



# What's really in your food

Surprising facts about additives you should know

Which of these three common food ingredients is worse for you—sugar, salt, or polyglycerol polyricinoleate? Can you even pronounce polyglycerol polyricinoleate?

OK, both are sort of trick questions because none of the three substances are horrible—and because polyglycerol polyricinoleate, or PGPR, is almost unpronounceable. But if you guessed that PGPR was the worst

ingredient in the list because of its long chemical name, read on!

Cutting down on packaged foods with long lists of manufactured ingredients in favor of foods like fresh fruits, vegetables, and nuts is a good start if you're trying to eat better. As we've reported in previous issues, some chemical additives are questionable for your health. But not all are worrisome. In fact, the giant amounts of sugar and salt added to so many processed foods are a

much bigger problem than chemical additives, most health experts agree.

Michael Jacobson, Ph.D., executive director of the nonprofit health-advocacy organization Center for Science in the Public Interest, says that food-safety debates can get sidetracked by scary-sounding multisyllabic chemical names.

When we peeled back the label to take a closer look at the thousands of substances added to your food, we found many surprises. We talked

to experts about some of the more controversial additives. Our research resulted in this list of five things that you should know about food additives. Also, see page 63 for additives that you might want to skip, as well as some that can cause problems. (For more info on additives, go to [www.cspinet.org](http://www.cspinet.org) or purchase the CSPI's phone app.)

### Additives can make foods safer and healthier.

When you think additives, you might think only of extras that color kids' cereal or make junk-food snacks seemingly last forever. But in addition to the red dyes in sugary snacks, additives include emulsifiers to keep foods like peanut butter from separating (soy lecithin, egg yolk, and polysorbates), anticaking agents to keep powdered foods such as baking mixes free-flowing (calcium silicate and silicon dioxide), vitamins to fortify cereal, and preservatives to discourage mold from growing (sodium benzoate, calcium sorbate, and sodium erythorbate).

"The convenience, quality, safety, and variety we enjoy at the supermarket are often enhanced by food additives," says Gregory Möller, Ph.D., professor of environmental chemistry and toxicology at the University of Idaho-Washington State University joint School of Food Science.

Roger Clemens, Dr.P.H., adjunct professor of pharmacology and pharmaceutical sciences at the University of Southern California School of Pharmacy and president of the nonprofit Institute of Food Technologists, says that additives contribute to public health. "In the 1920s the thyroid condition goiter virtually disappeared when iodine was added to salt. More recently, the incidence of neural tube defects in infants dropped more than 35 percent

in about a decade thanks in part to the fortification of grains with folic acid," Clemens says.

### Most of what's added is some form of sugar or salt.

In your kitchen, sugar and sodium chloride, or table salt, count as

### Viruses, bugs, and even beavers are used in some food additives.

ingredients, but food makers use lots more than you do and in different forms for different reasons. For example, carbonated drinks often contain sodium benzoate to preserve them and deflect off-flavors. And added sugars wind up in products as varied as crackers and canned three-bean salad to affect color, flavor, and texture. In fact, more than 3,000 food additives are listed in the Food and Drug Administration database, but just four constitute 93 percent of the total used: sodium and three

forms of sugar—corn syrup, dextrose, and sucrose.

"We know that added sugars contribute to the obesity epidemic. We know sodium can raise blood pressure," Möller says. "If you want to have a big impact on your diet, that's where to look first."

### Food labels' 'Nutrition Facts' don't always tell the whole story.

The amount of sugar per serving in a product might include natural and added sugars. And a drink labeled 100 percent juice might contain more sugars than a product with only 10 percent juice, even though it could be a better nutritional choice. The solution, at least when it comes to sugars: Check to see whether some form of sugar is one of the top three ingredients. If it is, the product probably contains lots of added sugars.

When it comes to salt, keep in mind that most foods are naturally low in sodium, so the amount listed generally reflects what was added during processing. To help meet the dietary-guidelines recommendation of no more than 2,300 milligrams of



sodium a day for healthy adults, look for products whose sodium (in milligrams) does not exceed the number of calories. If it does, look for a lower-salt version.

**'Natural' additives aren't necessarily better.**

For starters, there's no standard definition for "natural" except on meat and poultry products, so that's generally not a meaningful claim. Also, even a product free of artificial ingredients isn't necessarily a good choice. Another thing to keep in mind: Even organic items may contain some synthetic additives. Only products labeled "100 percent organic" are free of synthetics.

Also, natural additives aren't all what you might expect. Carmine, a coloring used in foods such as yogurts and juices, is made from insects. See at right for other examples.

**If you want to cut back on additives, start by kicking your soda habit.**

"Soft drinks are the single biggest category for additive use," Möller says. Drink fewer sodas and you'll consume many fewer additives.

Two more simple rules come from the book "Food Rules: An Eater's Manual," by Michael Pollan (Penguin Press, 2011): Don't eat breakfast cereals that change the color of the milk. Also, don't eat anything your great-grandmother wouldn't recognize as food. Emphasize foods that come in their own natural packaging, such as a shell, over those that come in boxes and wrappers.

In general, unless you have a specific sensitivity, even the more controversial additives are of concern only if you eat a lot of them. Nitrites from the occasional hot dog are no big deal, but a steady diet of processed meats might be a bad idea for many reasons.



