

Technological developments 5.2.2

Key words:

Nutritional modification: food modified to make it meet dietary recommendations or give a health benefit.

Fortification: means adding extra nutrients to a food, e.g. vitamins A and D to vegetable fat spread (added by law); B group vitamins to breakfast cereals; iron and calcium to white flour (added by law); vitamin B12 and calcium to soya products (added voluntarily by manufacturer).

Food additives: natural or synthetic (man made) chemical substances that are added to foods during manufacturing or processing to improve the quality, flavour, colour, texture or stability



Fortification.

Some foods are fortified by food manufacturers to:

- Replace nutrients lost during processing.
- Provide nutrients if the product has been made to be similar to another food, for example, vegetable fat spread is fortified with vitamins A and D because it is used instead of butter by some people.
- Increase the amount of nutrients in order to be able to make a nutritional claim about a product such as breakfast cereals.
- Fortification is controlled by law



Food that is fortified by law by food manufacturers:

- Wheat flour (not wholemeal) is fortified with iron, thiamine (vitamin B1) and niacin (vitamin B3), calcium, folic acid (vitamin B9). This is due to concern that some people have low intakes of these nutrients.

- Vegetable fat spreads are fortified with vitamins A and D as they are often used to replace butter where these nutrients are naturally found.

Foods that are fortified voluntarily by food manufacturers:

- Low-fat vegetable fat spreads are fortified with vitamins A and D. Cholesterol lowering spreads have natural substances called stanols added to vegetable fat spreads to lower blood cholesterol levels and help prevent heart disease.

- Breakfast cereals are fortified with B group vitamins, including folic acid (vitamin B9), iron, vitamin D.

- Soya products (milks, yogurts, fat spreads) are fortified with vitamin B12 and calcium.

Additives are used in food products to:

- Preserve (increase shelf life),
- Colour, flavour, sweeten to improve sensory qualities
- Stabilise, emulsify to improve structure and texture

The use of additives is controlled by law. There is concern about how many additives people consume if they eat a lot of processed foods. Some additives may cause health problems (side effects) e.g. headache, hyperactivity in children, and irritate symptoms of eczema and asthma.

Additives (except flavourings) are given E numbers by the European Union (EU). Strict safety tests are carried out. Foods must be clearly labelled to show which additives they contain.

The use of additives is regulated and controlled by law.

Types of Additives:

Colourings	Used to improve or intensify colour to attract consumers. Sometimes natural colours are used e.g. chlorophyll (green) and anthocyanins (purple) but these are affected by food processing. Some synthetic or man made col-
Flavourings	Used to improve or change the natural flavour and odour of foods. Some flavours are very intense (strong) e.g. those used to flavour fried snack foods (crisps); these are also high in salt. People become used to the very strong
Sweeteners	Used as a substitute sweeten to sugar to reduce calories and prevent high blood sugar levels. Examples are Sorbitol, Aspartame, Sucralose + Saccharin. Recent studies suggest that using sweeteners to replace sugar does not
Preservatives	Prevent the food becoming spoiled by micro-organisms and increase shelf life. Examples are: Sodium nitrate E251; Potassium sorbate E202. Some people are allergic to preservatives
Emulsifiers/ stabilisers	Are used to develop certain textures in foods so that the food does not change (is stable) while it is being stored or used. Emulsifiers are used to prevent oil and water separating out in products such as salad dressings Lecithin
Others	Acidity regulators; anti-caking agents; antioxidants; thickeners; gelling agents; flavour enhancers; modified starches and packaging gases