Viewpoint

Dietetics and functional foods

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Abstract

This paper reviews ‘functional dietetics’ through which specific brand-name foods may be prescribed as part of medical nutrition practice. Dietitians will be increasingly called on to translate nutrition science in many forums for functional foods creating complex professional and ethical challenges. Scientific evidence should be the basis for the formulation and targeting of functional foods and communication about their effects. Functional foods may provide opportunities for the use of highly specific dietary prescription in nutrition interventions and dietary counselling, in order to improve compliance and client outcomes. However, caution is required when foods are introduced with a population target in mind and a full evaluation of risks and benefits is also required. Functional foods are currently established in the Australian food supply and dietetics practice needs to encompass consideration of their use in research, food product development, regulation, education, therapy for individuals and the development of population-based nutrition strategies. These new roles have implications for dietetics training and entry-level competencies for dietitians.

Key words: functional foods, competency standards, evidence-based practice, health claims, food standards

Introduction

The Dietitians Association of Australia (DAA) competency standards define dietitians as translators of nutritional science (1). Using a broad knowledge base dietitians are able to assess nutritional problems and develop appropriate solutions. However, dietetics practice reflects nutrition knowledge at the time and it is reasonable to assume that as nutrition science develops, dietetics practice changes. The emergence of functional foods in recent years provides a focal point for examining how dietetics might develop in the context of contemporary nutrition science. This paper reviews some of the challenges posed by the emergence of functional foods and we argue that changes in the food supply require some reconsideration of how dietetic competencies may be implemented. We suggest that as dietetics practice becomes increasingly sophisticated we are currently on a path to ‘functional dietetics’ in which foods may be prescribed as drugs, and dietitians will be called on to translate their underlying nutrition science in many forums, for many purposes, creating complex professional and ethical challenges.

Dietetics: expanding knowledge, changing practices

Historically dietetics has been underpinned by a constant intrinsic belief in the health promoting benefits of food. In contrast, dietetics practice, which is the practical application of these beliefs, has changed dramatically over time. Present-day dietetics was built on an understanding of the metabolic disturbances that relate to the basis of illness. As lifestyle diseases such as heart disease, diabetes, cancer and obesity received greater attention in the last half of the twentieth century, a variety of healthy eating phenomena emerged (2). For individuals with specific pathologies, dietitians provided food prescriptions listing foods to consume and avoid. For the population as a whole, national guidelines emphasised the recommended proportions of food groups for optimal health (3). Food companies responded with the release of low-fat milks, cheeses and yoghurts, and fat-modified margarines that took substantial market share from traditional spreads such as butter and full fat dairy products.

By the 1990s consumers had become increasingly concerned about optimising health and wellbeing (4). The ideals of ‘too much’ in the 1980s—avoidance of ‘bad’ ingredients such as fat and salt—were replaced in the 1990s with the idea of ‘optimising intakes’ of particular nutrients or micronutrients, for example supplementation with antioxidants and dietary fibre. People around the world were becoming increasingly convinced that foods consumed not only modulate performance but also reduce the risk of acquiring a variety of diseases (5). Dietitians would need to adapt their practice accordingly and this is where ‘functional dietetics’ may be seen to emerge.

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**Functional foods: position and purpose**

Aided by increased knowledge in the fields of human nutrition and dietetics, and food technology, there has been a revolution in food product development over recent years. Concomitantly there have been changes in population demographics in Western countries with increases in age profile, degree of wealth and education (6). Consumers are becoming health conscious and more likely to self medicate (6). Most consumers agree that eating healthfully is a better way to manage illness than taking medication (7). This has led to the increased acceptance and consumption of foods with purported health promoting properties. There is an observed ‘push’ from food companies seeking out new markets and profit opportunities with a concurrent market ‘pull’ from educated, health-conscious consumers with high disposable incomes (8). At the same time, governments are recognising the potential value of functional foods to the Australian food industry and in supporting public health through the National Food Industry Strategy, the Department of Agriculture, Fisheries and Forestry Australia has initiated a National Centre of Excellence in Functional Foods (9).

