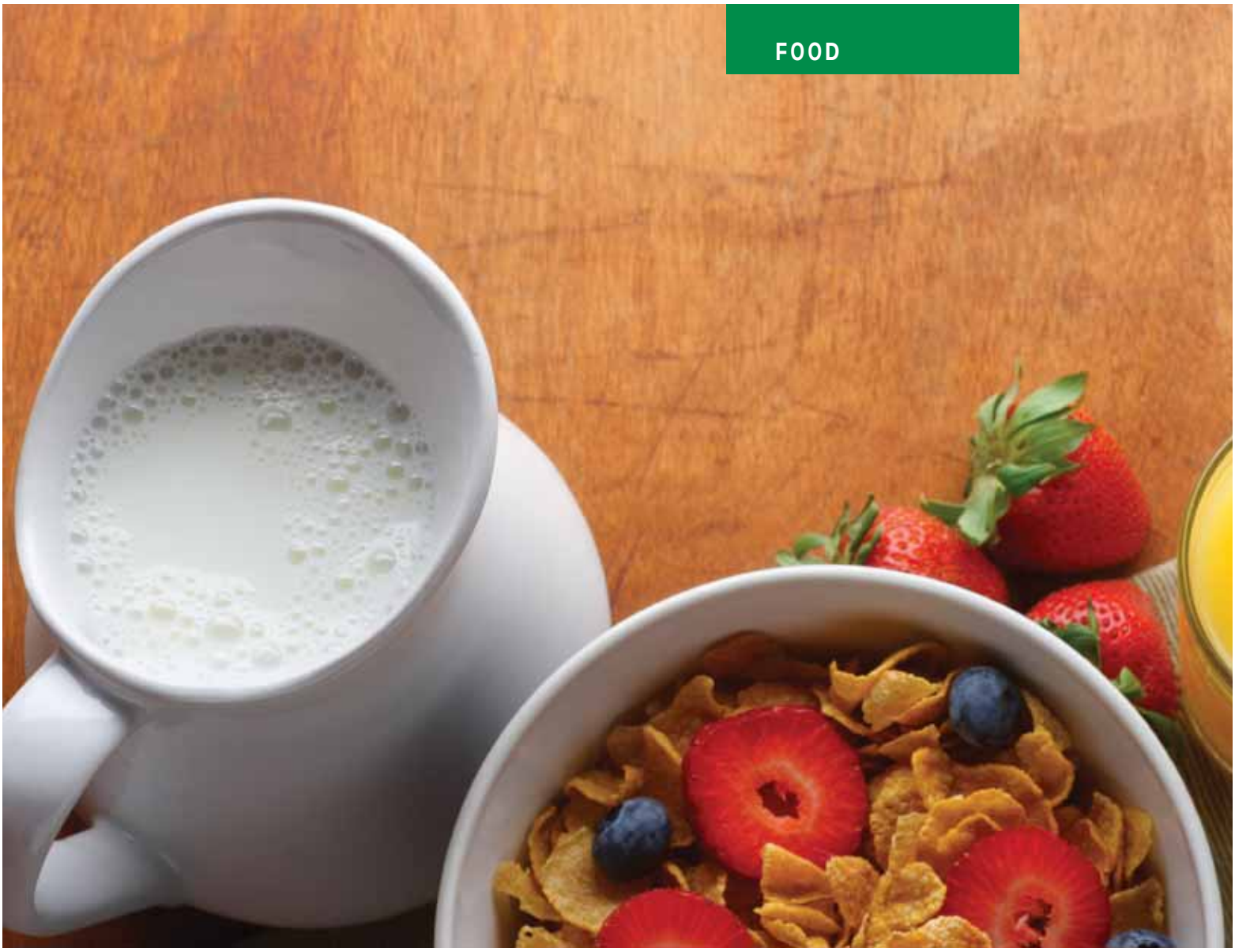

Fortified food

Adding nutrients to foods should benefit consumer health - but is it an excuse for manufacturers to produce foods whose low nutritional quality is masked by the added vitamins and minerals? *Consumer Choice* did a health check-up on some popular fortified foods.

Food fortification was first introduced to combat nutritional deficiencies because of new food processing methods and the resulting loss of nutrients. Based on their origins, foods were enriched to make the processed food nutritionally equivalent to the wholefood.

