

GRAPEFRUIT - A Golden Wonder Or A Fruit To Be Careful Of?

Grapefruits are among the most popular citrus fruits in the Caribbean region. They are commonly eaten by many people and are considered a good source of Vitamin C and other vitamins and minerals. Thousands drink grapefruit juice with meals or as a healthy thirst-quencher. However, events of the recent months mean that persons taking certain medications need to be careful about their intake of grapefruit or grapefruit juice, because of the possibility of drug-food interactions.

A drug-food interaction occurs when the food a person eats reacts with a drug that the person is taking, in such a way that the drug does not work in the body the way it is intended to. Such an interaction can occur with both prescription or over-the-counter drugs, including antacids, vitamins, minerals and herbal supplements. Extensive research has now made it possible to understand the actions of enzymes which help the body to metabolize certain drugs and to predict clinically significant drug-food interactions. This drug metabolism is also affected by age, nutrition, other diseases and other factors. This may include serious implications for some patients, well beyond an increase or decrease of effectiveness of the drugs involved. Warnings about possible food or drug interactions are usually

disseminated (via pharmacists, dietitians and other health care workers) and the public should always seek information on possible drug-nutrient interactions whenever medications are prescribed.

In this issue of Nyam News we will focus on the interaction between grapefruit and certain drugs, the way certain drugs are broken down in the body and the effect certain natural chemicals found in grapefruits can have in speeding up or retarding this process. Grapefruit juice can interact with a number of therapeutically important drugs. The interaction was discovered by accident when grapefruit juice was used to cover the taste of a medication being investigated for its interaction with alcohol. While the alcohol did not affect the amount of drug circulating in the blood, the grapefruit juice greatly increased the levels of the medication in the blood.

Many drugs are metabolized, or broken down, by certain chemicals called enzymes. Grapefruit juice inhibits the activity of one of these enzymes, which is found both in cells that line the small intestine and in the liver. Grapefruit juice primarily affects this enzyme in the small intestine but has little or no effect when it is found in the liver. It may take as long as 48 to 72 hours for this enzyme to become active again after being inhibited by



the last exposure to grapefruit juice. As little as one glass of grapefruit juice (8 oz. or 250 mL) can cause an effect and the effects can last for three days or more. Therefore, even if you drink the juice in the morning and do not take your medication until bedtime, the level of the drug in your blood could still be affected.

The drugs affected by this include calcium channel blockers (used for treatment of hypertension), antihistamines (used in allergies), immunosuppressants (used mainly after transplants), cholesterol-lowering drugs, certain antibiotics, HIV protease inhibitors and others. The reduced breakdown (metabolism) of these drugs results in increased concentrations of the drug in the blood, which can have clinical consequences. There are several substances in grapefruit that interfere with the way your body handles these drugs. Consuming grapefruit or its juice (fresh or frozen) can increase, or less commonly decrease, the effects of some drugs.

Sour oranges, such as Seville oranges, or their juice, may have an effect similar to grapefruit juice. Most other citrus fruits, such as lemons, limes, citrons, naturally sweet oranges and tangerines are not thought to have this effect. However, tangellos, a hybrid of grapefruit, may also interfere with drugs. It should be noted that the interaction is not due to vitamin C or citric acid and so other citrus fruit do not exhibit the same effects as grapefruits.

The effects vary from one person to another, from one drug to another, and from one grapefruit juice preparation to another. This results in an unpredictable increase in blood drug level, which in some cases can cause serious effects. As a practical means of prevention and since so many commonly prescribed medications are on the "forbidden fruit" list, it would be recommended that hospitals no longer have grapefruit juice and grapefruit on their menu. Also, physicians should be better informed about this issue and similarly, pharmacists should be diligent in affixing warning labels.

MINIMIZING YOUR RISK

Take the following precautions to minimize the risk of adverse effects when consuming grapefruit or its juice:

- If you are taking medication for any of the conditions listed thus far, **DO NOT** drink grapefruit juice or eat grapefruit in any form until you have talked to your doctor and your pharmacist about the potential for an adverse reaction.
- Avoid taking any drug with grapefruit juice until you have talked to your doctor or pharmacist. Fruits and fruit juices, other than grapefruit, such as apple juice, can be consumed instead.
- Read the labels on foods and natural health products to make sure they do not contain grapefruit or its juice, or Seville oranges.
- Always report any adverse drug reaction to your doctor or pharmacist immediately.

