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Sustainability and Usage of Food Additives and its Classification

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Opinion Article

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ABOUT THE STUDY

Food additives are substances that are added to food in order to preserve flavour or improve taste, appearance, or other sensory qualities. Some additives, such as vinegar (pickling), salt (salting), smoke (smoking), sugar (crystallization) and others, have been used for centuries to preserve food. This allows for the storage of longer-lasting foods such as bacon, sweets, and wines. With the introduction of processed foods in the second half of the twentieth century, many additives, both natural and artificial, were introduced. Food additives also include substances that are introduced to food indirectly during the manufacturing process, packaging, or storage or transportation. To regulate and inform consumers about these additives, each is assigned a unique number known as an "E number," which is used in Europe for all approved additives. The Codex Alimentarius Commission has now adopted and expanded this numbering scheme to internationally identify all additives, regardless of whether they are approved for use.

Although all E numbers begin with "E," countries outside of Europe use only the number, regardless of whether the additive is approved in Europe. Acetic acid, for example, is written as E260 on European products but is simply known as additive 260 in some countries. Alkannin additive 103 is not approved for use in Europe and thus does not have an E number, but it is approved for use in Australia and New Zealand. Australia has had an approved system of labelling for additives in packaged foods since 1987. Each food additive must be identified by name or number. The numbers are the same as in Europe, but with the prefix "E" removed.

These items are listed as Generally Recognized As Safe (GRAS) by the United States Food and Drug Administration (FDA); they are listed under both their Chemical Abstracts Service number and FDA regulation under the United States Code of Federal Regulations.

Classification

Food additives are classified into several categories, though some overlap exists because some additives have more than one effect. For example, salt functions as both a preservative and a flavor.

Acidulants: Acidulants are substances that have a sour or acidic flavor. Vinegar, citric acid, tartaric acid, malic acid, fumaric acid, and lactic acid are examples of common acidulants.

Acidity regulators: Acidity regulators Acidity regulators are used to control the pH of foods for stability or to affect enzyme activity.

Anticaking substances: Anticaking agents prevent milk powder from caking or sticking.

Foaming and antifoaming agents: Food foaming is reduced or prevented by antifoaming agents. Foaming agents have the opposite effect.

Antioxidants: Antioxidants, such as vitamin C, act as preservatives by preventing oxygen from degrading food.

Bulking agents: Starch and other bulking agents are additives that increase the bulk of a food without changing its taste.

Food coloring: Food colorings are used to replace colors lost during preparation or to make food look more appealing.

Fortifying agents: Vitamins, minerals, and dietary supplements are used to improve nutrition.

Color retention agents: Color retention agents, as opposed to colorings, are used to keep a food's natural color.

Emulsifiers: Emulsifiers enables water and oils to stay mixed together in an emulsion, such as mayonnaise, ice cream, and homogenized milk.

Flavorings: Flavorings are additives that give food a specific taste or smell. They can be derived naturally or artificially. Flavorings do not have an E-code in the EU and are not considered food additives.

Flavor enhancers: Flavor enhancers complement the flavors of a food. Monosodium glutamate is a well-known example. Some flavor enhancers have distinct flavors that are unrelated to the food.

Glazing agents: Glazing agents give foods a shiny appearance or a protective coating.

Humectants: Humectants keep foods moist and prevent them from drying out.

Tracer gas: Tracer gas enables package integrity testing to prevent foods from being exposed to the environment, thereby ensuring shelf life.

Preservatives: Preservatives prevent or reduce food spoilage caused by fungi, bacteria, and other microorganisms.

Stabilizers: Stabilizers, thickeners, and gelling agents, such as agar or pectin (used in jam, for example), provide a firmer texture to foods. While they are not true emulsifiers, they do aid in the stabilization of emulsions.

Sweeteners: Sweeteners are used to flavor foods. Other than sugar, sweeteners are added to keep food energy (calories) low or because they have beneficial effects on diabetes mellitus, tooth decay, or diarrhea.

Thickeners: Thickening agents are substances that, when added to a mixture, increase its viscosity without affecting its other properties significantly.

Packaging: Indirect additives such as bisphenols, phthalates, and Perfluoroalkyl Chemicals (PFCs) are used in manufacturing or packaging. The American Academy of Pediatrics called for more research into these three substances, as well as nitrates and food coloring, in July 2018 because they may harm children during development.