Food and Supplement Interactions With Chemotherapy

Some foods or supplements may alter the effectiveness of your cancer drugs.

February 4, 2020 By Danielle Penick

A team of scientists in 1989 were investigating the effects of alcohol on a particular type of blood pressure medication called Felodipine and used grapefruit juice to mask the taste of the ethanol. The group assumed that the citrus juice would not have an affect on the outcome of the study, but little did the researchers know they would make an accidental discovery. They found that the grapefruit could affect the bioavailability of certain oral medications. In this case it increased the medications bioavailability by sevenfold higher than previous studies would have suggested. This discovery led to further studies which found similar findings, but also the opposite effect was found with other types of drugs—it made them less effective. These interactions have potential to cause clinically significant impacts. For example, just drinking a single glass of grapefruit juice can interfere with medications for up to 3 days after consumption.

As it turns out, grapefruit inactivates an enzyme that metabolizes many drugs. Most of the medications affected by grapefruit use an enzymatic pathway called cytochrome P450 3A4 (sounds like a bunch of scientific jargon, I know!). This pathway is important for how drugs are broken down in the body after they have been absorbed into the blood and are produced by the liver. If too much of a cancer drug is broken down it might not work as well and you might need a bigger dose, which can cause more side effects. Conversely, if too little of the drug is broken down, you could have negative side effects from your cancer drug and you might need a smaller dose.

But the effects noted above are not only limited to grapefruit juice unfortunately. Some other foods and many supplements (especially herbal supplements) can affect the bioavailablity of some medicines. Other foods include pomegranate, starfruit, cabbage, brussel sprouts, onion, and turmeric. Other frequent supplements that interfere with these enzymes are St. John's Wort, black cohosh, ginseng, ginkgo biloba, goldenseal, mistletoe, and milk thistle for example.

Common drugs that can affect the CYP enzymes include some chemotherapies, certain antibiotics, anti-fungal drugs, HIV treatment, anti-convulsants, calcium channel blockers, anti-depressants, statins, and steroids. So if you are taking certain drugs, your health care team may tell you to avoid some foods and herbal supplements. If you're not sure, be sure to always ask your pharmacist when picking up your medications or ask your provider as it's better to be sure.

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