The table below lists drugs known to interact with a single eight-ounce glass of grapefruit juice. The degree or magnitude of the interaction these drugs have with grapefruit or its juice, is rated as large, moderate, small or negligible. The drugs are listed by generic name with brand names in parenthesis.



DRUGS THAT INTERACT WITH GRAPEFRUIT JUICE

Large Interaction	Moderate Interaction	Small or Negligible Interaction
Calcium Channel Blockers – used to treat hypertension		
	<ul style="list-style-type: none"> • nifedipine (CARDENE, CARRDENE SR) • nifedipine (ADALAT XL, PROCARDIA XL, APONIFED, NIFELAT, ZENUSIN) • nimodipine (NIMOTOP) • isradipine (DYNACIRC, DYNACIRC CR) 	<ul style="list-style-type: none"> • amlodipine (NORVASC) • diltiazem (CARDIZEM CD, DILACOR XR, TIAZAC, DILTAN) • verapamil (CAVERIL, FLAMON, COVERA-HS, ISOPTIN SR, VERELAN)
Statins – cholesterol-lowering drugs		
<ul style="list-style-type: none"> • lovastatin (MEVACOR) • simvastatin (ZOCOR) 	<ul style="list-style-type: none"> • cerivastatin (BAYCOL, LIPOBAY) – withdrawn from the market August 2001 	<ul style="list-style-type: none"> • fluvastatin (LESCOL) • pravastatin (PRAVACHOL)
Immunosuppressants – used mainly after transplants		
	<ul style="list-style-type: none"> • cyclosporine (NEORAL, SANDIMMUNE) • tacrolimus (PROGRAF) • sirolimus (RAPAMUNE) 	
Sleeping Pills and Tranquilizers		
<ul style="list-style-type: none"> • buspirone (BUSPAR) 	<ul style="list-style-type: none"> • triazolam (HALCION) • diazepam (VALIUM, DIALAG) 	<ul style="list-style-type: none"> • alprazolam (XANAX, APO - APRAZOLAM) • clonazepam (KLONOPIN, APOCLONAZEPAM, RIVOTRIL) • lorazepam (ATIVAN, APO - LORAZEPAM, LORIVAN)

DRUGS THAT INTERACT WITH GRAPEFRUIT JUICE (cont'd)

Large Interaction	Moderate Interaction	Small or Negligible Interaction
Other Psychiatric or Mood -Altering Drugs		
	<ul style="list-style-type: none"> • carbamazepine (TEGRETOL) • nefazodone (SERZONE) • quetiapine (SEROQUEL) 	<ul style="list-style-type: none"> • citalopram (CELEXA) • clozapine (CLOZARIL) • fluoxetine (PROZAC, AP O-FLUOXETINE) • fluvoxamine (LUVOX) • haloperidol (HALDOL, SERENACE) • paroxetine (PAXIL) • sertraline (ZOLOFT, APO - SERTRALINE)
Antihistamines		
	<ul style="list-style-type: none"> • loratadine (CLARITIN) 	<ul style="list-style-type: none"> • cetirizine (ZYRTEC) • diphenhydramine (BENADRYL, HISTERGAN)
AIDS Drugs		
	<ul style="list-style-type: none"> • saquinavir (INVIRASE) • ritonavir (KALETRA, NORVIR) • nelfinavir (VIRACEPT) • amprenavir (AGENERASE) 	<ul style="list-style-type: none"> • indinavir (CRIXIVAN)
Hormones		
	<ul style="list-style-type: none"> • ethinyl estradiol major ingredient in combined oral contraceptives 	
Steroids		
	<ul style="list-style-type: none"> • methylprednisolone (DEPO MEDROL) 	<ul style="list-style-type: none"> • prednisone (DELTA PHORICAL)
Other Drugs		
<ul style="list-style-type: none"> • amiodarone (CORDARONE) 	<ul style="list-style-type: none"> • sildenafil (VIAGRA) 	<ul style="list-style-type: none"> • clarithromycin (BIAXIN) • erythromycin (ERYTHROCIN, EES) • quinidine (DURAQUIN, QUINAGLUTE DURA -TABS, QUINIDEX) • omeprazole (PRILOSEC)

For further information contact: Caribbean Food and Nutrition Institute.

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