Functional foods and ingredients – trends and opportunities

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**What is a Functional Food?**

Functional foods are foods that provide health benefits beyond basic nutrition.

**What can functional foods do for us?**

Areas where functional foods have health potential are:

- Foods that afford **cardiovascular** protection
- Foods with benefits for the **digestive system**
- Foods designed to **protect against certain cancers**
- Foods with **sugar or fat alternatives**
- Foods with **optimal fat ratios** for the elderly, people with diabetes, those at risk of heart disease, and those with inflammatory disease
- Foods to better combat **allergenicity**
- Foods designed for **athletes and recreation**
- Foods that improve **mood or cognition**

- AFGC Fact Sheet
Why do we need functional foods?

- As an aging population we are increasingly reliant on costly medical services to treat chronic health conditions.
- Healthier foods and diets are an integral part of the solution.

**Functional capacity (physical & mental fitness)**

- **Early Life**
  - Growth and development

- **Adult Life**
  - Maintaining highest level of function

- **Older Age**
  - Maintaining health and independence

- **Range of function in individuals**

- **Disability threshold**

- **Genes**
- **Diet**
- **Lifestyle**
• We need nutritious foods and diets with functionality that meets the requirements of individuals at different life stages
The Australian Guide to Healthy Eating

- Dietary Guidelines for Australian Adults
- Dietary Guidelines for Children and Adolescents in Australia
- Dietary Guidelines for Older Australians
The shape of things to come
Obese Australians

Metabolic Syndrome

Excess energy (food) intake  Insufficient physical activity

Obesity

Inflammation

high blood glucose, insulin

high blood fats

high blood pressure

Heart disease  Diabetes

Physical disability  Cancer

Mental disorders

obese individuals are 74% more likely to have dementia than normal weight individuals

AIHW, 2008
Barriers to adopting healthier lifestyles

- motivation – *can I really be bothered to change?*
- education – *will it really make a difference?*
- availability – *how easy is it to access?*

Choosing healthier foods

- We have an overabundance of food choices – *healthy and unhealthy*
- Many popular food choices could be considered *dysfunctional*
- Functional foods could be redefined as *conventional foods that are (re)formulated to improve their nutritional value by*
  - adding beneficial nutrients, e.g. fibre, omega-3, phytochemicals
  - reducing less desirable nutrients, e.g. sodium, sat /trans fat, sugar
- There is steadily increasing demand for functional foods
Growth in Functional Foods

World market grew 53.5% from 1995 to 1999

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<thead>
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<tr>
<td>Japan</td>
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Functional foods - a world survey Euromonitor International

Energy/mood enhancement, gut health and heart health are the main health targets

Dairy, bakery and beverages account for 72.9% of functional foods in world’s biggest markets

Share: Japan 39%, US 31%, EU 28%, Aust 1.6%

Voluntary fortification of breakfast cereals with essential vitamins and minerals

(Leatherhead Food International 2009)
Source: Nutrition Business Journal estimates ($mil., consumer sales)
## Trends in functional beverages

<table>
<thead>
<tr>
<th>Year</th>
<th>Functional fruit juice and juice drinks ($ million)</th>
<th>Energy drinks ($ million)</th>
<th>Enhanced water ($ million)</th>
<th>Functional soy, rice and almond-based drinks ($ million)</th>
<th>Functional tea ($ million)</th>
<th>Functional yogurt drinks/smoothies ($ million)</th>
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<td>5,534</td>
<td>276</td>
<td>207</td>
<td>485</td>
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<td>2005</td>
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<td>863</td>
<td>754</td>
<td>618</td>
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<td>965</td>
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<td>679</td>
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<td>2009</td>
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<td>1,026</td>
<td>772</td>
<td>691</td>
<td>659</td>
<td>542</td>
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<td>2010 (fore)</td>
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<td>1,073</td>
<td>808</td>
<td>736</td>
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<td>2011 (fore)</td>
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<td>1,242</td>
<td>840</td>
<td>773</td>
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<td>516</td>
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<td>2012 (fore)</td>
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<td>1,467</td>
<td>884</td>
<td>809</td>
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<td>2013 (fore)</td>
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<td>1,689</td>
<td>927</td>
<td>846</td>
<td>617</td>
<td>476</td>
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<td>2014 (fore)</td>
<td>4,909</td>
<td>1,908</td>
<td>969</td>
<td>883</td>
<td>607</td>
<td>456</td>
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</table>

Source: Mintel (based on Information Resources, Inc. InfoScan Reviews Information)
Barriers to adopting healthier lifestyles

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- There is steadily increasing demand for functional foods
- Recent reports by PwC, AC Neilsen and others confirm that *health* is the main driver of international growth in functional foods
Trends in bioactive nutrients
Fibre, Omega-3, Plant Sterols, Peptides, Probiotics, Phytochemicals, Stevia

Trends in health applications

- **Beauty from Within** - very robust category now in its infancy.
- **Mood Food** - reduce stress and anxiety and improve mood and sleep.
- **Digestive Health** - the global market for probiotics alone is > $16 billion.
- **Immune Enhancement** - will continue to grow and sub-segment.
- **Cognitive Function** - Baby Boomers are looking to keep their mental edge; younger consumers are eager for a performance enhancer.
- **Libido** - consumers are paying > $10 per dose to enhance the sexual experience.
- **Phytonutrition** - 91% of Americans get <5 serves/day of fruits and vegetables.
- **Weight Management** - satiety is currently a very strong growth sector.
- **Energy** - meteoric sales of energy drinks and shots.
- **Joint Health** - 80 million people suffer from joint pain; expansion from supplements into functional foods is just taking root.