Functional foods have been available in Japan since 1988 with the launch of a product called Fibre Mini, a soft drink containing dietary fibre. In 2002 the global functional foods market was estimated to be $US47.6 billion (10). The largest market segment is the USA ($US18.2 billion), followed by Europe ($US15.4 billion) and then Japan ($US11.8 billion) (10), yet the total market represents only 3% of the $US1.5 trillion per annum global food industry and by 2010 it is expected to constitute about 5% of the total expenditure (11). With most food company sales generally growing little faster than inflation, the 8.5% growth per annum in demand for functional foods may be irresistible to industry despite reports which suggest that only about 4.5% of these products become market successes (10,12).

More than ten years ago the term ‘functional foods’ was not found in the scientific literature. It appeared in Medline for the first time in 1992 and a targeted search to June 2003 resulted in 238 articles. The term ‘functional foods’ does not carry any regulatory status within Australia and is largely used as a concept for food products rather than a separate category. There are many definitions, of which the following captures the core essence: ‘any food or food ingredient that may provide a health benefit beyond the traditional nutrients it contains’ (13). In Australia in 1994, the then National Food Authority offered a similar definition as: ‘similar in appearance to conventional foods and are intended to be consumed as part of a normal diet but modified to serve physiological roles beyond the provision of simple nutrients’ (14). The European Union has taken a broader approach stating ‘a functional food can be a natural food, a food to which a component has been added or a food from which a component has been removed by technological or biological means’ (15).

In some sense many ordinary foods might be considered to have ‘functional’ properties (16). For example, prunes and wholemeal bread can aid regularity; coffee can combat fatigue (15). In the US in 1995, Quaker Oats was successful in petitioning for a health claim based on the intrinsic cholesterol lowering characteristics of oats. Oats act as a functional food and can be labelled accordingly, however it is the intrinsic characteristic of oats that are functional, not an added dietary component.

The lack of an internationally recognised definition for functional foods and the lack of clarity between functional foods and other superficially similar products, such as food-type dietary supplements (17), has important implications for both public and professional application of this concept (18). In some cases health interests appear to be the primary drivers of functional food development, but in others it may be simply to gain a marketing edge. For example, both guarana-enriched beverages and folate fortified cereal products could be categorised as functional foods. However, the justification for folate fortification was based on the public health need to reduce the risk of foetal neural tube defects and the products were developed and marketed at the instigation of the National Health and Medical Research Council (NHMRC) for food manufacturers to do so (19). By contrast the development of a new food standard to allow the development of more caffeinated beverages was clearly not in response to an identified public health need.

The concept of functional foods may be further obscured by the marketing strategies used by the food industry in advertising and positioning of these novel foods. Heasman and Mellentin describe several ways in which functional foods might be utilised from a business perspective (12) and examples of each can be seen in the Australian market. Functional food makeover is about taking existing brands and fortifying them with additional vitamins and minerals. Breakfast cereals provide an example of vitamin and mineral fortification that has been used for over 40 years and is now generic to the category. More recently Sanitarium has marketed mineral waters with added vitamins and minerals. Incremental new business creators release an entirely new product category based on innovative technology. Yakult’s successful launch in the Australian market with small bottles of probiotic drink exemplifies this practice. The incremental old business developer creates new brands to compete in existing categories and the aim is to obtain more customers, or for customers to trade up to higher value products. The launch of sterol-containing margarines by Unilever and Goodman Fielder in Australia exemplify this strategy and there are current applications to Food Standards Australia New Zealand (FSANZ) to extend the use of this functional ingredient into other food categories as well (20). Whole category substitution takes the ‘health’ proposition of a competing category and applies it to a product. Berri has already taken the unique proposition of dairy foods (i.e. a good source of calcium) and applied it to a fruit juice-based product and FSANZ has recently recommended approval of an application to allow a broader range of foods to be fortified with calcium, including juices, cordials, soups and crispbreads (21). Leveraging hidden nutritional assets is another strategy companies use, as nutrition science reveals more and more about the intrinsic health-promoting properties of food and components. The increased promotions of soy, linseed, oats and canola as health foods are all examples of this.