The term fortification is now used in a broader sense. It includes adding nutrients to improve a food's nutritional make-up to help address deficiencies. Nutrients are also added to foods that are a substitute for others, when the alternative food does not contain nutrients that the original food contains. Examples include the addition of vitamins A and D to margarine spreads and low fat milk, and the addition of calcium to non-dairy milks.

Regulation

Rules were introduced in 2006 to regulate the addition of nutrients to foods in Europe, and to determine which foods cannot be fortified. Nutrients must not be added to unprocessed foods, such as fruit, vegetables, meat and fish. So in theory, all other foods can be fortified. Foods most often fortified include breakfast cereals, cereal bars, milks and juices.

The form of the nutrient added must be one that our bodies can make use of: it must be bioavailable. The label must not imply that a balanced diet cannot provide adequate levels of the added nutrients or mislead the consumer regarding the nutritional merits of the food.

Food fortification can be voluntary or compulsory. It has been proposed to add folic acid to certain breads to help reduce the incidence of neural tube defects (see 'Folic acid and the prevention of NTDs', *Consumer Choice*, July 2008, p258). But, in most cases, nutrients are added voluntarily by food manufacturers. Adding vitamins A and D to margarine and low fat milk is compulsory in the US, but is also common practice in Ireland.

Limits on the levels at which nutrients can be added are currently under discussion in the EU. It is proposed that the minimum level to be added must be of nutritional significance (expected to be set at 15% of the RDA), but the maximum level must not exceed quantities that are considered safe.

AT A **GLANCE**

Nutritional value.

Added vitamins and minerals.

Deficiencies.

Useful contacts

Food Safety Authority of Ireland
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fax (01) 817 1301
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FOOD SURVEY

We surveyed 30 fortified foods to investigate, apart from the added vitamins, how they measure up on a nutritional evaluation. We included examples from the most common types of fortified foods, such as breakfast cereals, cereal bars, milks and juice.

Most of the foods surveyed (93%) had a medium or low fat content and 91% had medium or low saturated fat. Salt was not too high either, with 83% having a medium or low content. However, the findings were not all on the positive side. Sugar content was high in 57% of cases and fibre low in 60%. See our table opposite, for more details.

The most commonly added nutrients were B vitamins, folic acid and iron. There was variation in the amounts added to foods per 100g. For example, folic acid was found ranging from 10µg to a high of 500µg per 100g of food. But those foods with higher added amounts did tend to be those with typically smaller portion sizes.

According to EU rules, the nutrients added to fortified foods should be based on deficiencies. It does not seem that added nutrients in the foods surveyed are directly targeting deficiencies. B vitamins are not the most common nutrient we lack, yet they are the most common nutrients added to foods, according to our survey. And deficiencies vary depending on the individual: women are more often low in iron and teenage girls lack calcium. So the idea of targeting deficiencies through food fortification is in itself problematic. This does suggest that a greater level of regulation may be needed, with input from public health organisations to guide food manufacturers on which nutrients are most crucial.

Cereals should naturally contain high levels of fibre, but many cereal based products, such as breakfast cereals, cereal bars and bread, are not high in fibre. Some are fortified, but mostly with micro-nutrients, such as vitamins and minerals, and not with the major nutrient that they have lost, which is fibre. Some fortified foods are also high in added sugar, most notably breakfast cereals, cereal bars, baby foods and hot drink powders. A limit on the amount of added sugars permitted in fortified foods is needed to improve the general nutritional value of these foods. Sugar is increasingly added to processed foods, and not just those that we would necessarily think of as containing a lot of sugar.

In addition to foods that EU rules clearly state cannot be fortified, regulations also refer to other food categories where fortification may not be permitted, based on their nutritional value. This is quite a vague requirement, which needs strengthening. Foods with a poor nutritional value, such as those high in fat, saturates, sugar and salt, should not be fortified. Our survey findings do raise the question of whether this principle is applied as stringently as it should be.

Quality

In 1999, the UK Food Commission surveyed fortified foods and found that almost three quarters were high in fat, sugar or salt. It suggested that fortification may be used as a marketing tactic, to promote a range of processed foods, many of which we should be eating less of. The Food Commission's co-director, Dr Tim Lobstein commented at the time: "Vitamins don't turn a fatty, sugary product into a healthy one. These products undermine healthy eating advice to cut down on sugary, fatty foods and to eat more foods which naturally contain a wide range of nutrients, such as fruits and vegetables, lean meat and fish."