As 31M Americans turn 65 by 2020, demand for condition-specific foods will grow. More than half of adults are controlling their diet in some manner: 61% for weight, 36% cholesterol, 22% blood sugar, 18% high blood pressure and 14% diabetes.
Consumers Want Wellness

Consumer interest in functional foods is related to health, performance and perceived wellness. The largest functional food categories are ones that are not considered therapeutic, but rather preventative or wellness-oriented.

Nearly 70% of Americans are pursuing a preventative lifestyle versus 27% who are trying to treat a health concern.

Eighty percent of Americans say they are interested in consuming functional foods and beverages. Even in a weak economy people will pay a premium for products seen as preventing a health problem. They are looking for tasty, convenient and "healthful" alternatives to "traditional" foods and beverages.
Why do we need functional foods?

- As an aging population we are increasingly reliant on costly medical services to treat chronic health conditions
- Healthier foods and diets are an integral part of the solution
- We need nutritious foods and diets with functionality meeting the requirements of individuals at different life stages
- **Foods must appeal to consumers, especially taste - no point in producing healthy products if consumers won't buy them!**
- Evidence-based food labelling and education should aid the promotion of healthy foods – consumers are confused, sceptical
What is a health claim?

“An express or implied claim made in the label of a food or advertisement for a food that describes a relationship between the food or components in the food and a disease or a health related condition…” - ANZFA, 1996
Health claims hurdles

- health claims must be evidence based
- levels of evidence required similar to drug registration
- need to extrapolate evidence of benefit to normal healthy population

FDA allows *qualified* claims – intake requirement not specified

EFSA has adopted rigorous approach – few submissions approved

**EFSA Health Claims Workshops**

Dec 2011: gut and immune health

Feb 2011: blood glucose control/postprandial responses; weight management/energy intake/satiety

May 2011: protection against oxidative damage; cardiovascular health

Sept 2011: bone, joint and oral health; cognitive function

Feb 2012: physical performance

**Will this lead to greater investment in *soft option* health applications?**

e.g. cosmetic, energy, satiety
Leveraging growth in the emerging functional foods industry:
Trends and market opportunities - PricewaterhouseCoopers 2009

Figure 7. Energy leads US market for functional foods, growth by benefit, 2007-2012F ($M)

Figure 8. Soft drinks and dairy lead US market for functional foods, growth by category, 2007-2012F ($M)

Regulation of Health Claims in ANZ

What claims can be made?

√ Nutrient content claims  e.g. “this food is a good source of calcium”
√ Nutrient function claims e.g. “calcium contributes to strong bones and teeth”
× Health Claims e.g. “calcium helps prevent osteoporosis and tooth decay”

Standard A1(19) of the Food Code prohibits
- therapeutic or prophylactic claims for foods
- the mention of any disease or physiological condition
- the word ‘health’ as part of the name of a food
- advice of a medical nature

this applies to advertisements as well as food labels!

New Standard for Nutrition, Health and Related Claims will allow:-
✓ Nutrition content claims
✓ General level health claims
✓ High level health claims

"... the food labelling policy vacuum has led to a conflict in current food labelling regulations which both mandate and prohibit factual nutrition and health information being provided to consumers."

- AFGC Submission on Review of Food Labelling Policy and Law
# Health benefits of LC Omega-3 PUFA (EPA, DPA, DHA)

- **Infant development & growth** (esp. brain)
- **Promoting fitness** (physical, mental, reproductive)
- **Counteracting disease** (prevention, treatment)

## Cardiovascular disease
- lipids (HDL, TG)
- blood pressure
- endothelial dilatation
- arterial compliance
- platelet aggregation
- heart rate, HR variability
- arrhythmia
- ischaemic heart disease
- heart failure
- stroke

## Inflammatory disorders
- psoriasis/dermatitis
- rheumatoid arthritis
- inflammatory bowel disease
- immune renal disease
- periodontitis
- asthma

## Behavioural disorders
- depression, bipolar disorder
- cognitive impairment, ADHD
- schizophrenia? autism?

## Metabolic syndrome?
- obesity?
- insulin resistance?

## Cancer?
- inflammation inducers?
- side effects of chemotherapy?
Getting the LC omega-3 message across

Plants
linseed, canola
walnuts, chia
contain
a-Linolenic acid
ALA

Fish, fish oil, microalgae
contain
Eicosapentaenoic acid,
Docosapentaenoic acid,
Docosahexaenoic acid
EPA, DPA
DHA

<5% <1%

ALA is NOT equivalent to EPA, DPA or DHA

This is explicit in
• Nutrient content claim for omega-3
• Nutrient Reference Values for omega-3
• Nutrition education material

How can we get this message across without approved health claims on labels and in advertising?

Nutritional Physiology Research Centre UniSA
Getting the low salt message across
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• Functional foods will offer increasing benefits to producers and consumers alike; however, challenges relating to health claims and other means of consumer education need to be addressed.

• We need improved dialogue between all stakeholders: researchers, food manufacturers, regulators and consumers to fully exploit advances in nutritional science.