## Weird but edible

**AMMONIATED BEEF** Trimmings of meat are ground and then gassed with ammonia to kill pathogens. (This is the "pink slime" that went viral on the Internet earlier this year. In fact, McDonald's hasn't used the stuff in its burgers since last August. Still, we wonder how many other fast food burgers remain "slimed.")

**BACTERIOPHAGES** A newer form of food preservative, this funky-sounding additive actually contains viruses. It's sprayed onto ready-to-eat meat and poultry products to destroy the bacteria responsible for the potentially deadly infection listeriosis.

**CASTOREUM** It's an extract made by drying and grinding the sacs located by the anal glands of beavers. It can be used in baked goods, gums, alcohol, and candy, for example.

**LANOLIN** The waxy substance is derived from raw wool and used in chewing gum (and hand cream).

**L-CYSTINE** This amino-acid nutrient can be derived from human hair or bird feathers. But most of what is used commercially is synthetically produced.

**RENNET** A component derived from the stomach of milk-fed calves, this additive is a thickening agent used for making custards.

**SHELLAC** Made from the shiny secretions of the Asian lac bug, it can be used to coat pills and candies as well as make apples glisten.

**SILICON DIOXIDE (silica or sand)** Yes, actual very fine quartz sand is used in some powdered foods to keep them free-flowing and moisture free.

**TRANSGLUTAMINASE** It's an enzyme used to "glue" pieces of meat together in order to form one whole cut. These new cuts must be listed on food labels. Look for ingredients such as "reformed and shaped chicken breast" or "formed turkey thigh roast."

# Can cause problems

## **MONOSODIUM GLUTAMATE (MSG)**

This flavor enhancer has been reported to cause flushing, headache, and other ailments. But research shows that only a few people react to it and only when given large amounts. Still, it's best to limit MSG because it adds to your overall sodium intake.

**MUSTARD SEEDS AND POWDER** They add texture and flavor to some processed and prepackaged foods but are an often-missed source of allergies, which can cause severe reactions.

## **RED AND YELLOW FOOD DYES**

Some people have allergic reactions after consuming some food colorings: Yellow No. 5 or 6, Red No. 40, carmine, and cochineal extract. (See below for more warnings on color additives.)

**SUGAR ALCOHOLS** These sweetening agents commonly used in ice creams, gums, mints, and candies can cause gas and diarrhea. If you're having digestive problems, try avoiding foods with isomalt or ingredients ending in the suffix "ol," such as sorbitol and xylitol.



**SULFITES** These preservatives can cause mild to potentially life threatening reactions in about 5 percent of people with asthma. They can be found in some wines, dried fruit, and vinegars.

# Smart to cut back on—or skip

**ARTIFICIAL SWEETENERS** Saccharin (Necta-Sweet and Sweet'N Low) and aspartame (Equal and NutraSweet) have been linked to cancer in some animal studies, though those results have not been borne out in humans. Research has also linked artificial sweeteners to weight gain, perhaps because some of us view them as license to overindulge. So don't overdo it on the diet soda!

**BHA (butylated hydroxyanisole) and BHT (butylated hydroxytoluene)** These synthetic antioxidants are used to keep oils from becoming rancid. Based on studies in rodents and fish, the National Toxicology Program of the National Institutes of Health concluded that BHA is "reasonably anticipated to be a human carcinogen." While saying that there is no evidence of hazard to the public when it's used at the low levels now found, the FDA has urged further investigation.

## **'CERTIFIED' ARTIFICIAL COLORS**

Synthetic dyes—often identified by a color name and number on the ingredients list ("Red No. 3")—have

been linked to hyperactivity in children. Until more is known, try limiting consumption. Grocery chains such as Trader Joe's and Whole Foods say they do not carry products with artificial dyes.

**OLESTRA (Olean)** This fat substitute used in Lay's, Pringles, and Ruffles light chips passes through your system undigested, so it doesn't add calories. But it can cause gastrointestinal problems, including stomach cramps and loose stools. An occasional serving is fine as long as it doesn't upset your stomach.

**POTASSIUM BROMATE** This dough-strengthening agent has been shown to cause cancer in animals and is banned in other countries. Bakers have significantly reduced the amount of potassium bromate they use or stopped using it altogether.

**SODIUM NITRATE** High cooking temperatures and stomach acid can cause these chemicals used in processed and cured meats to form compounds associated with cancer in animals. Some research has associated

eating large amounts of processed meats with an increased risk of pancreatic and stomach cancers, but an increased risk from cold cuts is probably small. And eating plenty of green vegetables and fruits containing vitamin C appears to negate any added cancer risk. Processed and cured meats tend to be high in sodium and fat, which is reason enough to limit them.

**TRANS FATS** While not what you'd consider a classic food additive, these manufactured fats, used in commercial baked goods, crackers, and margarine, can raise your cholesterol and increase your risk of heart disease and stroke. So avoid them at all costs by reading labels. Look for "partially hydrogenated" oils on the ingredient list. The words "trans fat free" on the front of the package don't necessarily mean the product has zero trans fats—each serving might have a tiny amount, but if you're eating several servings, the trans fats can add up. Also try to limit restaurant-fried foods because they pack a lot of calories, no matter what they're fried in.