



# Extension FactSheet

Human Nutrition, 1787 Neil Avenue, Columbus, OH 43210

## Vitamin C (Ascorbic Acid)

This fact sheet is one in a series containing information to help you select foods that provide adequate daily amounts of vitamins, minerals, and dietary fiber. The Dietary Guidelines Advisory Committee just released the Dietary Guidelines for Americans 2005 that convey the following nine major messages concerning these topics:

- Adequate nutrients within calorie needs
- Weight management
- Physical activity
- Food groups to encourage: fruits and vegetables, whole grains, and nonfat or low-fat milk and milk products
- Fat
- Carbohydrates
- Sodium and potassium
- Alcoholic beverages
- Food safety

### Why do we need vitamin C?

Vitamin C is a water-soluble, antioxidant vitamin. It is important in forming collagen, a protein that gives structure to bones, cartilage, muscle, and blood vessels. Vitamin C also aids in the absorption of iron, and helps maintain capillaries, bones, and teeth.

### What is a “good source” of vitamin C?

A “good source” of vitamin C contains a substantial amount of vitamin C in relation to its calorie content and contributes at least 10 percent of the U.S. Adequate Intake (AI) for vitamin C in a selected serving size. The U.S. AI for vitamin C is 90 milligrams per day for men and 75 milligrams per day for women. The U.S. AI given is for adults ages 19–50, and the recommended changes are for pregnant and/or lactating women. Consult your healthcare provider for these differences. The AI is also increased for smokers. Smoking increases oxidative stress—as a result, it is recommended that smokers consume 35 more milligrams of vitamin C per day.

### Do we get enough vitamin C?

According to recent surveys of the U.S. Department of Agriculture (USDA), the average intake of vitamin C by American adults was over the AI for vitamin C. Women

tended to consume less than men of the same age. Most nutrition scientists believe that there are no known advantages in consuming excessive amounts of vitamin C. The majority of vitamin C is consumed through fruits and vegetables in the diet.

### How can we get enough vitamin C?

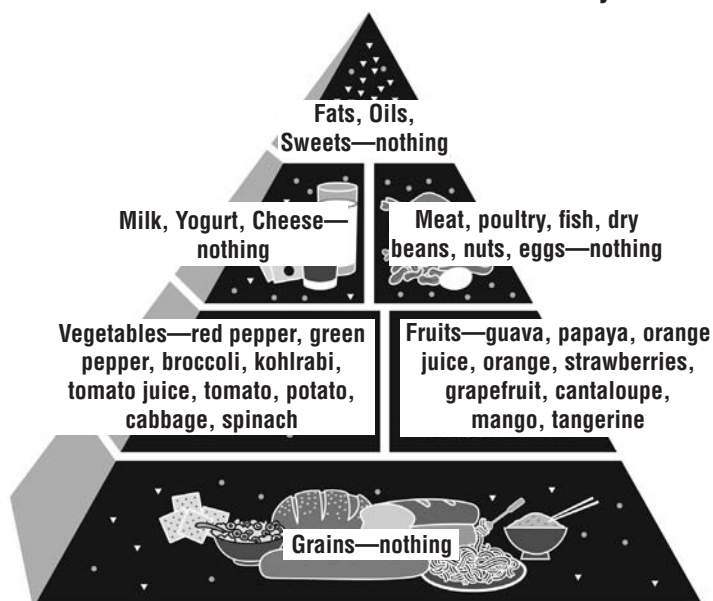
Eating a variety of foods that contain vitamin C is the best way to get an adequate amount each day. Healthy individuals who eat a balanced diet rarely need supplements. Select foods that are good sources of vitamin C as you follow the Dietary Guidelines.

### How to prepare foods to retain vitamin C.

Vitamin C can be lost from foods during preparation, cooking, or storage. To prevent loss of vitamin C:

- Serve fruits and vegetables raw whenever possible.
- Steam, boil, or simmer foods in a very small amount of water, or microwave them for the shortest time possible.

### Where to find vitamin C in the Food Guide Pyramid.



Good Sources of Vitamin C				
Food	Serving Size	Milligrams Vitamin C	% AI for men	% AI for women
Guava .....	1 medium .....	165 .....	183 .....	235
Red Bell Pepper .....	1/2 cup .....	95 .....	94.7 .....	135
Papaya .....	1 medium .....	95 .....	94.7 .....	135
Orange juice, from frozen concentrate .....	3/4 cup .....	75 .....	83.3 .....	107
Orange .....	1 medium .....	60 .....	66.6 .....	85.7
Broccoli, boiled .....	1/2 cup .....	60 .....	66.6 .....	85.7
Green bell pepper .....	1/2 cup .....	45 .....	50 .....	64.2
Kohlrabi, boiled .....	1/2 cup .....	45 .....	50 .....	64.2
Strawberries .....	1/2 cup .....	45 .....	50 .....	64.2
Grapefruit, white .....	Half .....	40 .....	44.4 .....	57.1
Cantaloupe .....	1/2 cup .....	35 .....	38.8 .....	50
Tomato juice .....	3/4 cup .....	35 .....	38.8 .....	50
Mango .....	1 medium .....	30 .....	33.3 .....	42.8
Tangerine .....	1 medium .....	25 .....	27.7 .....	35.7
Potato, baked with skin .....	1 .....	25 .....	27.7 .....	35.7
Cabbage greens, frozen, boiled .....	1/2 cup .....	25 .....	27.7 .....	35.7
Spinach, raw .....	1 cup .....	15 .....	16.6 .....	21.4

- Cook potatoes in their skins. Be sure to wash the dirt off the outside of the potato.
- Refrigerate prepared juices and store them for no more than two to three days.
- Store cut, raw fruits and vegetables in an airtight container and refrigerate—do not soak or store in water. Vitamin C will be dissolved in the water.

### What about fortified foods?

Some juices that are not normally a source of vitamin C have vitamin C added. Examples of these juices include apple and grape. A 3/4-cup (juice glass) serving of these fortified juices may provide 40 percent or more of the U.S. AI for vitamin C. Check the label for the exact amount. Vitamin C (ascorbic acid) is added to frozen peaches to prevent discoloration. Most ready-to-eat cereals are fortified with vitamin C. Fortified ready-to-eat cereals usually contain at least 25 percent of the U.S. AI for vitamin C. Because cereals vary, check the label on the package for the percentage of the U.S. AI for that cereal.

### What is a serving?

The amount of vitamin C in a serving depends on the weight of the serving. For example, 1/2 cup of a cooked vegetable contains more vitamin C than 1/2 cup of the same vegetable served raw, because a serving of the cooked vegetable weighs more. Therefore, the cooked vegetable may

appear on the list, while the raw form does not. The raw vegetable has vitamin C, just not enough in a 1/2-cup serving to be considered a good source.

### References

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