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Vitamin C Everyday
Michigan State University
Cooperative Extension Service
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With Addendum of a Quiz
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discontinued

count on fruits and vegetables

for Vitamin C everyday

By ANITA DEAN, Extension Specialist in Foods and Nutrition

how do you score?

CLAIM: Scientist claims cure for common cold with massive doses of Vitamin C.

FACT: Claim is based on personal experience. There is no conclusive evidence to support it at this time.

CLAIM: Processed fruits and vegetables have less food value than fresh.

FACT: Some loss occurs in processing, as in home cooking. It varies with the food product, nutrient and conditions of preparation and storage.

Processed foods enable the U. S. population to eat both ample quantities and varieties of foods. Of course, people will always like fresh fruits and vegetables. Food scientists are constantly searching for methods to assure the highest possible quality and nutritional content of processed products.

CLAIM: Scurvy (Vitamin C deficiency) no longer occurs in the U. S.

FACT: Scurvy occurs (though rarely) among some elderly as a result of poverty and general neglect, among alcoholics and bottle-fed infants who have no regular source of Vitamin C. Vitamin C induces rapid recovery.

CLAIM: Synthetic concentrates (pills or beverages) are of equal value with Vitamin C rich foods such as tomatoes, oranges, etc.

FACT: True. But fruits and vegetables contain other essential nutrients as well as Vitamin C.

Vitamin C (ascorbic acid) is absolutely necessary

for the formation of collagen, the protein substance that binds the cells together. The healthy formation of bone material and the dentine of teeth depends on Vitamin C, which also helps heal wounds and broken bones. Vitamin C keeps walls of blood vessels and body cells firm and strong. Vitamin C is essential to the body's use of other nutrients including protein (the amino acid, tyrosine), folic acid (a B-vitamin), iron and calcium.

As indispensable as it is, nature doesn't guarantee it. The body can't store it to any large extent. Cooking destroys part of it. It dissolves in water and leaches out of food. It is unstable. It reacts eagerly with oxygen when exposed to air. Heat speeds up its destruction. Exposure to light hastens its loss.

What can you do to assure a dependable daily supply of Vitamin C? Use a variety of forms of foods high in Vitamin C, especially fruits and vegetables. If fresh, handle and store so as to preserve flavor, food value and appearance: for example, store leafy greens in the refrigerator. At high humidity with minimum air movement and exposure to air, they retain Vitamin C longer.

Eat some raw vegetables and fruits each day. Cook vegetables only in enough water to assure top flavor and appearance. Do not over cook. Cook vegetables and fruits in their skins occasionally.

Remember that large or whole pieces and coarser shreds expose a smaller surface area to the air. Acids such as vinegar and lemon juice used in preparing pickled vegetables and coleslaw and the lactic acid in sauerkraut protect Vitamin C. Refrigerate leftovers promptly, keep them covered and use as soon as possible.

HOW MUCH VITAMIN C (Ascorbic Acid) DO YOU NEED EACH DAY?

| AGE GROUP | MILLIGRAMS |
|---------------------------|------------|
| Man (18 to 75) | 60 |
| Women (18 to 75) | 55 |
| Boys (14 to 18) | 55 |
| Girls (14 to 18) | 50 |
| Boys and Girls (12 to 14) | 45 |
| Children (1 to 12) | 40 |
| Infants | 35 |
| Pregnancy and Lactation | 60 |

These "Recommended Dietary Allowances," established by the National Research Council of the National Academy of Science, are considered adequate for maintaining good nutrition and health for all the U. S. population. They offer a wide margin of safety to cover differences in individual requirements. Do not confuse them with the "Minimum Daily Requirements" established by the U. S. Food and Drug Administration for labeling foods and special dietary products. Minimum daily Vitamin C requirements for adults are 30 milligrams; children (1 to 12), 20 milligrams; infants, 10 milligrams.

WHAT VITAMIN C-RICH FOODS DO YOU ENJOY EATING?

