HEALTH BASICS

Vitamin C

Vitamin C is an essential nutrient that supports connective tissue, iron absorption, and cell protection.

WHAT IT IS
A water-soluble vitamin needed for collagen and antioxidant functions

WHERE IT COMES UP
Food labels, supplement choices, nutrition reviews, and deficiency testing

WHY IT MATTERS
Supports connective tissue, iron absorption, and normal cell protection

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
Primary care clinician, dietitian, or pharmacist

HOW IT IS CHECKED
Diet review and, when needed, blood vitamin C measurement

Overview

Vitamin C, also called ascorbic acid, is an essential nutrient. Your body cannot make it, so you need to get it from food or supplements.

Many fruits and vegetables contain vitamin C. Good sources include citrus fruits, berries, kiwifruit, peppers, tomatoes, broccoli, and potatoes. Some foods and drinks are fortified, meaning vitamin C has been added. Storage and prolonged cooking can reduce the amount in food.

Vitamin C is water-soluble. This means it dissolves in water rather than being stored in large amounts in body fat. Your kidneys usually remove unused vitamin C in urine, but this does not mean that any supplement amount is harmless.

Vitamin C is not a disease or a diagnosis. Most people do not need a vitamin C blood test. Testing may be useful when a clinician suspects deficiency because of a very limited diet, problems absorbing nutrients, or compatible health findings.

How it works

Vitamin C helps enzymes carry out several important chemical reactions. Enzymes are proteins that help processes in the body happen.

One major role is making collagen. Collagen is a structural protein found in skin, blood vessels, gums, bones, cartilage, and other connective tissues. It helps give these tissues strength and supports normal wound healing.

Vitamin C also acts as an antioxidant. Antioxidants help control damage from unstable molecules called free radicals, which form during normal metabolism and through exposures such as tobacco smoke. This role does not mean that taking large antioxidant doses prevents disease.

Vitamin C improves absorption of non-heme iron, the type of iron found mainly in plant foods and fortified products. Eating a vitamin C-rich food with beans, lentils, or iron-fortified cereal can help your body absorb more of that iron.

It also supports normal immune function. However, supporting the immune system is different from preventing every infection or treating an illness.

Why it matters for your health

A varied diet usually provides vitamin C along with fibre and other nutrients. Supplements can provide vitamin C but do not replace the wider benefits of fruits and vegetables.

The amount you need is influenced by factors such as age, pregnancy, breastfeeding, and smoking. Tobacco smoke increases oxidative stress and lowers vitamin C levels, so people who smoke have higher nutritional needs. Official nutrition guidance gives recommendations for different life stages.

Some people may be more likely to have low intake or deficiency. These include people who eat very few fruits and vegetables, have a severely restricted diet, or have unreliable access to food. Conditions that interfere with nutrient absorption may also increase risk.

Vitamin C is often promoted for colds. Research has not shown that routine supplementation prevents colds in most people. Taking it regularly may slightly shorten a cold for some people, but starting it after symptoms appear has not shown consistent benefit. It does not replace rest, fluids, or medical assessment when needed.

Evidence also does not support using oral vitamin C supplements as a cure for cancer, heart disease, or other serious conditions. High-dose intravenous vitamin C is different from food or tablets. It is being studied in medical settings and can have important risks and interactions.

What can go wrong

Vitamin C deficiency develops when intake remains too low for long enough. Early findings can be vague, such as tiredness or weakness, and may have many other causes.

Scurvy is the disease caused by severe, prolonged vitamin C deficiency. It can lead to swollen or bleeding gums, easy bruising, small areas of bleeding under the skin, joint or muscle pain, poor wound healing, and anaemia. Anaemia means there are not enough healthy red blood cells to carry oxygen effectively.

These findings do not prove vitamin C deficiency. Gum disease, medicines, blood disorders, and other health conditions can cause similar problems.

Arrange routine medical follow-up if you have ongoing gum bleeding, unexplained bruising, wounds that heal poorly, or a diet with almost no fruits and vegetables. A clinician can consider your diet, medicines, health history, examination, and whether blood testing is appropriate.

Seek urgent care for heavy or uncontrolled bleeding, black or bloody bowel movements, fainting, severe shortness of breath, or rapidly worsening weakness. These problems need prompt assessment regardless of whether nutrition is involved.

Excess supplemental vitamin C can cause diarrhoea, nausea, and stomach cramps. Large supplemental amounts can increase urine oxalate, a substance involved in some kidney stones. This is a particular concern for people with kidney disease or a history of stones.

Because vitamin C increases iron absorption, large doses may be unsuitable for people with iron-overload conditions such as hereditary haemochromatosis. High doses can also interfere with certain blood glucose meters and laboratory tests. Intravenous vitamin C carries additional risks and should only be used under appropriate medical supervision.

What you can do

For most people, nothing special is required beyond regularly eating a range of fruits and vegetables.

Practical steps include:

If your diet is restricted, ask a dietitian or primary care clinician whether it is likely to provide enough vitamin C. A short food record can help. Write down what you eat and drink over several typical days rather than trying to remember it later.

Ask a pharmacist or clinician before using high-dose supplements if you have kidney disease, kidney stones, an iron-overload condition, or are receiving cancer treatment. Also mention

vitamin C products when discussing medicines or unexpected home glucose readings.

A blood vitamin C measurement exists, but routine screening is not usually needed. Recent food intake can affect the result, so it is interpreted alongside your diet and overall health rather than by itself.

- Check food and supplement labels for vitamin C or ascorbic acid
- Record all supplements you take, including powders and drink mixes
- Add up vitamin C from products that contain overlapping ingredients
- Ask whether a supplement is needed before starting a high-dose product
- Tell the testing service about supplements before blood, urine, or stool tests

Common questions

Is natural vitamin C better than synthetic vitamin C?

The vitamin C molecule is the same whether it comes from food or is manufactured as ascorbic acid. Foods offer additional nutrients and fibre, which supplements generally do not.

Can vitamin C prevent a cold?

Routine supplements do not appear to prevent colds in most people. Regular use may produce a small reduction in cold duration, but results differ between studies. Vitamin C is not a treatment for breathing difficulty, chest pain, severe dehydration, or other concerning symptoms.

Does more vitamin C provide more benefit?

Not necessarily. Absorption becomes less efficient as intake rises, and larger supplemental amounts are more likely to cause digestive side effects. Excess is not always harmless simply because vitamin C is water-soluble.

Should I take vitamin C with iron?

Vitamin C can improve absorption of iron from plant foods and some supplements. Whether you should combine them depends on why iron is being used. Ask about this if you have an iron deficiency, take an iron supplement, or have an iron-overload condition.

Can a vitamin C test diagnose scurvy by itself?

No. A blood result can support an assessment, but clinicians also consider diet, examination findings, other test results, and possible alternative causes.

Is intravenous vitamin C the same as a supplement?

No. Intravenous treatment produces much higher blood levels and has different risks. It should not be treated as a routine vitamin supplement or used without medical oversight.

Sources

- National Institutes of Health Office of Dietary Supplements: Vitamin C - Fact Sheet for Health Professionals
- NHS: Vitamins and minerals - Vitamin C
- Merck Manual Professional Edition: Vitamin C Deficiency
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- National Cancer Institute: Intravenous Vitamin C