What is Vitamin C?

Vitamin C was discovered by Dr Albert Szent-Gyorgyi in 1928. It is a water soluble vitamin with two forms: Ascorbic acid or Dehydroascorbic acid. The body cannot manufacture vitamin C so it is essential to consume it in our diet. It is easily perishable. Exposure to air quickly destroys vitamin C. It must be taken regularly throughout the day either from fresh vitamin C rich foods or as a supplement. Dr. Linus Pauling, a Nobel laureate biochemist, contributed much to the understanding of vitamin C as an immune boosting nutrient.

Why is Vitamin C important and what does it do in the body?

Vitamin C is a powerful antioxidant involved in many reactions especially with reduced iron and copper (these are forms of these two metals that are more easily absorbed). It also plays a role in the manufacture of neurotransmitters and of the collagen which is such an important part of our connective tissue.

Vitamin C plays a key role supporting the immune system to help fight infection. It does this by boosting leukocyte (white blood cell) function and increasing interferon (a protein released by white cells to ramp up the immune response to kill pathogens or “bad guys”). It also keeps bones strong and healthy by increasing absorption of calcium and iron, while helping to remove excess toxic substances like copper, lead and mercury. Vitamin C makes the so-called stress hormones like epinephrine. Since this is so, when experiencing increased stress (emotional, chemical or physical) we need more vitamin C. Vitamin C is used to manufacture neurotransmitters and also helps release energy from food. Together with zinc it lowers cholesterol and helps the body absorb amino acids from the digestion of protein.

The most well known example of vitamin C deficiency is scurvy. The symptoms of this include bleeding gums, loss of teeth, delayed wound healing, loss of appetite, fatigue, hysteria and depression.

Vitamin C is also a powerful antihistamine and helps with allergies and asthma, where histamine is released. It may reduce the risk of cancer, including cancers of the mouth, gullet (esophagus), lung, stomach, colon, cervix and breast. Some studies have shown that mega-doses of vitamin C have inhibited tumor growth and prolonged the survival of individuals with terminal cancer.

Vitamin C (with B12 and folic acid) helps prevent anemia and supports individuals who smoke and drink alcohol.

It is also vital for the regeneration of other antioxidants including vitamin E and glutathione. The latter is probably the body’s most powerful antioxidant but is poorly absorbed as a supplement. Taking vitamin C
increases and maintains glutathione, levels which is therefore very important for individuals with an MTHFR gene polymorphism (a gene that does not work as it should) which reduces the body’s ability to produce glutathione.

**What amount of Vitamin C do you need each day?**

Vitamin C is a very safe vitamin but is excreted within 3-4 hours of consumption so dosages should be repeated at intervals during the day.

*The DRI (Daily Recommended Intake) /RDA (Recommended Daily Allowance) of dietary vitamin C are listed right:
Please Note: By definition, the DRI/RDA recommendations apply only to 98% of healthy individuals and are not sufficient for those with higher nutrient requirements based upon their biochemical individuality, genetics, health status, medications, deficiencies, lifestyle, and toxic exposures.*

Daily intake of dietary vitamin C (according to the National Academy of Sciences) is listed right.

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### RECOMMENDED DAILY ALLOWANCE 60mg/Day

### OPTIMAL DAILY ALLOWANCE 2,000mg/Day

### NUTRIENT DEFICIENCY SYMPTOMS AND CONDITIONS

**What are possible Vitamin C deficiency conditions and symptoms?**

- Anemia
- Arteriosclerosis
- Asthma
- Bleeding or inflamed gums (gingivitis)
- Cancer
- Cataracts
- Cervical dysplasia
- Crohn’s disease
- Depression
- Diabetes
- Easy bruising
- Eczema
- Fatigue
- Frequent Cold or Infection
- Glaucoma
- Herpes Infection
- High blood pressure (hypertension)
- Hives - allergic rashes
- Infertility
- Loss of appetite
- Macular degeneration
- Menopause
- Osteoarthritis
- Parkinson’s disease
- Peptic ulcers
- Periodontal disease
- Preeclampsia and premature rupture of fetal membranes (PROM)
- Rheumatoid arthritis
- Scurvy
- Skin ulcers
- Slow wound healing
- Stress and Anxiety

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What are possible Vitamin C excess symptoms?

