‘Functional Foods’ – foods with extra, health boosting elements added – will become a significant element in the nutritional approach to health

But there have always been functional foods – foods with above normal nutritional impact

Chapter 20

Health care through Functional Foods

The wars against cancer, Alzheimer’s, coronary artery disease, osteoporosis and the other major killers will not be won in the pharmaceutical labs. Indeed the industry’s singular lack of success in these areas reinforces the conviction that drugs cannot be an adequate answer to problems caused largely by multiple micro-nutrient depletion.

Nor will popular victory come from molecular biology – because although genetically engineered agents will undoubtedly make a difference to some, they will be proprietary, expensive and unavailable for mass use.

If we want to ensure healthier (and longer) lives for all: if we want to have the same impact on coronary artery disease, for example, as the sanitation engineers had on cholera, turning it from an epidemic to a medical curiosity; the way forward is through the improvement of the public diet.

Functional foods

A definition

Foods which either naturally contain ingredients with health benefits; or, increasingly, foods to which such ingredients have been added.

Pills or foods?

Supplements are invaluable and the first choice for many people, but there are others who don’t like taking tablets and capsules.

Unfortunately, many of the so-called one-a-day supplements are inadequate in terms of the number, type and level of micro-nutrients used. Products that feature 100% of all the RDAs do not contain enough of many of the classical micro-nutrients to give optimal protection. And they usually do not contain any of the newly discovered, and powerful, micro-nutrients such as isoflavones, carotenoids (such as lutein and lycopene), flavonoids, betaine, etc.

This is where so-called 'functional foods' should come to the fore. These are basically food products, in a variety of forms, with enhanced levels of the key micro-nutrients, sometimes accompanied by reduced levels of ingredients judged to be less beneficial such as refined sugar or animal fat.

Whilst the current way forward is through well-designed supplements, I believe that the true medicine of the 21st century could eventually be food – a 'superfood' containing all the ingredients in the right form and at optimum levels that provide the highest chance of a long and healthy life. But what would the superfood contain?

The reader who has got this far will have understood the importance of a wide range of micro-nutrients in reducing the impact of the ageing process.

Anti-oxidants have received most of the publicity; but there is a great deal more to comprehensive anti-ageing nutrition. Apart from the anti-oxidants, there are at least eight other categories of micro-nutrients which must be available in adequate amounts if the body is to receive optimal nutritional support, and the best chance of realising its true biological potential.

Initially you will have to buy these nutrients in traditional capsule/tablet form. It's technically an easier form of delivery and the least expensive way to obtain the ingredients. And the necessary levels can be accurately measured. However, I hope that some manufacturer will eventually develop a 'functional'food that includes all the key ingredients. Such a functional or superfood might take the form of a chew, a non-bake biscuit, or even a yoghurt-type dessert.

On a more limited scale some functional foods are beginning to appear – because as the connections between our diet and our health become clearer, and are supported by more studies, industry is beginning to catch on.

We've been through the low-fat, low-calorie, low-taste, low-salt phase. Instead of taking things out, the new wave of foods *adds* value by adding new nutrients to old recipes in order to actively promote health.

Food manufacturers have, of course, been putting vitamins in our breakfast cereals and iodine in our table salt for years. Now they're

Functional foods
A national example

Hypertension is an important cause of heart failure and stroke, and requires distinct nutritional care and prevention.

In Finland, country-wide trials have shown conclusively that replacing sodium in the diet with potassium and magnesium is the most cost-effective way of lowering blood pressure safely.

Between 1986 and 1996, the national diastolic blood pressure fell an average of 10mm mercury; and the numbers of heart attacks and strokes fell by a massive 50%.

No drugs were involved; when the food industry switched from common salt to the salt substitute PanSalt, they did more good than the entire Finnish health care budget. (PanSalt is made by the Finnish company Raiso.)

adding phyto-nutrients, minerals, fibres and other kinds of nutrients to our milk, biscuits, chocolate bars, quiches and soft drinks.

The doses are generally smaller than in supplements, because food manufacturers are committed to preventing even the remotest possibility of accidental overdose – and must take a conservative position, based on consensus science. But the main difference is in the presentation.

Whereas tablets and capsules only reach a proportion of consumers, the same ingredients added to yoghurts or breads, for example, could reach the mass market and change public health statistics. This has happened in Finland, where the extensive use of PanSalt – which substitutes a potassium/ magnesium formula for common salt (sodium chloride) – has lowered blood pressure safely and reduced the incidence of stroke on a national scale.

You won't find a functional food section in your local supermarket yet, but you will find an increasing number of foods with added Omega 3s, 'friendly' bacteria (eg live yoghurts and other fermented milk products), and anti-oxidants.

But isn't all food functional?

The more conservative scientists don't like the term 'functional foods', and they have a point.

It's hard to think of a food which isn't functional, even if that function is only to provide taste, or bulk, or calories. And foods like soy, red wine, blueberries, dark chocolate, green tea, cranberry juice, oatmeal and herring – to give just a few examples – are undoubtedly and intrinsically functional.

Can functional foods improve public health?

