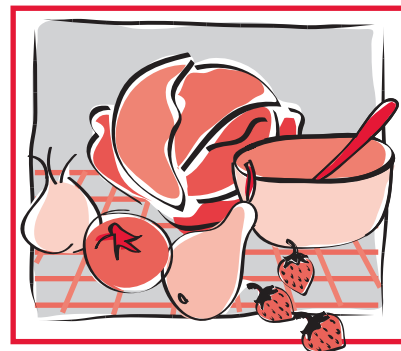


Nutrient-Drug Interactions and Food

Fact Sheet No. 9.361

Food and Nutrition Series | Health



by J. Anderson and J. Roach*

It is a difficult and complex problem to accurately determine the effects of food and nutrients on a particular drug. There are many dramatic results or problems caused by food-drug, drug-drug and alcohol-food-drug interactions. The following table is designed to help the reader become more knowledgeable about drug interactions and their effect on food, a nutrient or another drug that may produce unexpected results or cause additional health problems. Be sure to listen to and abide by all recommendations and advice of your doctor and pharmacist.

Generic Drugs

Generic drugs often are substituted for brand-name counterparts. They usually are more economical than brand-name drugs. Possible exceptions might be enteric-coated aspirin.

Patients may have concerns about the quality, efficacy, potency or consistency of generic drugs. Generics are therapeutically equivalent to brands approved and rated by the Food and Drug Administration. Many are made by major brand-name companies.

Over-the-Counter (OTC) Drugs

Points to remember:

- OTC drugs usually are meant only to relieve symptoms, not cure a disease or illness.
- Improper use can make symptoms worse or conceal a serious condition that should be brought to a doctor's attention. Never take OTC drugs longer than recommended on the label. If symptoms persist or if new symptoms occur, see a doctor.
- Read the label carefully before taking an OTC product and every time an

OTC product is bought. There may be important changes in indications, warnings or directions.

- People with allergies or chronic health problems should be especially careful to read the ingredient, warning and caution statements carefully. If there are any questions, consult a doctor or pharmacist.
- Check expiration dates from time to time. Destroy, in the safest way possible, any drugs that are outdated or that have deteriorated, such as discolored eyedrops or ointment, or vinegar-smelling aspirin.
- Keep all drugs and medications out of the reach of children.
- When pregnant or nursing a baby, check with a health professional before taking any drugs.

Aspirin vs. Acetaminophen vs. Ibuprofen (see Table 2)

Aspirin, acetaminophen and ibuprofen all have analgesic (pain control) and antipyretic (fever control) properties. Only aspirin and ibuprofen also contain anti-inflammatory properties. Acetaminophen does not produce the stomach or intestinal irritation or allergic reactions that aspirin can. Gastrointestinal side effects observed with aspirin are greatly reduced with ibuprofen, although patients with aspirin hypersensitivity can have similar reactions.

To reduce stomach upset from ibuprofen, take it with food or an antacid. Avoid alcohol or aspirin with ibuprofen.

Naproxen sodium, which has analgesic, antipyretic and anti-inflammatory properties, is indicated for the same conditions as aspirin, ibuprofen and acetaminophen but should not be taken with them. Anyone who generally has three or more alcoholic drinks per day should consult a physician on when and how to take naproxen sodium and other pain relievers.

Quick Facts

- Medications need to be taken at different times relative to meals.
- Drugs and medications can interact with nutrients in food.
- Consult a physician when health problems persist.
- During pregnancy and nursing always consult a physician or pharmacist before taking any medication. Drugs taken by the mother may affect the infant.
- Take all medications only with water, unless otherwise advised.
- Check with a doctor or pharmacist for the proper way and time to take medication.

*J. Anderson, Colorado State University Extension foods and nutrition specialist and professor; and J. Roach, M.S., graduate student. 12/2008



Table 1. Food and Drug Interactions.

