

FOOD GETS FUNCTIONAL

Consumers are now looking for more from their food than basic nutrition: they want health and vitality too. And as *Food Processing Intelligence* discovers, a growing number of food producers are happy to oblige.

Food processing companies are under constant pressure to innovate. Some consumers want healthier products. So they choose 'natural', 'low-fat', 'low-sugar' or 'reduced-cholesterol' versions of their favourite products. Other consumers now want their everyday foods to provide them with extra vitamins and minerals or even ingredients that will improve their complexions or help their digestion.

Until relatively recently, consumers were happy to find these benefits in the form of pills or herbal remedies. Today the food processing industry is trying to provide these enhancements in their food products while ensuring that the taste and texture of the foods and drinks that incorporate them are not compromised. These enhanced foods are known as functional foods and their health improving ingredients are termed nutraceuticals.

ADDING FUNCTIONALITY

The ageing populations in the industrialised world are major markets for functional foods. Sometimes called seniors, older people – who can nevertheless be as young as 50 – are increasingly health conscious and picky about what they eat. Seniors also form one of the most prosperous segments of the developed world's population. This means that if food processing companies develop the

right products for them they are likely to sell well.

Dairy products are a prime example of the developments and trends in functional foods. Mairi Coia, business development director for Quest International's sweeteners and flavours for Europe, the Middle East and Africa says: 'We make milk healthier by removing the fat in it, and we can improve it further by adding ingredients such as fish oil or omega three, which are full of vitamins, but taste, well, fishy. To mask that taste we add natural ingredients [which Quest International

challenge. Smell and colour are equally important and just as susceptible to enhancement.

DESIGNER DAIRY

Quest International, spun off from ICI to Irish ingredients group Kerry in 2004, points out that products such as its Dairy Designer powders can help food processing companies mix ingredients to produce the taste and texture their consumers expect. The dairy sector of functional foods has been dominated by the surge in pro-biotic drinking yoghurt market. These

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trademarks as Dairy Designer] from butter or whey. We can also add extra calcium to boost yoghurt or another dairy product to help combat osteoporosis.'

Taste is not the only variable for designers of functional foods. Most functional foods are sold in supermarkets and thus have to meet the stores' rules for minimum shelf life. Ensuring that a new dairy product's texture, – or mouth feel – does not deteriorate over time can be a

are yoghurt drinks in which the bacteria that turn milk into yoghurt are added to a product by the manufacturer for their health-giving properties. The manufacturers choose bacteria which are found in the human intestine and are resistant to stomach and bile acids. This means that the bacteria can survive for longer in the digestive tract and keep it performing well. The success of this science has seen sales of pro-biotics grow exponentially in the past

couple of years. Pro-biotic drinking yoghurts have taken dairy products into direct competition with soft drinks.

'We've had a lot of discussions about the seniors market and what they require,' Coia says. 'There are two areas: the functional health side, which might address issues such as longevity, and the marketing. Just as marketing to children has to appeal to the mother as much as the child, so marketing now has to appeal to seniors who sometimes see themselves as second-generation parents. The emphasis is increasingly on natural ingredients, adding a tincture of this or extract of that.'

One of the key advantages of natural ingredients is that they do not appear as E-factors on the list of ingredients. A series of scares over ingredients in processed foods has prompted consumers to read the small print that list a product's ingredients.

FLAVOUR FACTORS

WILD Flavors uses both nature and science to manage a consumer's response to a functional ingredient. 'WILD Flavors has developed Resolver technology for helping with the off-notes from functional ingredients,' says Donna Hansee, marketing director at WILD Flavors. The WILD Resolver, a registered trademark, is a natural flavour extract. 'What the WILD Resolver technology does is overcome undesirable taste components by selectively influencing the tongue's taste buds,' she explains. 'To experience a taste sensation, a molecule has to fit exactly onto the relevant receptor on the tongue. The Resolver blocks the receptor by attaching itself to the receptor but does not trigger the taste sensation.'

WILD Flavors, which was set up in 1994, has clients using its technology in sweet, bakery, beverage, confectionery, culinary,

dairy and savoury products. One of WILD Flavors' key products is its co-enzyme Q10 which meets the US Generally Regarded as Safe (GRAS) standards, for use in beverages, nutritional bars, yoghurts and other products. 'Co-Q10 is produced by the body but requires a good diet high in vitamins and nutrients,' Hansee says. 'Many consumers' diets are inadequate, and anyway our bodies

produce less co-Q10 as we age, but we need it more when we engage in physical activity. Research has shown the correlation between increased performance and elevated co-Q10 plasma levels. Co-Q10 is a powerful antioxidant. It is also important for the proper functioning of the heart muscle and in helping to prevent cardiovascular disease.'

FRUITY SOLUTION

For companies producing functional foods, ingredients that protect against damaging free radicals and reduce trans (or hydrogenated) fats are highly sought after. Hydrogenated fats do not occur in nature but are produced when unsaturated vegetable oils are cooked at high temperatures. The advantage of hydrogenation for manufacturers is that the fat produced is virtually tasteless, yet does not go off, as vegetable oils do over time. The problem is that hydrogenated fats pose major health risks, especially of cardiovascular disease and cancer.