Despite the ambiguity of definition and interpretation of functional foods, there is increasing research into the efficacy and application of functional foods and food.
ingredients (22). One of the most intensively studied classes of physiologically active components is the omega-3 fatty acids, predominantly found in fatty fish (7). Another class of biologically active components that has received increasing attention is probiotics, or viable micro-organisms that are beneficial to human health (23). Numerous plant food components have been investigated for their role in disease prevention and health (7). At the same time there is increasing evidence of the protective and health promoting effects of many whole foods such as nuts (24) and wholegrain cereals (25). More recently, emerging research also suggests non-plant ingredients such as conjugated linoleic acid (CLA) and some dairy-derived tripeptides have potential clinical importance (26), and marine extracts of glucosamine and chondroitin may benefit osteoarthritis symptoms (27,28).

Table 1 lists some of the nutrients and food ingredients that have a scientific basis for functional food development and highlights those that have been approved for health claim labelling in the US. The strength of the evidence base for these proposed benefits ranges from very strong, based on multiple clinical trials, to the merely suggestive, relying on epidemiological or in vitro studies (29). A strong scientific base is a necessary requirement for any health claims about functional foods (29), as well as consideration of the ethical and social consequences of their introduction into the food supply (30).

Thus, from an industry perspective, functional foods may be seen as agents of business development with capacity to change the market and work with trends in consumer demands. This is quite different to the way in which functional foods would be positioned from a population health perspective, but the provision of functional foods by industry does have public health implications.

Functional dietetics and population health

Dietitians are now faced with an increasingly medicalised food supply, with more food products designed and marketed with health improvement in mind. For example, products such as Meadow Lea’s Hi-omega margarine, Brownes’ Heart Plus milk and Tip-Top’s Up bread launched in 2002 are enriched with marine omega-3 fatty acids, which act positively on heart health parameters. While some see functional foods as a nutrition revolution, others remain sceptical (14). Functional foods can be seen to challenge a fundamental principle of dietetic practice: the total diet, not individual food products, determines health (31).

The prevailing consensus is that the rising prevalence of chronic conditions such as cardiovascular disease, obesity and Type 2 diabetes mellitus is due to changes in society leading to overnutrition and a more sedentary lifestyle than previously (32,33). The current western diet has been described as part of a ‘patho-environment’ (34) or ‘obesogenic’ environment and attempts to improve public health needs to be ecological in scope (35). A solution proposed by some is to change the environment back to one where the foods available are more wholesome ‘natural’ foods (36). While there is evidence from the growth of the organic food industry that there is a niche market for such an approach, an integral part of the environment is socio-cultural, therefore change can only occur in a way that ultimately will be accepted and supported by the majority of a population. It seems highly improbable that modern societies can sustain the political will needed to change the food supply to reduce the number of food alternatives, limit the use of convenience foods and alter the energy density of foods (36), particularly if it also increases costs.

A more realistic option is to re-engineer healthy eating back into our lives in a way that is compatible with our socio-cultural values (36). For example, traditional fortification programs, such as the mandatory folate fortification of cereals in the US to reduce the risk of neural tube defects, are based on an epidemiological approach. It is recommended that women who are pregnant or may become pregnant consume at least 400 µg of folate per day to help reduce the risk of babies being born with spina bifida. Dietary studies have found that usual dietary habits of the target group provide less than this recommendation and even intensive targeted individual advice to increase natural sources is not as effective as the consumption of a fortified food supply (37,38).

Standard 1.5.1 of the Australia New Zealand Food Standards Code, governs novel foods and food ingredients (39). FSANZ assesses the safety of foods and food ingredients in accordance with accepted risk-based principles (40). There is however, an inherent difficulty in determining with certainty the long-term health impacts of interventions using novel food additives, since conventional risk assessment procedures are generally limited to short timeframes and often consider foods and ingredients in isolation (41).