		Use	Interactions/Guidelines	Examples¹
ALLERGIES	Antihistamine	To relieve or prevent the symptoms of colds, hay fever and allergies.	FOOD: Take without regard to food. Exception: Fexofenadine/ALLEGRA. Bioavailability decreases if taken with apple, orange, or grapefruit juice. ALCOHOL: Avoid alcohol because it increases the sedative effects of the medications.	Diphenhydramine/BENADRYL Fexofenadine/ALLEGRA* oratadine/CLARITIN Cetirizine/ZYRTEC * do not take with juice
ARTHRITIS and PAIN	Analgesic/Antipyretic	To treat mild to moderate pain and fever.	FOOD: For rapid relief, take on empty stomach. ALCOHOL: Avoid or limit the use of alcohol because chronic alcohol use can increase the risk of liver damage or stomach bleeding.	Acetaminophen/TYLENOL TEMPRA
	Non-Steroidal Anti-Inflammatory Drugs (NSAIDS)	To reduce, pain, fever and inflammation.	FOOD: Take with food or milk because medications can irritate the stomach. ALCOHOL: Avoid or limit the use of alcohol because chronic alcohol use can increase the risk of liver damage or stomach bleeding.	Aspirin/BAYER, ECOTRIN Ibuprofen/MOTRIN, ADVIL Naproxen/ANAPROX,ALEVE, NAPROSYN
	Corticosteroids	<ul style="list-style-type: none"> To relieve inflamed areas of the body. To reduce swelling and itching. To help relieve allergies, rheumatoid arthritis, and other conditions. 	FOOD: Take with food or milk to decrease stomach upset.	Methylprednisolon/MEDROL Prednisone/DELTASONE Prednisolone/PEDIAPRED, PRELONE Cortisone acetate/CORTEF
	Narcotic Analgesic	To provide relief for moderate to severe pain.	ALCOHOL: Avoid alcohol because it increases the sedative effects of the medication.	Codeine combined with acetaminophen/TYLENOL Morphine/ROXANOL, MS CONTIN
ASTHMA	Bronchodilators	To treat the symptoms of bronchial asthma, chronic bronchitis and emphysema.	FOOD: High-fat meals may increase the amount of theophylline in the body, while high-carbohydrate meals may decrease it. It is important to check with the pharmacist about which form you are taking because food can have different effects depending on the dose form. CAFFEINE: Avoid eating or drinking large amounts of foods and beverages that contain caffeine. ALCOHOL: Avoid alcohol because it can increase the risk of side effects such as nausea, vomiting, headache and irritability.	Theophylline/SLO-BID, THEO-DUR, UNIPHYL Albuterol/VENTOLIN, PROVENTIL, COMBIVENT Epinephrine/PRIMATENE MIST
CARDIO VASCULAR DISORDERS	Diuretics	To help eliminate water, sodium and chloride from the body.	FOOD: Take on an empty stomach or with milk to decrease stomach upset. Some diuretics cause loss of potassium, calcium and magnesium. Triamterene is known as a "potassium sparing" diuretic. When taking triamterene avoid eating large amounts of potassium-rich foods such as bananas, oranges and green leafy vegetables or salt substitutes.	Furosemide/LASIX Triamterene/ hydrochlorothiazide DIAZIDE, MAXZIDE Hydrochlorothiazide/ HYDRODIURIL Triamterene/ DRYENIUM Bumetamide/BUMEX Metolazone/ZAROXOLYN
	Beta Blockers	To decrease the nerve impulses to blood vessel.	FOOD: Take with food to increase bioavailability. Take atenolol/TENORMIN Avoid licorice. ALCOHOL: Avoid drinking alcohol with Avoid licorice. ALCOHOL: Avoid drinking alcohol with propranolol/INDERAL because these drugs lower blood pressure too much.	Atenolol/TENORMIN Metoprolol/LOPRESSOR separately from orange juice. Propranolol/INDERAL Nadolol/CORGARD
	Nitrates	To relax blood vessels and lower the demand for oxygen by the heart.	FOOD: Take on an empty stomach. ALCOHOL: Avoid alcohol because it may add to the blood vessel-relaxing effect of nitrates and result in dangerously low blood pressure.	Isosorbide dinitrate/ ISORDIL, SORBITATE Nitroglycerin/NITRO, NITRO-DUR, TRANSDERM-NITRO
	Angiotension Converting Enzyme (ACE Inhibitors)	To relax blood vessels by preventing angiotension II, a vasoconstrictor, from being formed.	FOOD: Take catopril/CAPOTEN or moexipril/UNIVASC on empty stomach. High fat meals decrease absorption of quinapril/ACCUPRIL. Take others without regard to food. Ensure adequate fluid intake. Avoid salt substitutes.	Captopril/CAPOTEN Enalapril/VASOTEC Lisinopril/PRINIVIL, ZESTRIL Quinapril/ACCUPRIL Moexipril/UNIVASC

Table 1. Food and Drug Interactions. (continued)