Vitamin C is extremely safe. Diarrhea, intestinal distension and gas are the most common results of excess. Some studies suggest that the use of prolonged very high dose Vitamin C may cause kidney stones. Other studies dispute this with an intake of 10 grams (10,000mg) per day not showing this side effect. It is recommended that additional magnesium be supplemented with vitamin C, to keep calcium soluble and to reduce the risk of kidney stones. Since kidney stones are a risk, vitamin C supplementation should be avoided in individuals with uric acid stones or kidney stones. It should also be avoid in Glucose 6 Phosphate Dehydrogenase (G6PD) deficiency (an enzyme required to maintain healthy red blood cell membranes where vitamin C may cause the red cells to break down) and hemochromatosis (where iron is poorly excreted and vitamin C worsens the issue by increasing iron absorption). Vitamin C tablets should not be chewed as the ascorbic acid may damage teeth.

What steals Vitamin C from the body?

- Exposure to oxygen.
- Heat
- Light
- Smoking (each cigarette destroys 25-100mg of Vitamin C)
- Environmental toxins - especially carbon monoxide from gas-burning and car fumes
- Caffeine
- Stress
- Illness
- Inflammation
- Allergy and elevated histamine production
- Drugs that deplete Vitamin C levels include:
  - Aspirin
  - Oral contraceptives
  - Nonselective Non Steroidal Antinflammatory drugs (NSAIDS): Ibuprofen, Naproxen (Naprosyn) and Sulindac (Clinoril)
  - Antifugal medication: Amphotericin B (Fungizone)

What tests can be used to assess Vitamin C levels?

- Vitamin C in serum deficiency <0.2mg/dl
- Blood level - maximum concentration in the blood system is approximately 1.4mg/dl
What foods contain the highest amounts of Vitamin C?

TOP 10 VITAMIN C (ASCORBIC ACID) RICH FOODS ARE:

<table>
<thead>
<tr>
<th>Rank</th>
<th>Food</th>
<th>Vitamin C (mg/100g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Red and Green Chili Peppers</td>
<td>243</td>
</tr>
<tr>
<td>2</td>
<td>Guavas</td>
<td>228</td>
</tr>
<tr>
<td>3</td>
<td>Yellow peppers</td>
<td>184</td>
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<tr>
<td>4</td>
<td>Fresh thyme</td>
<td>160</td>
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<tr>
<td>5</td>
<td>Fresh parsley</td>
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<td>6</td>
<td>Raw kale</td>
<td>120</td>
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<td>7</td>
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<td>8</td>
<td>Broccoli</td>
<td>89</td>
</tr>
<tr>
<td>9</td>
<td>Brussels sprouts</td>
<td>79</td>
</tr>
<tr>
<td>10</td>
<td>Papaya</td>
<td>62</td>
</tr>
</tbody>
</table>

What are the best Vitamin C products?

Supplemental forms are buffered Vitamin C, magnesium ascorbate (mildly alkaline and better tolerated) and Ester C.

It has been shown that taking Vitamin C with bioflavonoids, (a group of antioxidant plant compounds derived from fruits such as citrus fruits and black currants) may increase its effect.

Vitamin C should be taken, with food, at regular intervals during the day because the excess is excreted within 3-4 hours of consumption.

REFERENCES

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All the statements, including product labels, supporting literature and/or product manufacturers websites have not been evaluated by FDA. These products are not intended to diagnose, treat, cure or prevent any disease.
Vitamin C (Ascorbic acid)

What are the very best Vitamin C products to buy?

**Klaire Multi Element Buffered C**
Vitamin C is important for immune function and antioxidant protection, as well as collagen and connective tissue production. Multi-Element Buffered C adds calcium, magnesium and …

**PRL Vit C Premier**
Unlike most vitamin C products, Premier Vitamin C is a 100% natural botanical vitamin C formula with no synthetic ascorbic acid or calcium ascorbate added. It features Camu Super-C™ (100 mg/cap) coupled with Super C-Pro™ Blend (210 mg/cap) …

**Klaire VitaSpectrum**
Powdered multiple vitamin/mineral supplement for children with Autism Spectrum Disorders. Natural berry-pomegranate flavor. This comprehensive multiple vitamin/mineral supplement contains 28 highly bioavailable …

**ProThera MultiThera 3**
Iron- and copper-free multiple formula. Both iron and copper have been eliminated from this version of MultiThera® to address the needs of patients who may have elevated tissue identical in all other respects to MultiThera® 1 …

**Pure Caps Womens Pure Pack**
Women's Supplement to Support Bone and Heart Health. Now With Metafolin® L-5-MTHF. Sizes Available 30 packets. Each packet contains 6 different supplements, including …

**Pure Caps Mens Pure Pack**
Regardless of your walk of life, all men need to ensure that they get enough of an array of important nutrients. However, who wants to spend their time picking out supplements for a daily …