

Food Additives

Key facts

- Food additives are substances added to food to maintain or improve its safety, freshness, taste, texture, or appearance.
- Food additives need to be checked for potential harmful effects on human health before they can be used.
- The Joint FAO/WHO Expert Committee on Food Additives (JECFA), is the international body responsible for evaluating the safety of food additives.
- Only food additives that have been evaluated and deemed safe by JECFA, on the basis of which maximum use levels have been established by the Codex Alimentarius Commission, can be used in foods that are traded internationally.

What are food additives?

Substances that are added to food to maintain or improve the safety, freshness, taste, texture, or appearance of food are known as food additives. Some food additives have been in use for centuries for preservation – such as salt (in meats such as bacon or dried fish), sugar (in marmalade), or sulfur dioxide (in wine).

Many different food additives have been developed over time to meet the needs of food production, as making food on a large scale is very different from making them on a small scale at home. Additives are needed to ensure processed food remains safe and in good condition throughout its journey from factories or industrial kitchens, during transportation to warehouses and shops, and finally to consumers.

The use of food additives is only justified when their use has a technological need, does not mislead consumers, and serves a well-defined technological function, such as to preserve the nutritional quality of the food or enhance the stability of the food.

Food additives can be derived from plants, animals, or minerals, or they can be synthetic. They are added intentionally to food to perform certain technological purposes which consumers often take for granted. There are several thousand food additives used, all of which are designed to do a specific job in making food safer or more appealing. WHO, together with FAO, groups food additives into 3 broad categories based on their function.

Flavouring agents

Flavouring agents – which are added to food to improve aroma or taste – make up the greatest number of additives used in foods. There are hundreds of varieties of flavourings used in a wide variety of foods, from confectionery and soft drinks to cereal, cake, and yoghurt. Natural flavouring agents include nut, fruit and spice blends, as well as those derived from vegetables and wine. In addition, there are flavourings that imitate natural flavours.

Enzyme preparations

Enzyme preparations are a type of additive that may or may not end up in the final food product. Enzymes are naturally-occurring proteins that boost biochemical reactions by breaking down

larger molecules into their smaller building blocks. They can be obtained by extraction from plants or animal products or from micro-organisms such as bacteria and are used as alternatives to chemical-based technology. They are mainly used in baking (to improve the dough), for manufacturing fruit juices (to increase yields), in wine making and brewing (to improve fermentation), as well as in cheese manufacturing (to improve curd formation).

Other additives

Other food additives are used for a variety of reasons, such as preservation, colouring, and sweetening. They are added when food is prepared, packaged, transported, or stored, and they eventually become a component of the food.

Preservatives can slow decomposition caused by mould, air, bacteria, or yeast. In addition to maintaining the quality of the food, preservatives help control contamination that can cause foodborne illness, including life-threatening botulism.

Colouring is added to food to replace colours lost during preparation, or to make food look more attractive.

Non-sugar sweeteners are often used as an alternative to sugar because they contribute fewer or no calories when added to food.

WHO response

Evaluating the health risk of food additives

WHO, in cooperation with the Food and Agriculture Organization of the United Nations (FAO), is responsible for assessing the risks to human health from food additives. Risk assessment of food additives are conducted by an independent, international expert scientific group – the Joint FAO/WHO Expert Committee on Food Additives (JECFA).

Only food additives that have undergone a JECFA safety assessment, and are found not to present an appreciable health risk to consumers, can be used. This applies whether food additives come from a natural source or they are synthetic. National authorities, either based on the JECFA assessment or a national assessment, can then authorize the use of food additives at specified levels for specific foods.

JECFA evaluations are based on scientific reviews of all available biochemical, toxicological, and other relevant data on a given additive – mandatory tests in animals, research studies and observations in humans are considered. The toxicological tests required by JECFA include acute, short-term, and long-term studies that determine how the food additive is absorbed, distributed, and excreted, and possible harmful effects of the additive or its by-products at certain exposure levels.

The starting point for determining whether a food additive can be used without having harmful effects is to establish the acceptable daily intake (ADI). The ADI is an estimate of the amount of an additive in food or drinking water that can be safely consumed daily over a lifetime without adverse health effects.

International standards for the safe use of food additives

The safety assessments completed by JECFA are used by the joint intergovernmental food standard-setting body of FAO and WHO, the Codex Alimentarius Commission, to establish

levels for maximum use of additives in food and drinks. Codex standards are the reference for national standards for consumer protection, and for the international trade in food, so that consumers everywhere can be confident that the food they eat meets the agreed standards for safety and quality, no matter where it was produced.

Once a food additive has been found to be safe for use by JECFA and maximum use levels have been established in the Codex General Standard for Food Additives, national food regulations need to be implemented permitting the actual use of a food additive.

How do I know which additives are in my food?

The Codex Alimentarius Commission also establishes standards and guidelines on food labelling. These standards are implemented in most countries, and food manufacturers are obliged to indicate which additives are in their products. In the European Union, for example, there is legislation governing labelling of food additives according to a set of pre-defined “E-numbers”. People who have allergies or sensitivities to certain food additives should check labels carefully.

WHO encourages national authorities to monitor and ensure that food additives in food and drinks produced in their countries comply with permitted uses, conditions and legislation. National authorities should oversee the food business, which carries the primary responsibility for ensuring that the use of a food additive is safe and complies with legislation.