Some commentators[11] regard functional foods as just an attempt by food manufacturers to increase their profit margins at the expense of the consumer. In some cases they may be right but the evidence suggests that genuinely functional foods will be of real benefit. Many studies have found widespread malnutrition among the public at large. It is increasingly accepted that this malnutrition is a risk factor for conditions ranging from spina bifida to coronary artery disease to cancer; and conversely that enhanced nutrition is the best way to reduce risk.

Breakfast cereals were the first foods to be routinely fortified and can be considered as early functional foods. Breakfast eaters have a higher intake of fibre, B vitamins, calcium, iron and Vitamins A, C and E than non-breakfast eaters, thanks largely to breakfast cereal consumption[1]. Even this slight dietary improvement has been linked to a reduced risk of cerebral palsy in new-born babies[3].

There is much research to be done, but I have no doubt that functional foods can greatly improve public health.

Uphill climb

It won't happen overnight. Exaggerated health claims by the media will inevitably cause disappointment, as will sub-standard products, which make implicit claims they cannot fulfil.

In the UK, for example, the sale of nutritional supplements is relatively unregulated, except in terms of the claims that can be made. Apart from that fig-leaf (and it's actually counter-productive in that it prevents the consumer from finding out what a given supplement will do) consumers have insufficient protection.

They have no way of knowing whether the tablet, capsule, or bar has been so badly formulated that its contents cannot be absorbed – or whether the amount of each nutrient will actually do any good.

Some supplement manufacturers only put a token amount of some of the most expensive nutrients in their product, so the list on the pack looks impressive. That's why I have listed (on pages 348-350) the levels I believe are genuinely therapeutic.

The regulatory authorities, who are over-influenced by the drug companies, continue to adopt a defensive position.

They maintain that any product which makes a medical claim or alludes to a medical condition is a medicine, must therefore have a licence (costing anything between £100,000 – £100 million), and may even require a prescription.

This is entirely appropriate when dealing with a novel molecule, but is not a suitable way of handling extracts of food crops we have co-evolved with and which are widely eaten without known toxicity.

Another problem with the regulatory authorities is that they dislike compound formulations. 'Polypharmacy', as they call it, is considered inferior. The pharmaceutical companies are always looking for a better 'magic bullet', designed to hit one single link in the disease chain so hard that it kills the disease, an approach almost guaranteed to produce side effects.

Setting standards

Reputable trade associations such as the Health Food Manufacturers' Association (in Britain) are particularly concerned with maintaining and raising production standards: but there are still too many companies operating outside the HFMA's limits.

Food as preventative medicine

An ageing population, rising health-care costs, a growing awareness of the limitations of traditional 'crisis management' health care, and a public which is generally more health-conscious, all mean that foods which can help sustain health are increasingly seen as the way forward.

The nutritionist, on the other hand, tries to modify as many of the links as possible, subtly, gently, effectively and hopefully without side effects.

Wedded as they are to the single agent approach, the regulatory authorities find it hard to understand the more complex relationships between multiple food ingredients and health.

To give just one example, fish oil has been shown to reduce the risk of coronary artery disease, as have Vitamins E and C. From the herbal community we learn that hawthorn has very significant benefits on heart health, and recent investigations have shown that some of its active ingredients work in a way which complements the C, E and fish oil.

Then there's work from the USAand Finland showing the role of the B vitamins and betaine in reducing plasma levels of homocysteine, an amino acid which raises the risk of clot formation.

When you know how each of these actives works, it is logical to combine all of them – and illogical of the medical regulatory authorities to refuse to deal with nutraceutical combinations like this.

Whilst the public needs to be protected against fraud, it's also true that reputable manufacturers are prevented from getting

FOSHU to you

In Japan, which has the most highly developed market in these products, they are termed 'Foods for Specified Health Use' (FOSHU or TOKUHO).

These terms, although accurate, are unlikely to become popular in the West!

In Japan

Q: Why does the Japanese Ministry for Health actively promote functional foods?

A: The ageing Japanese population creates increasing health-care costs. Functional foods are seen to be not only the most effective way of improving public health – but also the most cost-effective.

THE FUNCTIONAL FOOD RACE

Japan was first in the race, and remains in front. Japanese manufacturers of functional foods work to exacting standards. Labelling is easily understood, and the customer has a clear idea of the health benefits of the food he or she is buying.

As a result, the Japanese market in functional foods has expanded to $11 billion – approximately eight percent of the processed food market. Functional foods include drinks, wafers, candies, bars and even noodles.

The European approach is quite different. Current law forbids medicinal claims; and statements like 'cardio-protective nutrition', although justifiable on the basis of scientific evidence, have been disallowed.

In this rather hostile climate, food manufacturers in the West are understandably reluctant to invest in new functional foods. However, policy recommendations such as the Joint Health Claims Initiative (UK) and the Health Canada Initiative will help to grow the market.

information to the general public that could save many millions of lives. Indeed that has been a major motive in writing this book.

Through the red tape

In the USA the FDA have grudgingly admitted health claims for only a few items, including dietary fibre and whole grains in reducing the risk of colon cancer and heart disease; lipids in affecting the risk of cancer and heart disease; calcium and osteoporosis; and sodium and hypertension. These are not particularly good claims. Calcium by itself is not a good treatment for osteoporosis, nor is sodium reduction on its own very important except in a sub-set of hypertensive patients.