We conducted our own investigation on the issue. While our survey was not as extensive as the Food Commission's, it did find some similar patterns. The major finding from our research was that the main problem was not fat, but high sugar and low fibre (see *Food survey*).

Report by Aisling Murtagh CC

Fortified food consumption

In Ireland, fortified foods are not new to the market. Findings based on data from the National Food Consumption Database in 2004 found that fortification brings benefits, with a low risk of excessive nutrient intakes. The data highlighted deficiencies in vitamins C, B2 and D, and especially iron and folate in women. Fortified foods were found to contribute to adults' intake of the following nutrients: vitamins D, B1, B2, B6, B12, folate and iron. In the case of teenagers, the 2008 Teens' Food Survey found the average diet to be low in vitamins A, D, iron, calcium and folate. Fortified foods contributed significantly to teenage B vitamin and iron intake.

EU rules on fortification state that when nutrients are added to foods there must be evidence of deficiency. Adding nutrients must also be generally positive from a nutritional perspective, or the addition should make up for dietary changes that could lead to deficiencies.

So, in the Irish case, fortification does seem justified and has positive dietary benefits, but only when vitamins and minerals are analysed. When the wider nutritional content of the food and dietary imbalances are correlated, fortified foods may contribute to a better nutrient intake, but at the expense of a balance of the major nutrients, such as fibre and sugar.

choice comment

Food fortification focuses on vitamins and minerals, the micro-nutrients. The macro-nutrients, such as fibre, fat, sugar, and salt, are not controlled in fortified foods. Deficiencies in micro-nutrients are one justification for adding them to foods. But our intake of macro-nutrients can also lead to health problems.

There is a link between refined sugar consumption and the development of Type 2 diabetes. A high intake of sugar can also contribute to tooth decay and the rising levels of obesity. Low levels of fibre are also a problem in many fortified foods. Bowel cancer is most common in countries with a low fibre and high fat diet and is the second most common cancer in Ireland.

We are encouraged to have a healthy, balanced diet and get nutrients from foods before relying on vitamin supplements. But when foods have nutrients added to make up for those lost during processing there seems a contradiction based on the general dietary advice consumers are given. We are encouraged to eat naturally healthy foods, but why is it accepted that food manufacturers can process foods and add nutrients back to make up for those lost?

It is possible to gain all of our nutrients from a balanced diet that does not contain fortified foods. Some foods currently on the market are not nutritionally up to scratch and adding nutrients is like applying a band-aid. It does not solve the problem's root cause.

FORTIFIED FOODS - HOW HEALTHY ARE THEY?