Choose your favorites from "Your Daily Vitamin C Score." Many seasonal and local foods are good sources of Vitamin C. Endless combinations of fruits and vegetables will furnish a day's supply of Vitamin C. Of course, you would also eat from the meat group, cereal and bread group, and milk group of foods.

| | | |
|---|---|--|
| <p style="text-align: center;">(1)</p> <p>HALF CANTALOUPE 63</p> <p>—</p> <p>TOTAL 63</p> | <p style="text-align: center;">(4)</p> <p>HALF GRAPEFRUIT 44</p> <p>FROZEN BROCCOLI 36</p> <p>—</p> <p>TOTAL 80</p> | <p style="text-align: center;">(7)</p> <p>APPLE 7</p> <p>COLESLAW 21</p> <p>POTATO 20</p> <p>CHERRY PIE 12</p> <p>—</p> <p>TOTAL 60</p> |
| <p style="text-align: center;">(2)</p> <p>STRAWBERRY SHORTCAKE 44</p> <p>CANNED ASPARAGUS 23</p> <p>—</p> <p>TOTAL 67</p> | <p style="text-align: center;">(5)</p> <p>BLUEBERRIES 10</p> <p>PEACH 7</p> <p>CAULIFLOWER 33</p> <p>RADISHES (4) 10</p> <p>—</p> <p>TOTAL 60</p> | <p style="text-align: center;">(8)</p> <p>GREEN BEANS 8</p> <p>FRENCH FRIES 12</p> <p>LETTUCE SALAD 10</p> <p>TOMATO (1/2) 21</p> <p>BANANA, WHOLE 12</p> <p>—</p> <p>TOTAL 63</p> |
| <p style="text-align: center;">(3)</p> <p>TOMATO JUICE 20</p> <p>SPARERIBS AND SAUERKRAUT 17</p> <p>SWEET POTATOES 25</p> <p>APPLE SAUCE 2</p> <p>—</p> <p>TOTAL 64</p> | <p style="text-align: center;">(6)</p> <p>ORANGE JUICE 62</p> <p>—</p> <p>TOTAL 62</p> | |

YOUR DAILY VITAMIN C SCORE (VEGETABLES)

| | Milli-grams | SCORE | | | | | | |
|---|-------------|-------|---|----|---|---|----|---|
| Green pepper, sweet, raw—1 pod | 94 | — | Tomatoes, canned—1/2 cup | 21 | — | Beet greens, cooked, drained leaves and stems—1/2 cup | 11 | — |
| Green pepper, cooked—1 pod | 70 | — | Cabbage, finely shredded, raw—1/2 cup | 21 | — | Green peas, canned—1/2 cup | 11 | — |
| Broccoli, whole stalks, cooked—1/2 cup | 70 | — | White potato, peeled before boiling—5 oz. | 20 | — | Summer squash, cooked—1/2 cup | 11 | — |
| Brussel sprouts, cooked—1/2 cup | 68 | — | Tomato juice—1/2 cup | 20 | — | Head lettuce—1/6 head | 10 | — |
| Collards, cooked—1/2 cup | 43 | — | Asparagus, canned—1/2 cup | 19 | — | Radishes, raw, small—4 | 10 | — |
| Tomatoes, raw—1 (3x2 1/8 in.) | 42 | — | Turnips, cooked—1/2 cup | 17 | — | Snap beans, cooked, drained—1/2 cup | 8 | — |
| Broccoli, frozen, cooked—1/2 cup | 36 | — | Sauerkraut—1/2 cup | 17 | — | Parsnips, cooked—1/2 cup | 8 | — |
| Turnip greens, mustard greens, kale, cooked—1/2 cup | 34 | — | Green peas, cooked—1/2 cup | 17 | — | Onion, cooked—1/2 cup | 7 | — |
| Cauliflower, cooked—1/2 cup | 33 | — | Asparagus, cooked drained—4 spears | 16 | — | Corn, sweet or canned—1 ear or 1/2 cup | 7 | — |
| Spinach, cooked—1/2 cup | 25 | — | Lima beans—1/2 cup | 15 | — | Cucumber, raw, pared, center—6 slices | 6 | — |
| Sweet potatoes (peeled after cooking)—1 (5 x 2 in.) | 25 | — | Winter squash, baked—1/2 cup | 14 | — | Beets, cooked, diced—1/2 cup | 5 | — |
| Cabbage, cooked—1/2 cup | 24 | — | Blackeye peas, cooked—1/2 cup | 14 | — | Celery, raw—1/2 cup diced or 1 stalk | 4 | — |
| | | | French fried potatoes—10 pieces (2 x 1/2 x 1/2) | 12 | — | Carrot, whole—1 or 25 thin strips | 4 | — |
| | | | Spinach, canned, drained—1/2 cup | 12 | — | Potato chips—10 medium chips | 3 | — |
| | | | Onion, 6 green or 1 raw | 12 | — | | | |