In assessing the new generation of functional foods as a possible public health intervention, an analysis of the possible effects on consumption patterns and subsequent nutrient intake is important, in addition to traditional risk management assessments. Dietary interventions designed to promote health may be categorised two ways: those that aim to modify dietary behaviour and reduce the level of risk factors in individuals, and those that aim to address the underlying determinants of health in populations as a whole (42). Caution is required when interpreting results from controlled clinical contexts and transferring them into free-living settings. Extrapolating scientific evidence from one paradigm to another may falsely raise expectations. Similarly, consideration of the use of functional foods in population nutrition and individual therapeutics requires certain distinctions to be made.

Some functional foods (e.g. oats or probiotic yoghurt) can probably be safely promoted for consumption by the whole population, whereas others with more potent added ingredients (such as stanol margarines) may carry greater potential risks to some subgroups than others. Perhaps initially these should only be recommended to at-risk individuals until the impact of their presence in the market on consumer purchase and eating behaviour is better understood. Making these distinctions is an important component of functional dietetics at a population level.

Functional dietetics and clinical practice

To expect that technical innovations alone will solve complex social problems such as lifestyle diseases is unrealistic. It is more appropriate to place expectations of functional foods in the context within which they were developed, which is in relation to the potential impact on certain types of at-risk individuals (42).
Table 1. Functional food components and their potential benefits\(^{(a)}\)

<table>
<thead>
<tr>
<th>Bioactive component</th>
<th>Source(^{(b)})</th>
<th>Potential benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Animal-derived component</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Fatty acids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Omega-3 fatty acids–DHA/EPA</td>
<td>Tuna, fish and other marine oils (e.g. algae)</td>
<td>Promotes cardiovascular health and improve mental and joint health</td>
</tr>
<tr>
<td>Conjugated linoleic acid–CLA</td>
<td>Cheese, meat products</td>
<td>Improves body composition, improved lipid profiles and decreases risk of certain cancer</td>
</tr>
<tr>
<td><strong>Milk protein</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tri-peptide</td>
<td>Milk and dairy foods</td>
<td>ACE-inhibitory activity</td>
</tr>
<tr>
<td>Whey protein</td>
<td></td>
<td>High biological value protein</td>
</tr>
<tr>
<td><strong>Glycosaminoglycans</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chondroitin sulfate</td>
<td>Shark or cow cartilage</td>
<td>Reduces inflammation in osteoarthritis</td>
</tr>
<tr>
<td><strong>Amino saccharides</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucosamine</td>
<td>Cartilage of crab shells</td>
<td>Reduces inflammation in osteoarthritis</td>
</tr>
<tr>
<td>Collagen hydrolysate</td>
<td>Gelatine</td>
<td>May relieve symptoms of osteoarthritis</td>
</tr>
<tr>
<td>Collagen hydrolysate</td>
<td>Gelatine</td>
<td></td>
</tr>
<tr>
<td><strong>Plant-derived component</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carotenoids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha-carotene</td>
<td>Carrots</td>
<td>Neutralises free radicals</td>
</tr>
<tr>
<td>Beta-carotene</td>
<td>Various fruits, vegetables</td>
<td>Supports healthy vision</td>
</tr>
<tr>
<td>Lutein</td>
<td>Green vegetables</td>
<td></td>
</tr>
<tr>
<td>Lycopene</td>
<td>Tomatoes and tomato products (tomato sauce etc)</td>
<td>Reduces the risk of prostate cancer</td>
</tr>
<tr>
<td>Zeaxanthin</td>
<td>Eggs, citrus, corn</td>
<td>Supports healthy vision</td>
</tr>
<tr>
<td><strong>Dietary fibre</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insoluble fibre</td>
<td>Wheat bran</td>
<td>Reduces risk of breast/or colon cancer</td>
</tr>
<tr>
<td>Beta-glucan(^{(c)})</td>
<td>Oats</td>
<td>Reduces risk of cardiovascular disease</td>
</tr>
<tr>
<td>Soluble fibre(^{(c)})</td>
<td>Psyllium</td>
<td>Reduces risk of cardiovascular disease</td>
</tr>
<tr>
<td>Whole grains(^{(c)})</td>
<td>Cereal grains</td>
<td>Reduces risk of cardiovascular disease and some cancers</td>
</tr>
<tr>
<td><strong>Flavonoids</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anthocyanidins</td>
<td>Fruit</td>
<td>Neutralises free radicals</td>
</tr>
<tr>
<td>Catechins</td>
<td>Tea</td>
<td></td>
</tr>
<tr>
<td>Flavanones</td>
<td>Citrus</td>
<td></td>
</tr>
<tr>
<td>Flavones</td>
<td>Fruits, vegetables</td>
<td></td>
</tr>
<tr>
<td><strong>Glucosinolates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sulphoraphane</td>
<td>Cruciferous vegetables (broccoli, kale), horseradish</td>
<td>Neutralises free radicals</td>
</tr>
<tr>
<td><strong>Phenols</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caffeic acid, ferulic acid</td>
<td>Fruits, vegetables, citrus</td>
<td>Antioxidant-like activities</td>
</tr>
<tr>
<td>Plant sterols(^{(b)})</td>
<td>Corn, soy, wheat, wood oils, fortified margarine</td>
<td>Lowers blood cholesterol levels by inhibiting cholesterol absorption</td>
</tr>
<tr>
<td>Stanol ester</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prebiotics/Probiotics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fructo-oligo- saccharides</td>
<td>Jerusalem artichokes, shallots, onion powder</td>
<td>Improves gastrointestinal health</td>
</tr>
<tr>
<td>Lactobacillus</td>
<td>Yoghurt, other dairy products</td>
<td>Improves gastrointestinal health</td>
</tr>
<tr>
<td>Saponins</td>
<td>Soy beans, soy foods, soy-protein containing foods</td>
<td>Lower LDL cholesterol; contains anti-cancer properties</td>
</tr>
<tr>
<td>Saponins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soy protein</td>
<td>Soy beans and soy-based foods</td>
<td>25 g/day may reduce the risk of heart disease</td>
</tr>
</tbody>
</table>