There are many other stronger health claims which could and should be made, but cannot because of administrative stonewalling.

In contrast, the Japanese government has recognised 12 broad classes of food ingredients as promoting health[1] including:

- Dietary fibres, eg inulin: which reduce the risk of colorectal cancer and heart disease, and modify sugar absorption in diabetics.
- Oligosaccharides: which modify gut flora, reduce the risk of food poisoning, diarrhoea, and probably colorectal cancer. There is also evidence for some immuno-enhancement.
- Lactic acid bacteria (in live yoghurts): which have functions similar to the oligosaccharides.
- Poly-unsaturated fatty acids (Omega 3): beneficial effects on coronary artery disease, arthritis, eczema, asthma, cancers, diabetes, weight control and osteoporosis.
- Phytochemicals (plant extracts like flavonoids and isoflavones) and anti-oxidants: reduce free-radical related and inflammatory diseases.

STOP PRESS!

The Food and Drug Administration in America has just accepted a well-substantiated claim that soy protein lowers cholesterol, and may reduce the risk of heart disease.

Goldrush

The multi-nationals are investing large amounts of money and time in phytochemicals[4]. Nestlé, for example, have taken a special interest in carnosol and carnosic acid, derived from the herb rosemary.

These compounds are powerful anti-oxidants, bind destructive free iron, and have anti-cancer properties[5, 6]. You can expect to see rosemary or rosemary extract listed as an ingredient in functional foods in the future as well as catechins, strong anti-oxidants that survive cooking well[7-11].

The future now

We have instinctively known for many generations that we are what we eat. Increasingly, old wisdom and new science show how true that is – and the way forward. If we take note of the new science – and put more emphasis on prevention rather than cure, – we can achieve a dramatic effect on the public health statistics.

A supplement or functional food that included all the nutritional categories we reviewed in the early sections of this book and the specific nutrients and levels detailed in the next chapter would, I believe, make a dramatic impact on our health.

If each of us ensured that our diet included these nutrients and foods, we would see a rise in healthy longevity and a very significant fall in the amount of money being spent on the National Health Service.

21st Century Health Care?

Until recently, few people knew more about their bodies than their weight, or their blood group. New health monitoring devices mean we'll all be better informed.

The current generation of breathalysers can already detect diabetes, colon cancer, kidney failure, liver failure, lactose intolerance, Helicobacter pylori infection and other problems. The devices will be miniaturised and sold like personal stereos before long.

Laser acoustics can already measure blood glucose via a probe placed on the skin which gives a read-out, Star Trek style in seconds.

The next generation of probes will use tunable laser diodes. One touch on the wrist will provide a comprehensive read-out of your biochemistry. The data can either be fed down a phone line to a clinical centre for diagnosis or into your own personal computer.

Add diagnostic software and you have a home diagnostic centre, capable of detecting potential illness long before symptoms appear, long before a doctor might pick it up.

Your genetic make-up will become a factor. (Some people are salt-sensitive, some do not respond to fish oil, others cannot utilise folic acid, etc.) This will create a new science of nutrigenomics.

The next phase will link your health and your genetic data to your shopping habits, so your virtual on-line supermarket can flag potential hazards or recommend beneficial foods according to your body's personal requirements.

Ultimately we will no longer have to worry about nutrition and health because optimum nutrition will become embedded in the consumer environment.

EXISTING SUPERFOODS

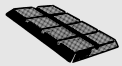
Foods you should include frequently in your diet:

- Fruit, especially bilberries, elderberries, tomatoes, blackcurrants, prunes, raisins, strawberries, bananas

- Vegetables, especially soy and other beans, broccoli, Brussels sprouts, cabbage, Jerusalem artichokes, kale, lentils, peas, chick peas, peppers, sweet potato and onions
- Oily fish, eg salmon, mackerel, herring, sardines
- Herbs, including rosemary, oregano, and thyme

- Juices, especially orange, grapefruit, cranberry, blackcurrant and black grape

- Red wine
- Spices, especially turmeric, ginger and garlic
- Eggs
- Seeds, eg sunflower, linseed
- Soya products
- Tea, especially green
- Wholegrains, including oatmeal and wheat
- Dark chocolate



SUMMARY

Health care through functional foods and supplements

➤ Categories of nutrients that offer a comprehensive positive health-care strategy include

* anti-oxidants
* vitamins and minerals
* isoflavones (eg genistein)
* pre-biotics
* Omega 3 oils
* carotenoids (mixed)
* flavonoids (grapeseed, elderberry, bilberry)
* betaine
* co-enzyme Q10
* adaptogens (Withania somnifera)

➤ Start with a better diet. This is now widely agreed to contain more fruits, vegetables, wholegrains and fish; less animal products, sugars, and salt; alcohol in moderation (not spirits), and no tobacco.

➤ Emphasise foods which are naturally good sources of micro-nutrients (see above).

➤ Look for functional processed foods, and/or supplements.