Food	Added vitamins and minerals	Fat [1] (g per 100g)	Saturated fat [1] (g per 100g)	Sugar [1] (g per 100g)	Salt [1] (g per 100g)	Fibre [2] (g per 100g)
BABY FOOD						
Farley's Rusks	A, C, D, E, B1, B6, B12, calcium, iron	7.4 medium	3.4 medium	29 high	0.05 low	5.1 medium
Liga	B1, B3, B6, iron	7.5 medium	0.6 low	25 high	0.4 medium	1.5 low
Milupa 7 Cereals Breakfast	A, C, D, E, B2, B3, B5, B6, B12, biotin, folic acid, calcium, iron, magnesium, zinc	9.5 medium	4.1 medium	35 high	0.3 low	4.4 medium
BREAKFAST CEREALS						
Kellogg's All Bran	D, B1, B2, B3, B6, B12, folic acid, iron, magnesium, zinc	3.5 medium	0.7 low	17 high	1.55 high	27 high
Kellogg's Bran Flakes	D, B1, B2, B3, B6, B12, folic acid, calcium, iron	2 low	0.5 low	22 high	1.3 medium	15 high
Kellogg's Coco Pops	B1, B2, B3, B6, B12, folic acid, calcium, iron	3 low	1.5 medium	34 high	1.15 medium	2 low
Kellogg's Corn Flakes	D, B1, B2, B3, B6, B12, folic acid, calcium, iron	0.9 low	0.2 low	8 medium	1.8 high	3 low
Kellogg's Rice Krispies	D, B1, B2, B3, B6, B12, folic acid, iron	1 low	0.2 low	10 medium	1.65 high	1 low
Kellogg's Special K	C, D, B1, B2, B3, B5, B12, folic acid, iron	1.5 low	0.5 low	17 high	1.15 medium	2.5 low
Nestlé Cheerios	C, B1, B2, B3, B5, B6, B12, biotin, folic acid, calcium, iron	3.9 medium	1.1 low	21.6 high	1.2 medium	6.6 high
Nestlé Shreddies	B1, B2, B3, B5, B6, B12, biotin, folic acid, iron	1.9 low	0.4 low	15.5 high	0.9 medium	9.8 high
Ready Brek	B1, B2, B3, B5, B6, B12, biotin, folic acid, calcium, iron	8.7 medium	1.2 low	1 low	<0.25 low	7.9 high
Weetabix	B1, B2, B3, folic acid, iron	2 low	0.6 low	4.4 low	0.65 medium	10 high
BREAD						
Brennan's White Slice	Folic acid	1.4 low	0.4 low	0.1 low	1.3 medium	3 low
Brennan's Whipper Snapper	B1, B3, calcium, iron	1.6 low	0.51 low	0.2 low	1.3 medium	3 low
CEREAL BARS						
Kellogg's Nutrigrain Apple	B1, B2, B3, B6, B12, calcium, folic acid, iron	9 medium	3.5 medium	32 high	0.75 medium	3.5 medium
Kellogg's Rice Krispie Squares	B1, B2, B6, B12, folic acid	12 medium	7 high	32 high	0.75 medium	0.9 low
DRINK POWDERS						
Ovaltine Original	A, C, E, B1, B2, B3, B5, B6, B12, calcium, folic acid, iron, magnesium, zinc	1.9 low	1.4 low	49.6 high	0.25 low	2.5 low
Nesquik Chocolate Powder	D, E, C, B1, B3, B5, folic acid, calcium, magnesium	3.2 medium	1.4 low	78 high	0.5 medium	5.8 medium
Horlicks Malted Food Drink	A, C, D, B2, B3, B12, folic acid	4.7 medium	1.8 medium	46.4 high	1.2 medium	4 medium
MARGARINE						
Flora	A, D, E, B6, B12, folic acid	59 high	12 high [3]	Trace low	1.5 medium	Trace low
Low Low	A, D, E, B6, B12, folic acid	38 high	9.3 high [3]	0.5 low	1.5 medium	Trace low
MILK / MILK SUBSTITUTES						
Avonmore Super Milk	A, D, E, B2, B12	1.5 low	0.9 low	5.2 medium	<0.3 low	Trace low
Provamel Soya Drink	D, E, B2, B12	1.9 medium	0.3 low	2.4 low	0.2 low	0.6 low
ORANGE JUICE						
Tropicana Essentials Fibre	A, C	Trace low	0 low	10.6 high [4]	Trace low	3.4 medium
Tropicana Essentials Multivitamins	A, C, B1, B2, B6	Trace low	0 low	10.5 high [4]	Trace low	0.1 low
SOUP						
Knorr Oxtail and Vegetable	C, E, B1, B2, B6, B12, folic acid	1.5 low	1 low	0.4 low	1 medium	0.3 low
Knorr Spicy Tomato Quicksoup	C, E, B1, B6, B12, folic acid	0.5 low	0.2 low	3.5 low	1 medium	0.3 low
YOGHURT						
Danone Vitilinea	D, B12, calcium, magnesium	0.1 low	Trace low	6.9 medium	0.2 low	2 low
Yoplait Frubes	A, B2, B5, B6, B12	2.9 low	1.8 medium	14 high	0.1 low	0.2 low

[1] The high, medium and low evaluation is based on the UK Food Standards Agency nutritional criteria for traffic light signpost labelling, red, amber and green for the fat, saturates, sugar and salt.
[2] Fibre rating is also based on FSA criteria, but this nutrient is not part of traffic light labelling. We have given high fibre a green rating as a high fibre intake is encouraged, whereas for the other nutrients a high content is given a red rating as a high intake of these nutrients is not encouraged. [3] Application of traffic light coding to fats can be problematic. Olive oil is also 'high' in saturates, but not considered a saturated fat when compared with animal produce such as butter or fatty meat. If per portion guidelines are applied, these margarines fall into the medium or amber category.
[4] Sugars represent natural sugars present in the fruit and not added, refined sugar.