One way for processing companies to reduce the problems posed by

hydrogenated fats is to increase the use of fruit ingredients in other products. Jeannie Swedberg, the new business director at Treetop Inc, points out that her company, which produces fruit ingredients in a powdered form, has commissioned research that shows that Treetop products reduce the incidence of cancer. 'High fibre content in foods reduces the incidence of colonic cancer,' she says.

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Swedberg notes that processors prefer to use the word 'natural' rather than 'organic' when they defined their fruit ingredients: 'When we first talk to processors, they are very keen on using organic products, but when they see the cost, which is usually twice what ordinary fruit costs, they say no. They know that people will pay for an organic product, but they also know that they will not pay twice as much.' Treetop stresses that its fruit is virtually 95 per cent (according to Swedberg) organic.

Treetop, like other ingredient companies, gets involved with processors when their development of new products is little more than just a plausible idea. 'Our rule of thumb is that it usually takes between 18 and 24 months for a new product to come to market,' Scott Summers, Treetop's director of research says. 'You never know whether it is the first or the tenth prototype which will be the one that works. If we're really pushing, we can do the job in between nine and 14 months.'

Treetop's main areas of operation are added-fibre breakfast cereals, snacks and low-fat or reduced-fat baked goods. 'Our

ingredients also go into lots of different yoghurts,' Swedberg adds. Apples, blueberries, cranberries and cherries form the core of Treetops' offerings, although it also produces tropical fruit ingredients and apple-based mixtures, known as fruit sensation, delivering very intense flavour in snack bars.

NATURAL APPROACH

Carrington Laboratories, by contrast, has focused its ingredients business on one naturally occurring product: aloe vera. Aloe vera is a species of lily whose leaves are chock full of nutrients and vitamins. Pamela Schonbeck, senior director for sales and marketing at Carrington, points out that, although aloe vera's health-giving and life-enhancing properties were well known, only Carrington has patented the process for alcohol precipitation of the all-important aloe vera gel which has all the active ingredients. 'These acetylated mannans are very long but very fragile complex carbohydrates. Their molecules weigh 1m Daltons, so they are very large, but they are fragile and difficult to keep stable,' Schonbeck explains. 'Our powder goes into sport beverages, energy bars and some breakfast cereals,' she adds. 'Aloe vera has no flavour, but it does help the body to perform better. People who drink a beverage containing aloe vera sleep better. For the seniors, there is evidence that it can help to reduce irritable bowel syndrome.' Carrington's brand name aloe vera product is Manapol.

Carrington, based in Texas in the USA, is active internationally. It has been selling Manapol in Asia since 1998, and in Europe it has significant businesses in Hungary and Italy. It is the market leader for aloe vera products in the USA, and has found growing interest in its products in northern European markets such as the UK, Germany and the Netherlands.

PHYTO-NUTRIENTS

Bert Schwitters, the owner of the International Nutrition Company (INC), focuses his business, based in the Netherlands, on food supplements discovered by Dr Jack Masquelier in 1948. 'Since 1988, INC has built a global network of distributors who market Masqueliers food supplements under varying claims of nutritional support,' Schwitters says. 'It depends on the country's rules and regulations what we say and don't say.'

Masqueliers, which are also known as OPCs, are part of the plant substances called proanthocyanidins. INC's trademarked product is Anthogenol. 'This contains a delicate, yet biologically highly active, ingredient which benefits the cardiovascular and circulatory systems, the skin, eyes and joints. I know it sounds fantastic, but can it be documented,' Schwitters explains. 'It works because Anthogenol protects collagen,

makes fresh collagen. It's as if your body falls apart. No collagen, no structure. No medicine can change that: only vitamin C can.'

Schwitters offers a test for everyone to assess the state of their collagen: 'Put your hand on the table. Make a thick fold 1cm high of the skin between your thumb and forefinger. Let go of it, and see what happens. The speed at which the fold disappears is an indication of your collagen's health. In older people, it may take two to three minutes before the fold is gone. In a baby, it may take less than 30 seconds. It's all about your collagen's condition. In fact, collagen is what keeps the skin flexible, smooth, resilient and beautiful.' Collagen is also crucial for sight and the ability of bones to grow and renew themselves.

INC admits that the cost of producing OPC as an ingredient for the food industry was prohibitive. 'We see that the food industry seeks cheaper solutions in the form

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boosts vitamin C's activity and naturally assists the body's antioxidative defences.'

For seniors OPC's capacity to 'recharge' vitamin C is crucial. 'Vitamin C is not a disposable that the body throws away after use,' Schwitters explains. 'Our product permits your body to reuse one and the same vitamin C molecule time after time. It works on the same principle as rechargeable batteries. This is how people whose vitamin C intake is poor can still survive and keep scurvy at bay. There is no medicine against scurvy. Only the nutrient called vitamin C can prevent and cure it. Also don't think that scurvy no longer exists: it is simply a condition in which the body no longer

of grape seed extracts that have a lower quality and therefore a lower price. Although these extracts do not substitute or replace the kind of OPCs extracts developed by Dr Masquelier, the food industry feels that extracts of the grape seed type form a sufficiently defensible ingredient to use.' The challenge, Schwitters says, in using OPC is a marketing one. 'The marketers must decide whether they go with the cheaper grape seed extract option or with the more expensive food supplement type. Making marketers accept that grape seed extracts cannot replace OPCs is always our greatest challenge.' ■