

Understanding Food-Drug Interactions

Developed by the American Pharmacists Association. Improving medication use. Advancing patient care.

What Is a Food-Drug Interaction?

Any time that a food or beverage changes the effects of a drug, the change is considered a food-drug interaction. Such interactions are not uncommon. But not all medications are affected by food, and some are affected only by certain foods. Food-drug interactions can occur with prescription drugs, over-the-counter drugs, herbal products, and dietary supplements. Although some interactions are harmful or even fatal in rare cases, others can be beneficial, and the majority will not cause noticeable changes in your health.

How Do Foods and Drugs Interact?

Foods and drugs can interact in many different ways. Often, a specific compound in the food causes the effect. Other changes can be caused by the amount of protein in your diet, or even the way food is prepared. For example, charcoal-broiling beef produces certain compounds that change the way your body uses some drugs.

One of the most common ways foods affect drugs is by changing the way drugs are broken down (metabolized) by your body. Proteins called enzymes metabolize many drugs. Some foods can make these enzymes work faster or slower, either shortening or lengthening the time that the drug spends in your body. If the food speeds up the enzyme, the drug will spend a shorter time in your body and may be less effective. If the food slows the enzyme, the drug will spend a longer time in your body and may cause unwanted side effects.

What Are Some Common Food-Drug Interactions?

Foods that contain the substance tyramine (including beer, wine, avocados, some cheeses, and some processed meats) slow down enzymes that metabolize MAO inhibitors (a type of antidepressant medication) and can cause hazardous effects, including dangerously high blood pressure.

Some foods can prevent certain drugs from being absorbed after you swallow them, and others can increase absorption. For example, if you drink a glass of milk when taking the prescription antibiotic tetracycline, the calcium in the milk will bind to the tetracycline, making a compound that is impossible for your body to absorb. Therefore, the desired effect of the tetracycline (as well as the benefits of calcium) will not occur. On the other hand, drinking a glass of citrus juice at the same time that you take an iron supplement is beneficial because the vitamin C in the citrus juice increases the absorption of iron.

Finally, some foods can actually interfere with the intended effect of the medication. For example, people who use the blood-thinning drug warfarin should not also eat foods that have a lot of vitamin K in them, such as broccoli or spinach. Vitamin K helps make blood clot, therefore reversing the effect of warfarin. The opposite can happen with vitamin E, onions, and garlic because they all produce effects that are similar to those of warfarin. Large amounts of these foods can make the effects of warfarin too powerful.

This information is developed and made available by the American Pharmacists Association, through an educational grant from the Florida Department of Citrus.



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The Most Commonly Misunderstood Interaction: Grapefruit Juice

The fact is that although some medications may interact with grapefruit juice, most do not. Also, it is believed to be safe to consume grapefruit juice while taking any over-the-counter medication.

Over a decade ago, scientists discovered that a substance in grapefruit juice interferes with certain prescription drugs. Since then, many scientists have focused on the effects of grapefruit and have discovered specific drug interactions that may be dangerous in some instances. As a result, media reports have exaggerated the risks of grapefruit juice, leading many people to believe that grapefruit juice must be avoided when taking any medication. Some of these reports are particularly confusing because they list only health conditions that the affected drugs help remedy. However, dozens of drugs that have no interaction with grapefruit juice may be used to treat the same condition.

The interactions seen with grapefruit juice occur because grapefruit juice changes the actions of enzymes in your intestine. Only medications that are metabolized by these enzymes will be affected by grapefruit juice.

If you are concerned, ask your doctor or pharmacist if your medication interacts with grapefruit juice. If the answer is “no,” then you are free to enjoy grapefruit juice without concern. If the answer is “yes” and you don’t want to avoid grapefruit juice, then ask if a non-interacting medication is available to treat your condition.

What If I’m Not Supposed to Eat a Food I Love?

If your doctor or pharmacist advises you to avoid certain foods while taking a medication, it is very important to avoid that food. But, other options may be available. If you find yourself in this situation, express your concern to your doctor or pharmacist.

Some food-drug interactions occur only if the food is eaten at the same time that you take your medication. You may be able to develop a schedule that allows you to take the medication and continue eating the food.

Your doctor may be able to switch you to another drug that has similar effects but that won’t interact with the food. For example, several cholesterol-lowering drugs, known as statins, can interact with grapefruit juice. However, not all statins have this effect, and your doctor may be able to switch your prescription to another one of these drugs.

Unfortunately, with some medications, you will need to stop eating a certain food in order to take your medication safely and protect your health.

How Do I Know If a Certain Food Is Safe to Eat?

Luckily, the number of food-drug interactions with harmful results is small. However, to be safe, you should carefully read the labels of all prescription and over-the-counter drugs to check for interactions. In addition, always talk with your doctor or pharmacist about any known food (or drug) interactions with your medications and clarify treatment options.

In addition, if your medications do not seem to produce the desired effects, or if you experience unwanted side effects (particularly if the effects change during the course of treatment), review your diet with your doctor or pharmacist to assess for food-drug interactions.