\(^{(a)}\) From Nutrition & Dietetics (2004) 61:1
Dietetics practice requires the translation of nutrition science into dietary change. The lack of consistent and appropriate dietary change is believed to undermine many dietary interventions (43). Diets that require minimal behavioural changes are more likely to be adhered to, and adding functional foods to the diet may be a powerful tool in achieving desired metabolic outcomes. For example, research has shown that the use of spreads with added sterols or stanols has greater cholesterol-lowering capabilities than a fat-modified diet alone (44). Many consumers with hyperlipidaemia may find use of such functional foods more appealing than the alternatives of a lifetime of prescription medication or consuming a completely restructured diet. Physicians are now being advised how to incorporate information about functional foods into their patient management plans (45) and dietitians too may now prescribe the use of these products as part of medical nutrition therapy. One survey of American dietitians in 1998 found that over three quarters had recommended the use of functional foods to clients in the past year (46) and Australian research suggests that prescription of branded functional food products by a dietitian can improve the effectiveness of dietary advice to manage hyperlipidaemia (47). This approach can be seen as part of the new functional dietetics.

Evidence-based nutrition practice guidelines attempt to transfer research findings into standard dietetic practice (48). Many areas of health and medical practice are still based on the judicious use of regimens not necessarily established in evidence by today’s conventions, and it always takes time to change. Sailors in the British Navy continued to be offered ineffective elixirs of herbs and spices or alcoholic beverages to avert the symptoms of scurvy for a further hundred years after the causal relationship between the prevention of scurvy and ingestion of citrus fruits was known. In that case the application of scientific findings—rationing with citrus fruits on their long voyages—happened much later (49). One reason for such delay may be the context in which the treatment is adopted. While evidence of the efficacy of functional foods is required from clinical trials, research in practice settings is also important, since the applicability of controlled studies to general community settings needs to be confirmed (50).