		Use	Interactions/Guidelines	Examples¹
CARDIO VASCULAR DISORDERS (continued)	HMG-CoA Reductase	Known as “statins” rate of LDL (bad) cholesterol.	FOOD: Avoid grapefruit/related citrus with atorvastatin/LIPITOR, lovastatin/MEVACOR, and simvastatin/ZOCOR. Lovastatin/MEVACOR should be taken with the evening meal to enhance absorption. ALCOHOL: Avoid drinking large amounts of alcohol because it may increase the risk of liver damage.	Fluvastatin/LESCOL Lovastatin/MEVACOR Pravastatin/PRAVACHOL Simvastatin/ZOCOR
	Anticoagulants	To prevent the formation of blood clots.	FOOD: Vitamin K produces blood-clotting substances and may reduce the effectiveness of anticoagulants. Limit foods high in Vitamin K such as broccoli, spinach, kale, turnip greens, cauliflower, and brussel sprouts. High doses of vitamin E (400 IU or more) may prolong clotting time and increase the risk of bleeding.	Warfarin/COUMADIN
INFECTIONS	Antibiotics and Antifungals	To treat infections caused by bacteria and fungi.	GENERAL GUIDELINES: Tell the doctor if you experience skin rashes or diarrhea. If you are using birth control, consult with your health care provider because some methods may not work when taken with antibiotics. Be sure to finish all of your medication even if you start feeling better. Take medication with plenty of water.	
	Antibacterials/Penicillin	To treat infections caused by bacteria and fungi.	FOOD: Take on an empty stomach unless it upsets your stomach, then take with food.	Penicillin V/ VEETIDS Amoxicillin/TRIMOX, AMOXIL Ampicillin/RINCIPEN, OMNIPEN
	Quinolones	To treat infections caused by bacteria and fungi.	FOOD: Take on empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food, but not with dairy or calcium-fortified products alone. CAFFEINE: Taking these medications with caffeine-containing products may increase caffeine levels, leading to excitability and nervousness.	Ciprofloxacin/CIPRO Levofloxacin/LEVAQUIN Ofloxacin/FLOXIN Troloxacin/TROVAN
	Cephalosporins	To treat infections caused by bacteria and fungi.	FOOD: Take on an empty stomach one hour before or two hours after meals. If your stomach gets upset, take with food.	Cefaclor/CECLOR CECLOR CD Cefradroxil/DURICEF Cefixime/SUPRAX Cefprozil/CEFZIL Cephalexin/KEFLEX, KEFTAB
	Macrolides	To treat infections caused by bacteria and fungi.	FOOD: May take with food if GI distress occurs. Avoid taking with citrus foods, citrus juices, and carbonated drinks.	Azithromycin/ZITHROMAX Clarithromycin/BIAXIN ERYTHROMYCIN/E-MYCIN, ERY-TAB, ERYCErythromycin + sulfisoxazole/PEDIAZOLE
	Sulfonamides	To treat infections caused by bacteria and fungi.	FOOD: Take with food and at least 8 ounces of water.	Sulfamethoxazole + trimethoprim/BACTRIM, SEPTRA
	Tetracyclines	To treat infections caused by bacteria and fungi.	FOOD: Take on an empty stomach with 8 ounces of water. Avoid taking tetracycline with dairy products, antacids, and vitamin supplements containing iron because they can interfere with the medication’s effectiveness.	Tetracycline/ACHROMYCIN, SUMYCIN Doxycycline/VIBRMYCIN Minocycline/MINOCIN
	Nitromidazole	To treat infections caused by bacteria and fungi.	FOOD: May take with food to decrease GI distress, but food decreases bioavailability. ALCOHOL: Avoid drinking alcohol and taking medications that contain alcohol while taking metronidazole and for at least three days after you finish the medication. Alcohol may cause nausea, abdominal cramps, vomiting, headaches, and flushing.	Metronidazole/FLAGYL

Table 1. Food and Drug Interactions. (continued)

		Use	Interactions/Guidelines	Examples¹
INFECTIONS (continued)	Antifungals		FOOD: Take with food to increase absorption. Do not take itraconazole/SPORANOX with grapefruit/related citrus. ALCOHOL: Avoid drinking alcohol and taking medications that contain alcohol while taking ketoconazole and for at least three days after you finish the medication. Alcohol may cause nausea, abdominal cramps, vomiting, headaches, and flushing.	Fluconazole/DIFLUCAN Ketoconazole/NIZORAL Itraconazole/SPORANOX
MOOD DISORDERS	Monoamine Oxidase (MAO) Inhibitors	To treat depression, emotional and anxiety disorders.	FOOD: These medications have many dietary restrictions and people taking them need to follow the dietary guidelines and physician's instructions very carefully. A rapid, potentially fatal increase in blood pressure can occur if foods or alcoholic beverages containing tyramine are consumed while taking MAO inhibitors. Avoid foods high in tyramine and other pressor amines during drug use and for two weeks after discontinuation. These include aged cheeses, aged meats, soy sauce, tofu, miso, fava beans, snowpeas, sauerkraut, avocados, bananas, yeast extracts, raisins, ginseng, licorice, and caffeine. ALCOHOL: Do not drink beer, red wine, other alcoholic beverages, non-alcoholic and reduced alcohol beer and red-wine products.	Phenelsine/NARDIL Tranycypromine/PARNATE
	Anti-Anxiety Drugs	To treat depression, emotional and anxiety disorders.	FOOD: May take with food if GI distress occurs. CAFFEINE: May cause excitability, nervousness and hyperactivity and lessen the anti-anxiety effects of the drugs. ALCOHOL: May impair mental and motor performance.	Lorasepan/ATIVAN Diazepam/VALIUM Alprazolam/XANAX
	Antidepressant Drugs	To treat depression, emotional and anxiety with or without food.	FOOD: These medications can be taken with or without food. ALCOHOL: Avoid alcohol.	Paroxetine/PAXIL Sertraline/ZOLOFT Fluoxetine/PROZAC
STOMACH CONDITIONS	Histamine Blockers	To relieve pain, promote healing and prevent irritation from returning.	FOOD: These medications can be taken with or without food. CAFFEINE: Caffeine products may irritate the stomach. ALCOHOL: Avoid alcohol while taking these products. Alcohol may irritate the stomach and make it more difficult for the stomach to heal.	Cimetidine/TAGAMET Famotidine/PEPCID Ranitidine/ZANTAC Nizatadine/AXID

