



What Food Additives Add

An additive is any substance that is added to food either intentionally or unintentionally. Unintentional additives migrate into various foods by accident during processing, packaging, or storage. Intentional additives are added to food to produce a desired effect.

There are approximately 3000 substances used in food processing, and these make up less than 1% of the total weight of our food supply. The most widely used are sugar, salt, pepper, mustard, corn syrup, citric acid, and baking soda. These additives account for 98% (by weight) of all the food additives used. The following list describes the main uses of intentional food additives:

- Coloring agents - increase acceptability and attractiveness
- Flavoring agents - enhance flavor
- Nutrients - improve nutritional value
- Emulsifiers, stabilizers, and thickeners - give texture and desired consistency
- Preservatives and antioxidants - prevent and retard spoilage.

An example of a commonly used additive is calcium propionate. It is a preservative added to bread to prevent the growth of mold and extend its shelf life. It also occurs naturally in swiss cheese, and two ounces of swiss cheese contains enough of this additive to preserve two loaves of bread.

Are Additives Harmful?

Much controversy exists regarding the safety of food additives. Additives must be considered effective, safe, and measurable in order to be used in a product.

“Proof of safety” means that when fed in large doses to laboratory animals, an additive causes no cancer, birth

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defects, or other damage or injury. But, as evidence is collected on the cancer-causing potential of substances, the safety of certain additives is questioned.

Examples of questionable substances include: saccharin, artificial colors, sodium nitrate, acesulfame K, BHA, and BHT. These have been shown to cause cancer in laboratory animals when ingested in large amounts.

Controversy exists in determining the actual risk to humans who consume these additives. Some scientists believe the amount needed to cause harm is so excessive that there is no real danger. Besides, most additives that involve risk are allowed in foods only at levels 100 times below those at which the risk is still known to be zero. Others believe that any questionable substance should automatically be banned.

Until further research is available to determine the link between additives and cancer, you should decide what is best for yourself. If you are concerned about the safety of food additives, become an informed consumer.

"No Additives or Preservatives"

Foods that are labeled "no additives" are not necessarily healthier than other brands. The difference between two products may be that one contains sugar or salt while the other does not. The best way to judge the value of foods is to read ingredient labels carefully.

What to Select

Remember that selecting a variety of foods is the best way to ensure you are eating a healthy diet. This will also help reduce your exposure to any one additive, in case it does have negative long-term effects. Select fresh and minimally processed foods since they generally contain only a few additives. Highly processed foods, such as candy, cookies, and soda, contain many artificial colors, flavors, and other additives, and they also provide little nutritional value.

Please visit www.snac.ucla.edu to learn more about food additives and their use.

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FOOD ADDITIVE CONTROVERSIES

One of the major controversies in the food industry today surrounds food additives. Health professionals have differing opinions on the safety of food additives. This makes it extremely difficult for the public to determine which additives are safe and which are not. Outlined below are some of the regulations pertaining to food additives. Also discussed are some of the more controversial food additives and the reasons for concern.

Regulations Governing Additives

The FDA (Food and Drug Administration) is charged with the responsibility for deciding what additives may be in foods. To obtain permission to use a new additive in food products, manufacturers must test the additive and prove that it is effective, can be detected and measured in the final food product, and is safe. The FDA then schedules a public hearing where consumers and experts voice their opinions for and against the additive. Finally, if approved, the FDA writes a regulation stating in what amounts, for what purposes, and in what foods the additive may be used. These regulations are periodically reviewed. Many substances are exempt from complying with this procedure since they have been used for a long time without any known adverse effects. These substances are on the FDA's generally recognized as safe (GRAS) list. To remain on this list, an additive must not be found to cause cancer in animals or humans.