Ethical considerations

Functional foods are designed to appeal to a particular segment of the population, taking into account new scientific understanding and technical knowledge. Their development brings together scientific research, food product development, labelling and marketing with important implications for a range of stakeholders—food industry, governments, health professionals and consumers. While the collaborative efforts of agriculture and food science, food and pharmaceutical companies, and the health professions have the potential to create a healthier food supply, the relationship between these groups may give rise to concerns for consumers. As observed with reactions to the introduction of genetically modified food and food irradiation, consumer scepticism can lead to a significant delay in achieving the benefits of new food technologies. Consumers may reject new functional foods on ethical or precautionary grounds that may not be linked to any scientific evidence of health risk, which in turn may lead to diminished enthusiasm from food industry and government (18).

Another important ethical issue is related to the distributive justice of functional foods: who has access to new foods with health-promoting properties (30)? Functional food consumers are likely to be one of at least two groups. The first group are those described as the ‘worried well’ who are generally healthy, with an adequate diet, but interested in optimising health and preventing disease (18). The second group represents those known to be ‘at risk’ of lifestyle diseases, for example, people with raised blood cholesterol or high blood pressure. Research into nutritional supplement use has revealed that those more likely to use supplements are those who need them least (51,52). Often functional foods come with a price premium, which is known to effect consumer purchase habits (53).

### Table 1. (continued)

<table>
<thead>
<tr>
<th>Phytoestrogens</th>
<th>Soy beans and soy-based foods</th>
<th>Reduce menopause symptoms such as hot flushes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lignans</td>
<td>Flax, rye, vegetables</td>
<td>Lowers LDL cholesterol, total cholesterol and triglycerides</td>
</tr>
<tr>
<td>Sulphides/Thiols</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diallyl sulphide</td>
<td>Onions, garlic, olives, leeks, scallions</td>
<td>Lowers LDL cholesterol, maintains healthy immune system</td>
</tr>
<tr>
<td>Ally methyl trisulphide, Dithioliathones</td>
<td>Cruciferous vegetables</td>
<td>Lowers LDL cholesterol, maintains healthy immune system</td>
</tr>
<tr>
<td>Tannins</td>
<td>Cranberries, cranberry products, cocoa, chocolate</td>
<td>Improve urinary tract health</td>
</tr>
</tbody>
</table>

(b) Examples only—not all-inclusive.
(c) FDA-approved health claim established for component. Generally are supported by at least two dozen well-designed published clinical trials.
more, distribution outlets for these products are often in more affluent areas and metropolitan centres (53). It remains to be seen if functional foods will even be accessible to and reach those who are at risk in the community or whether the ‘worried well’ with adequate diets will be the major users.

Consumers often turn to health professionals to clarify the role of functional foods in promoting and maintaining health. The health professional’s role in educating consumers is recognised as important for the success of functional foods and manufacturers’ view dietitians’ acceptance of functional foods as an important marketing strategy. There is thus a fine balance between general advice on nutrition, including the potential contribution of functional foods, and inappropriate promotion of particular food brands (18). As consumers’ perceptions of risks and benefits are not only determined by scientific facts but how they are presented and by whom they are presented, it is important that dietitians are able to provide balanced and objective advice. Dietitians should be active early in the communication cycle building up an atmosphere of communication and trust between the stakeholders (18).

Regulatory approval of the use of health claims will largely determine the promotion and success of functional foods (41). Health ministers at the Australia New Zealand Food Standards Council agreed in May 2002 and again in December 2003 to set policy principles for a new regulatory system that will allow the use of health claims (which at present are prohibited in Australia) within a risk management framework (54). The current legal restrictions create a dilemma whereby professionals may be well informed, but information about the health-promoting aspects of new foods is withheld from consumers when they may benefit from it the most, that is, at the point of purchase (on the food label) (55).