YOUR DAILY VITAMIN C SCORE (FRUITS)

| | Milli-grams | SCORE | | | | | | |
|--|-------------|-------|--|-------|---|--|-----|---|
| Orange—1 | 66 | — | Lemon—1 | 39 | — | Bananas, raw—1 | 12 | — |
| Cantaloupe—1/2 melon | 63 | — | Grapefruit, canned, white, sweetened—1/2 cup | 39 | — | Pineapple juice, canned—1/2 cup | 11 | — |
| Orange juice, fresh or frozen—1/2 cup | 60-62 | — | Strawberries, frozen—2 1/2 oz | 38 | — | Apricots, raw (12 per lb.)—3 | 10 | — |
| Lemon juice—1/2 cup | 56 | — | Peaches, frozen—3 oz. | 34* | — | Blueberries, raw—1/2 cup | 10 | — |
| Orange and grapefruit juice, frozen—1/2 cup | 51 | — | Watermelon, raw, 4 x 8—1 wedge | 30 | — | Lemonade, frozen, diluted—1/2 cup | 9 | — |
| Orange juice, canned, unsweetened—1/2 cup | 50 | — | Tangerines, raw, medium—1 | 27 | — | Rhubarb, cooked, sweetened—1/2 cup | 9 | — |
| Grapefruit juice, fresh, white—1/2 cup | 46 | — | Avocado, Florida—1/2 | 22 | — | Pineapple, canned—2 small or 1 large slice | 8 | — |
| Strawberries, chopped—1/2 cup | 44 | — | Orange-apricot drink—1/2 cup | 20* | — | Pears, raw—1 | 7 | — |
| Grapefruit, fresh—1/2 | 44 | — | Cranberry juice, cocktail*—1/2 cup | 20** | — | Peach, yellow, fresh—1 | 7 | — |
| Grapefruit juice, frozen diluted—1/2 cup | 43 | — | Raspberries, red, frozen or fresh—1/2 cup | 15-16 | — | Apricots, canned or cooked—1/2 cup dried | 4-5 | — |
| Grapefruit, canned, white, unsweetened—1/2 cup | 42 | — | Blackberries, raw—1/2 cup | 15 | — | Peaches, canned—1/2 cup | 4 | — |
| Lime juice, fresh—1/2 cup | 40 | — | Avocado, California—1/2 | 15 | — | Apple—1 | 3 | — |
| | | | Cherries, canned, red, sour—1/2 cup | 12 | — | Grape juice, frozen, dilute—1/2 cup | *** | — |
| | | | Pineapple, raw, diced—1/2 cup | 12 | — | | | |

*Includes ascorbic acid added by manufacturer.
 **Based on products stating 30 milligrams per 6 fl. oz. serving.
 ***Present ONLY if added by manufacturer.

WHAT'S TRUE AND FALSE ABOUT VITAMIN C?

Choose the correct alternative - either true (T) or false (F).