¹The generic name for each drug is stated first. Brand names are in all capital letters and represent only some examples of those medications. References: Food and Drug Interactions, 1998, U.S. Food and Drug Administration, National Consumers League.

See Table 2,
page 5.

Table 2. Aspirin vs. Acetaminophen vs. Ibuprofen

	Aspirin	Acetaminophen	Ibuprofen
Classification	NSAID, ANALGESIC, ANTIPYRETIC, ANTIARTHRITIC	ANALGESIC, ANTIPYRETIC	NSAID, ANALGESIC, ANTIARTHRITIC
Use	<ul style="list-style-type: none"> • pain relief and fever reduction in adults-relieves mild itching • reduces swelling and inflammation • used to treat arthritis, many other conditions and injuries • used to reduce risk of heart attack and stroke 	<ul style="list-style-type: none"> • mild pain relief • reduces fever 	<ul style="list-style-type: none"> • pain relief • reduces fever • reduces inflammation
Cautions	<p>Caution is advised if you:</p> <ul style="list-style-type: none"> • get stomach irritation when taking aspirin or are allergic to aspirin • are taking blood thinning medication • have a hang-over <p>A person should not take aspirin if he/she has: ulcers, gout, asthma, hearing loss.</p>	<ul style="list-style-type: none"> • High doses or regular, long-term use can cause liver damage, especially if used with alcohol. • Should not be used to treat fever over 103.1° F for more than three days. • Should not be used to treat fevers that keep coming back. • Should not be used on a regular basis by people who suffer from: anemia or liver or kidney disease. 	<p>Caution is advised if you have:</p> <ul style="list-style-type: none"> • asthma and nasal polyps • a stomach or intestinal disorder • a skin condition called "angioedema" • an allergic reaction to other anti-inflammatory medications • liver or kidney disease • a blood clotting disorder • heart failure • Not to be used with aspirin, alcohol or steroids. • HT hypertension
Dietary Recommendations	<ul style="list-style-type: none"> • Insure adequate fluid intake/hydration • Increase foods high in vitamin C and folic acid with long-term, high dosage use • Avoid or limit garlic, ginger, ginko, or horse chestnut • Limit caffeine • Avoid alcohol 	<ul style="list-style-type: none"> • Avoid alcohol or limit to less than 3 drinks per day. 	<ul style="list-style-type: none"> • Take with meals or milk. • Avoid or limit garlic, ginko, or horse chestnut. • Limit caffeine. • Avoid alcohol.
Remarks	Children and teenagers should not take aspirin because it is associated with a rare disorder called Reye's Syndrome in these age groups.	<ul style="list-style-type: none"> • Works well for people who can't take aspirin because of aspirin-related allergic reactions, stomach irritation, or ringing in the ears. • Safe for use by infants, children and teenagers. 	<ul style="list-style-type: none"> • Less irritating to the stomach than aspirin for some. • Does not cause ringing in the ears like aspirin. • Does not cause liver damage like acetaminophen.
Known Brands	Aspirin, Ascriptin, Bufferin, Ecotrin	Aspirin Free Anacin, Aspirin Free Excedrin, Tylenol, Panadol, Tempra.	Advil, Midol IB, Motrin

Pregnant women should consult a doctor prior to taking any over-the-counter medication. Other people, including persons with medical conditions, are advised to read product labels carefully and consult a pharmacist if they have any questions about proper use.

Medical Center of the Rockies. Food and Drug Interactions. 2008.

Pronsky, ZM. *Food Medication Interactions*. 15th Ed. Birchrunville, PA: 2008

U.S. Food & Drug Administration. National Consumers League. Food and Drug Interactions. 1998.