Health claims bring with them concern about the level of honesty and accuracy of claims and label information generally (56). Examples show that the regulators are often behind the marketers in this matter (57,58). A major threat to the effective use of functional foods is the exaggerated and often contradictory health claims observed in Europe, Asia and the US. For example, only 1% of Japan’s functional foods are directed at the significant health problems such as high blood pressure, with adequate scientific justification (59). Furthermore, in Australia, where health claims are prohibited, a study found that 7.4% of food and drink advertisements contained illegal health claims (41). Careful consideration is required about our future regulatory frameworks in order to ensure that consumers are not misled about the potential benefits of functional foods and that they maintain trust in the information conveyed on food labels.

Implications for the roles of dietitians

In developing viewpoints about the role of functional foods in dietetic practice, dietitians need to remain respectful of the complexity of whole foods and mindful that we are a long way from having a complete understanding of all the interactions between food and health. We should be wary of reductionism: we know the benefits of wholegrains come from more than their fibre content and it is probable that fish consumption is valuable for reasons other that the fatty acid contribution (60). While fortification remains a valuable strategy in addressing some important nutritional problems, the chronic health issues in today’s societies are rarely going to be solved by the addition of single isolated ingredients into familiar foods. Advice about overall dietary balance and food synergy will remain just as important.

However, it is important that dietitians bring open minds to the opportunities offered by functional foods. Modern pharmacology has developed over many centuries by characterising, purifying and understanding the mode of action of active components in herbs and other traditional medicines. While some authors argue that the development of functional foods is now blurring the distinction between food and medicine (61), dietitians can recognise that this has been happening for over 40 years. When polyunsaturated margarines were first introduced the primary propositions were not just lower price and convenience (ease of spreading), but also their health benefits. Dietitians were in the vanguard of educating the public about how to incorporate these new foods into the diet. Nowadays, while supporting the primacy of a total diet approach to nutritional advice, we also need to be able to offer independent and credible expert advice on the appropriate use of new functional foods.

Dietitians will have a range of roles in the context of increasing availability and use of functional foods, including providing expertise to the food industry relating to the development of future foods; education of the public, health care professionals and food companies regarding their role in health management; working with other food and nutrition organisations and government to develop and enhance regulatory standards for functional foods, and participating in applied research in this evolving field (62). These new roles can be considered in the context of the entry-level competencies for all dietitians (1). Table 2 sets out some of the current elements of the DAA competency standards and considers the applications to functional foods that dietitians may be called upon to demonstrate in the practice of ‘functional dietetics’. We are not suggesting here that the entry-level competency standards need to be changed, but rather seek to interpret the competency standards in terms of the use of functional foods as well and integrating these into training programs.

Conclusion

The emergence of functional foods in today’s market is having a significant impact on contemporary dietetics practice. ‘Functional dietetics’ encompasses practice in research, food production development, regulation, education, therapy for individuals and the development of population-based nutrition strategies. Opponents of functional foods take the position that the total diet is more important for health and that manufacturers have most to gain from the development of functional foods (58). Those who support functional foods claim that they have the potential to improve individual patient and population health (55). In this context, health claims are seen as a legitimate educational tool, which will help to inform and affect consumer behaviour, and dietitians might responsibly use specific functional foods in their diet prescriptions (63).

Functional foods may appear to be a futuristic approach to ameliorating lifestyle diseases, but a new paradigm for diet, nutrition and lifestyle can be developed.
utilising the social capital available among the interested stakeholders. Through the development of scientifically-based new functional foods, as well as education about their role in a healthy diet, the potential to reduce the burden of lifestyle disease is great. As health professionals with extensive training in nutrition, dietitian-nutritionists are ideally positioned to play a leading role in the evaluation of functional foods, advising on public health policy and translating new science into practical information for their clients. We also have a responsibility to ensure that these new foods enter the market in an equitable way that supports the health of both high-risk individuals and the population in general.

References


