

Vitamins and supplements: What you need to know before taking them

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Credit: AI-generated image ([disclaimer](#))

If you were to open your medicine cabinet right now, there's a fair chance that you'd find at least one bottle of vitamins alongside the painkillers, plasters and cough syrup.

After all, people are definitely buying vitamins: in 2020, the [global](#)

[market](#) for complementary and alternative medicines, which includes multivitamin supplements, had an estimated value of [US\\$82.27 billion](#). The use of natural health products such as minerals and [amino acids](#) has [increased](#)—and continues to rise, partly driven by consumers' buying habits during the COVID-19 pandemic.

People [sought out](#) vitamins C and D, as well as [zinc supplements](#), as potential preventive measures against the virus—even though the [evidence](#) for their efficacy was, and [remains](#), inconclusive.

Multivitamins and mineral supplements are easily accessible to consumers. They are often marketed for their health claims and benefits—sometimes unsubstantiated. But their potential adverse effects are not always stated on the packaging.

Collectively, vitamins and minerals are known as micronutrients. They are essential elements needed for our bodies to function properly. Our bodies can only produce micronutrients in small amounts or not at all. We get the bulk of these nutrients [from our diets](#).

People usually buy micronutrients to protect against disease or as dietary "insurance", in case they are not getting sufficient quantities from their diets.

There's a common perception that these supplements are harmless. But they can be dangerous at incorrect dosages. They provide a false sense of hope, pose a risk of drug interactions—and can delay more effective treatment.

Benefits

Vitamins are beneficial if taken for the correct reasons and as prescribed by your doctor. For example, folic acid supplementation in pregnant

women has been shown to prevent neural tube defects. And individuals who reduce their intake of red meat without increasing legume consumption require a vitamin B6 supplement.

But a worrying trend is increasing among consumers: intravenous vitamin therapy, which is often punted by celebrities and social media marketing. Intravenous vitamins, nutrients and fluids are administered at pharmacies as well as beauty spas, and more recently "[IV bars](#)". Users believe these treatments can quell a cold, slow the effects of aging, brighten skin, fix a hangover or just make them feel well.

Intravenous vitamin therapy was previously only used in medical settings to help patients who could not swallow, needed fluid replacements or had an electrolyte imbalance.

However, the evidence to support other benefits of intravenous vitamin therapy is limited. No matter how you choose to get additional vitamins, there are risks.

Warning bells

Most consumers use multivitamins. But others take large doses of single nutrients, especially [vitamin C](#), iron and calcium.

As lecturers in pharmacy practice, we think it's important to highlight the potential adverse effects of commonly used vitamins and minerals:

- [Vitamin A/retinol](#) is beneficial in maintaining good eye health. But it can cause toxicity if more than 300,000IU (units) is ingested. Chronic toxicity (hypervitaminosis) has been [associated](#) with doses higher than 10,000IU a day. Symptoms include liver impairment, loss of vision and intracranial hypertension. It can cause birth defects in pregnant women.

- [Vitamin B3](#) is beneficial for nervous and digestive system health. At moderate to high doses it can cause peripheral vasodilation (widening or dilating of the blood vessels at the extremities, such as the legs and arms), resulting in skin flushing, burning sensation, pruritis (itchiness of the skin) and hypotension (low blood pressure).
- [Vitamin B6](#) is essential for brain development and in ensuring that the immune system remains healthy. But it can result in damage to the [peripheral nerves](#), such as those in the hands and feet (causing a sensation of numbness and often referred to as pins and needles) at doses over 200mg/daily.
- [Vitamin C](#) is an antioxidant and assists in the repair of body tissue. Taken in high doses it can cause kidney stones and interactions with drugs, such as the oncology drugs doxorubicin, methotrexate, cisplatin and vincristine.
- [Vitamin D](#) is essential for bone and teeth development. At high doses it can cause hypercalcaemia (calcium level in the blood is above normal) that results in thirst, excessive urination, seizures, coma and death.
- [Calcium](#) is essential for bone health, but can cause constipation and gastric reflux. High doses can cause hypercalciuria (increased calcium in the urine), [kidney stones](#) and secondary hypoparathyroidism (underactive parathyroid gland). It can have drug interactions with zinc, magnesium and iron.
- [Magnesium](#) is important for muscle and nerve functioning. At high doses it can cause diarrhea, nausea and abdominal cramping, and can interact with tetracyclines (antibiotics).

- Zinc [can impair](#) taste and smell, and doses over 80mg daily have been [shown](#) to have adverse prostate effects.
- [Selenium](#) can cause hair and nail loss or brittleness, lesions of the skin and [nervous system](#), skin rashes, fatigue and mood irritability at high doses.
- [Iron](#) at 100-200mg/day can cause constipation, black feces, black discoloration of teeth and abdominal pain.

Recommendations

People need to make [informed decisions](#) based on evidence before consuming health products.

Regular exercise and a well-balanced diet are more likely to do us good, as well as being lighter on the pocket.

Seeking advice from a healthcare professional before consuming supplements can reduce the risk of adverse effects.

Be aware of the potential adverse effects of vitamins and seek a healthcare professional's guidance if you have symptoms.

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