1. Vitamin C is helpful in preventing but not curing the common cold. T_____ F_____
2. Vitamin C helps to prevent lung cancer. T_____ F_____
3. Chemical vitamin C, made in a laboratory, is as effective as "natural" vitamin C, as extracted from rose hips. T_____ F_____
4. Exercise increases the body's need for vitamin C T_____ F_____
5. Taking large doses of vitamin C is harmless because the body takes what it needs and excretes the rest in urine. T_____ F_____
6. Potatoes are a good food source of vitamin C. T_____ F_____
7. Most Americans have adequate vitamin C in their diets, making a supplement unnecessary. T_____ F_____
8. Men need more vitamin C than women. T_____ F_____
9. Cutting vegetables and covering them with cold water will help preserve their vitamin C. T_____ F_____
10. If a large wound is not healing, it may be a sign that dietary vitamin C is inadequate. T_____ F_____

ANSWERS TO VITAMIN C QUIZ:

1. FALSE. Despite repeated attempts, carefully controlled studies have not been able to demonstrate that vitamin C, chemically named ascorbic acid, has any significant effect either in preventing or in curing the common cold. It has been reported in some studies, however, that vitamin C exerts a slight effect in decreasing the severity of cold symptoms in some individuals. There are many over-the-counter pharmaceuticals that are far more likely to do the job effectively when it comes to alleviating cold symptoms.
2. FALSE. There is no evidence that vitamin C will prevent the development of lung cancer. Vitamin C may help block the formation of carcinogenic nitrosamines formed by nitrates and nitrites in some foods, but this is still unclear.
3. TRUE. Vitamin C that has been extracted from a plant has exactly the same chemical structure as vitamin C that is chemically synthesized in a laboratory. Despite all the myths and convictions of vitamin C devotees, the body cannot tell the difference between the two forms.
4. FALSE. Exercise does not affect the body's requirement for vitamin C.
5. FALSE. You can possibly increase your body's need for vitamin C by increasing the amount you take in. Your body actually becomes conditioned to need more vitamin C. When this increased need is suddenly unfulfilled, you may find yourself in trouble. One great concern involves the pregnant woman who has been ingesting large doses, before the baby is born. The infant, in turn, may be born with an abnormally high need that may not be satisfied by a normal infant's diet. Furthermore, it has been suggested that high vitamin C intakes among adults may cause kidney stones as well as interfere with vitamin B₁₂ metabolism and distort the results of some urine tests for sugar.
6. TRUE. White potatoes, in particular, are a good source - one medium fresh potato has about 20 mg. of vitamin C or about a third of the amount called for daily. Even better sources are dark green vegetables (broccoli, spinach), citrus fruits, melons, green peppers, and tomatoes. Green beans, iceberg lettuce, and corn, which some people are willing to eat as a "token" vegetable as a means of meeting their vitamin needs, are in fact not great sources of vitamin C or of vitamin A, for that matter.
7. NEITHER TRUE NOR FALSE. Most Americans do have adequate vitamin C in their diets. However, nutritional surveys demonstrate that a significant number do not consume adequate vitamin C even though there are many readily available vitamin C sources. For example, an 8-ounce glass of orange juice has about 100 mg. of vitamin C. The Recommended Daily Allowance for vitamin C is 60 mg. And remember that the RDAs contain safety factors, so that the recommended levels exceed the needs of most healthy individuals. Keep in mind that certain environmental factors, such as stress and smoking, may increase vitamin C needs, but the extent of the increase in requirement is unclear.
8. NEITHER TRUE NOR FALSE. The RDA is the same for both men and women. However, pregnancy and lactation increase the need to 80 and 100 mg. respectively. There is also some evidence that oral contraceptives may decrease blood levels of vitamin C, but the related effect on requirements is unknown.
9. FALSE. Vitamin C is a water-soluble vitamin. Thus, peeling and cutting vegetables and placing them in water actually allows the vitamin C to be leached out into the water. Cutting and peeling also expose more surface of the vegetable to the air, which can destroy the vitamin. For maximum retention of vitamin C, don't cut or peel vegetables until just prior to cooking. Use only enough water to cover the bottom of the pan, bring it to a boil, then add vegetables, cover with a lid, and steam or boil for as little time as possible.
10. TRUE. The healing process requires many factors, one of which is adequate nutrition, which includes vitamin C because the vitamin is necessary for the formation of collagen, a type of connective tissue. When recovering from surgery and severe burns, the need for vitamin C increases significantly.