Sugar Replacers and Substitutes

- **Sugar alcohols** (sorbitol, mannitol, xylitol) provide the bulk of sugar, without as many calories (1.5-3 calories per gram). Unlike sugar, they don't cause tooth decay, and they don't cause sudden increases in blood glucose (sugar) levels. Large amounts may cause diarrhea, but otherwise they are considered safe. Most sugar alcohols are only about half as sweet as sugar, so many foods with sugar alcohols may also contain one of the following intense sweeteners:
- **Saccharin** (*Sweet 'n Low, Sugar Twin*) is 350 times sweeter than sugar. Animal studies have shown that very high doses can cause cancer of the bladder and other organs. In fact, the FDA proposed to ban saccharin in 1977, but the proposal was removed due to loud public outcry. Foods with saccharin must carry health warnings.
- **Aspartame** (*NutraSweet, Equal*) is 180 times sweeter than sugar and is composed of two amino acids, phenylalanine and aspartic acid. As of yet, there is no good evidence that it causes cancer. Although some people report headaches and dizziness after its consumption, research hasn't confirmed a link. People with phenylketonuria (PKU) should avoid it because they can't break down the amino acid phenylalanine.
- **Acesulfame Potassium** (*Summett, Sweet One*) is 200 times sweeter than sugar and was approved by the FDA in 1988. The only safety tests done were in the 1970s, and they were done poorly and indicated some cancer risk in animals at very high doses. No adverse health effects have been documented in humans.



- **Sucralose** (*Splenda*) is the only noncaloric sweetener made from sugar. It is 600 times sweeter than sugar and was approved in 1998. Unlike many other sugar substitutes, it can be used in cooked and cold foods, and it appears to be completely safe.

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Fat Substitutes

Olestra is synthetic fat that cannot be broken down by the body, so it passes through the digestive tract unabsorbed. It was approved by the FDA in 1996 for use only in “savory snacks” (chips and crackers). While it appears safe, it can cause unpleasant side effects such as diarrhea, loose stools, stomach cramps, and gas. It also reduces the body’s absorption of fat-soluble vitamins and carotenoids (such as beta-carotene and lycopene) which are found in fruits and vegetables. Those carotenoids may reduce the risk of cancer and heart disease.

Preservatives

Sulfites prevent growth of mold and bacteria and prevent discoloration in foods such as dried fruit, processed potatoes, shrimp, and wine. The FDA now prohibits sulfite use on foods meant to be eaten raw (except grapes), and it requires that all foods containing sulfites list it on the label. Some people have adverse reactions related to sulfites such as hives, shortness of breath, and in some extreme cases, even death. People with asthma most commonly experience these adverse reactions.

Nitrates are used as a preservative in foods such as bacon, ham, hot dogs, and luncheon meat. They help prevent the growth of bacteria that cause botulism and also stabilize the red color in cured meats. When nitrates combine with amines present in the stomach and meat, nitrosamine can form. Nitrosamine has been found to cause cancer in animals. The formation of nitrosamine is inhibited by ascorbic acid (vitamin C), so many companies add ascorbic acid to their products. While nitrates introduce only a small cancer risk, they’re still probably worth avoiding.

BHA and BHT

BHA and BHT are preservatives used to retard rancidity in vegetable oils, potato chips, candy, cereals, and many convenience foods. Though generally recognized as safe by the FDA, much debate exists regarding these two additives. Some studies have shown these additives to cause cancer in rats, while other studies contradict these findings. The FDA is still reviewing BHT and BHA.

Artificial Colors

Artificial colors are used almost exclusively in food products with little nutritional value (candy, soda, gelatin, desserts, etc.), so you won’t be missing much if you avoid foods that contain them. The presence of colorings often signals the absence of fruit or other natural ingredients. Artificial colors contribute to hyperactivity in some children and are suspected as possible cancer-causing substances. The FDA recommended that Red Dye #3 (found in maraschino cherries, some candies, and baked goods) be banned, but the recommendation was overruled due to pressure from the presidential administration in the 1980s.

Pesticides

Pesticides are used to protect crops and foods after harvest from insects and other pests. These chemicals are monitored and controlled by the FDA and other national and international organizations. One major concern with pesticides is the potential harm to health arising from ingestion of residues in our foods. The popularity of organically-grown produce has increased because of this concern. To reduce your pesticide residue intake, remember to thoroughly wash all fresh fruits and vegetables in water with a scrub brush.