn in the major European countries.

The commonly accepted areas for functional food development include food solutions for heart, bone and gut health and immune system enhancement. However, a number of new areas of development are emerging, including women's health, and mental and cognitive function. The major areas being targeted by diet-related health claims include: probiotics and intestinal health; calcium and bone health; saturated fats; soya and cholesterol reduction; wholegrains; and heart health.

It is important that health claims are supported by evidence, and that the claims are understood by consumers. But it is also essential that functional food products taste good and are easily consumed.

## Health and food: making the link

There is a long tradition of manufacturers making health claims for their foods, particularly in Europe and the USA. However, occasionally, these claims were unjustified. For example, there was little evidence for the 'Guinness is good for you' type claims made by food and drink advertising in Victorian times.

The process of establishing a scientific link between food and health in the West probably started with the work of investigators into the action of vitamins. As the twentieth century proceeded, it became clear that foods contained not only protein and energy, but also a variety of other compounds essential to health.

In 1912, Casimir Funk proposed his theory of vitamins. The basis of his theory was that foods contained four different vitamins, which could be used to cure four diseases: scurvy, pellagra, beri-beri and rickets. The theory suggested that a lack of certain food components in the diet, rather than infections, caused some human diseases. This was a radical change in thinking, which suggested that dietary components have a direct function in the prevention of disease and that there is a direct

correlation between the lack of a specific nutrient in the diet and the development of disease. Funk's empirical approach has since come to dominate nutrition policy-making throughout Europe.

## Optimal nutrition

The concept of optimal rather than essential nutrition has been slow to catch on. After all, there were regular periods in the last century when even developed countries experienced a lack of adequate food – during the Great Depression in the USA, for example, when malnutrition was commonplace. However, the situation has been transformed over the last 30 years or so.

Perhaps the key moment for the idea of optimal nutrition was the publication of 'The Causes of Cancer' by Doll and Peto in 1981. They suggested that it might be possible to reduce US cancer deaths by 35 per cent through dietary means.

Many major European initiatives on diet and health have been undertaken under the sponsorship of the EU. Recently, the PASSCLAIM project assessed the scientific evidence for the health claims being made for foods. The basic premise was that there are essentially two types of claim: the 'enhanced function' claim and the 'reduced risk of disease' claim. The PASSCLAIM project examined how claims can be best substantiated and which markers can be used to support claims.

## A balanced approach

Traditionally, the scientific approach to supporting health claims identifies the bioactive ingredients in foods and seeks proof of their efficacy in maintaining and improving health. A typical approach begins with an observation concerning a possible health benefit based on epidemiological studies or even folk medicine. The next stage would be to confirm the claim and establish the active ingredient(s) using cell culture, animal and, ultimately, human experiments. Once the claim is established, the next stage is normally to find a suitable food to which the healthy ingredient can be added. Finally a product is developed, which is subjected to sensory analysis.

The problem with this approach is that bioactive food ingredients often have sensory characteristics associated with them. They will almost certainly be present in foods at concentrations above taste or sensory thresholds, and food consumers will be aware of unfamiliar sensory characteristics. Even simple adjustments, such as the addition of calcium to fruit juice, can have a deleterious effect on a product. In such circumstances, the sales pitch for the food has to concentrate on its health improving properties. But if consumers are unable to identify with the 'enhanced function' or 'reduction in disease risk' claim, the product will almost invariably fail.

A second problem is consumer perception and awareness. Perhaps this is best illustrated by considering the relative properties of a functional milk product in different formats. If a milk-based product such as yoghurt containing added *Lactobacillus* culture is sold as a product for improving gut health, the concept of the product is not particularly difficult to explain. A chocolate milk product making the same claim is a much less plausible idea, simply because of the association of chocolate with indulgence. It is the juxtaposition of health claims and product perceptions that lies at the heart of the problem promoting functional foods.

In future, companies will increasingly be required to have their food health claims approved. In the EU, voluntary national codes of practice on health claims have now been superseded by new EU regulation on nutrition, which sets out an agreed list of generic health claims. Innovative health claims have to be submitted to, and approved by, an expert group under the new European Food Safety Authority.

### Product-led functional food development

If manufacturers are to develop functional foods with an acceptable market share, they must work on all the attributes of the product. The first thing they must do is define the product in terms of its functional claims.

Products such as Benecol and Flora pro-activ, which contain plant sterols or stanols that help reduce blood cholesterol, can be easily defined in terms of their function. There is a long-standing association between margarine products and cardiovascular health, and the debate over the health benefits of monounsaturates and polyunsaturates has been going on for long enough for many people to accept the idea that margarines can promote heart health. Furthermore, consumers accept the basic premise that cholesterol causes heart disease. As a result, the addition of plant stanols and/or sterols to margarine to reduce LDL-cholesterol concentrations in the blood sounds like a good idea to the consumer.

### Targeting issues

A major factor in the successful development of functional foods is finding the target consumer. Several studies have indicated that the primary target should be women with families, since they appear to be the group most receptive to health products.

Products targeted specifically at peri- and post-menopausal women appear to be most successful. Recent studies have indicated that phytoestrogens derived from soya are able to prevent bone loss in post-menopausal women, and that soya isoflavones have a role to play in alleviating the symptoms of menopause. Supplementation of milk or cereal bar products would appear to be a useful approach, and a number of companies have developed bread products for women containing soya, most recently Warburtons with its Good Health Loaf for Women. Products aimed at women for improving skin health are also starting to appear.

### Confectionery: a sticky problem

It is uncertain to what extent food products such as confectionery, which are not currently associated with health, can be made functional. The main health focus in this category to date has been on developing products that are 'less bad', usually by being sugar free. However, there is an increasing interest in functional confectionery, and it has been estimated that the global market will be worth \$7bn by 2004. Typical products include herbal sweets, prebiotic toffees and St John's Wort lollipops.

Interestingly, a number of functional medicated lines have begun to appear, including products containing prebiotics and added vitamins. Another functional ingredient being added to confectionery – particularly in the medicated and cold remedy area – is zinc, which has been linked with an enhancement of the immune system.

Other products have tended to stick with the tried and tested approach of supplementation with vitamins and minerals. There is also a growing focus on adding herbal ingredients to chocolate to boost energy levels and mental performance, the most recent example being the relaunch of Cadbury's Boost bar with guarana and glucose.

There is increasing interest in components such as polyphenols, but the link between chocolate or confectionery and energy, mood and cognition would appear to be the best route for this sector. The proposed new regulation on nutrition and health claims is currently proposing to prohibit behavioural/cognitive claims and introduce compositional criteria – particularly in relation to the sugar, fat and salt content – for products that make nutrition and health claims. This would, of course, mean that functional confectionery-type products would probably be unable to carry health claims.

### The functional future

Currently, it looks as if nutrition and health claims are unlikely to be permitted on products such as chocolate or confectionery, so other routes may need to be explored, such as promoting the health benefits of the added ingredients. The key thing is that scientists, producers, consumers and legislators act in partnership to determine how best to present functional foods to maximise both the financial and health benefits. ❖