

Dietary Supplements for Weight Loss

Fact Sheet for Consumers



If you're thinking about taking a dietary supplement to lose weight, talk with your health care provider.

What are weight-loss dietary supplements and what do they do?

The proven ways to lose weight are eating healthful foods, cutting calories, and being physically active. But making these lifestyle changes isn't easy, so you might wonder if taking a dietary supplement that's promoted for weight loss might help.

This fact sheet describes what's known about the safety and effectiveness of many ingredients that are commonly used in weight-loss dietary supplements. Sellers of these supplements might claim that their products help you lose weight by blocking the absorption of fat or carbohydrates, curbing your appetite, or speeding up your metabolism. But there's little scientific evidence that weight-loss supplements work. Many are expensive, some can interact or interfere with medications, and a few might be harmful.

If you're thinking about taking a dietary supplement to lose weight, talk with your healthcare provider. This is especially important if you have high blood pressure, diabetes, heart disease, liver disease, or other medical conditions.

What are the ingredients in weight-loss dietary supplements?

Weight-loss supplements contain many ingredients—like herbs, fiber, and minerals—in different amounts and in many combinations. Sold in forms such as capsules, tablets, liquids, and powders, some products have dozens of ingredients.

Common ingredients in weight-loss supplements are described below in alphabetical order. You'll learn what's known about whether each ingredient works and is safe. Figuring out whether these ingredients really help you lose weight safely is complicated, though. Most products contain more than one ingredient, and ingredients can work differently when they're mixed together.

You might be surprised to learn that makers of weight-loss supplements rarely carry out studies in people to find out whether their product works and is safe. And when studies are done, they usually involve only small numbers of people who take the supplement for just a few weeks or months. To know whether a weight-loss supplement can help people lose weight safely and keep it off, larger groups of people need to be studied for a longer time.

The next pages provide information on common ingredients found in weight-loss dietary supplements.

African mango

African mango seed extract is claimed to curb the formation of fat tissue.

Does it work?

African mango might help you lose a very small amount of weight.

Is it safe?

African mango seems to be safe, but its safety hasn't been well studied. It can cause headache, sleeping problems, flatulence, and gas.



Beta-glucans

Beta-glucans are soluble dietary fibers in bacteria, yeasts, fungi, oats, and barley. They might slow down the time it takes for food to travel through your digestive system, making you feel fuller.

Does it work?

Beta-glucans don't seem to have any effect on body weight.

Is it safe?

Beta-glucans seem to be safe (at up to 10 grams [g] a day for 12 weeks). They can cause flatulence.



Bitter orange

Bitter orange contains synephrine (a stimulant). It's claimed to burn calories, increase fat breakdown, and decrease appetite. Products with bitter orange usually also contain caffeine and other

ingredients. Bitter orange is in some weight loss dietary supplements that used to contain ephedra, another stimulant-containing herb that was banned from the U.S. market in 2004 (see the section on Ephedra).

Does it work?

Bitter orange might slightly increase the number of calories you burn. It might also reduce your appetite a little, but whether it can help you lose weight is unknown.

Is it safe?

Bitter orange might not be safe. Supplements with bitter orange can cause chest pain, anxiety, headache, muscle and bone pain, a faster heart rate, and higher blood pressure.



Caffeine

Caffeine is a stimulant that can make you more alert, give you a boost of energy, burn calories, and increase fat breakdown. Often added to weight-loss dietary supplements, caffeine is found naturally in tea, guarana, kola (cola) nut, yerba mate, and other herbs. The labels of supplements that contain caffeine don't always list it, so you might not know if a supplement has caffeine.

Does it work?

Weight-loss dietary supplements with caffeine might help you lose a little weight or gain less weight over time. But when you use caffeine regularly, you become tolerant of it. This tolerance might lessen any effect of caffeine on body weight over time.

Is it safe?

Caffeine is safe for most adults at doses up to 400–500 milligrams (mg) a day. But it can make you feel nervous, jittery, and shaky. It can also affect your sleep. At higher doses, it can cause nausea, vomiting, rapid heartbeat, and seizures. Combining caffeine with other stimulant ingredients can increase caffeine's effects.



Calcium

Calcium is a mineral you need for healthy bones, muscles, nerves, blood vessels, and many of your body's functions. It's claimed to burn fat and decrease fat absorption.

Does it work?

Calcium—either from food or in weight-loss dietary supplements—probably doesn't help you lose weight or prevent weight gain.

Is it safe?

Calcium is safe at the recommended amounts of 1,000 to 1,200 mg a day for adults. Too much calcium (more than 2,000–2,500 mg a day) can cause constipation and decrease your body's absorption of iron and zinc. Also, too much calcium from supplements (but not foods) might increase your risk of kidney stones.



Capsaicin

Capsaicin comes from chili peppers and makes them taste hot. It's claimed to help burn fat and calories and to help you feel full and eat less.

Does it work?

Capsaicin hasn't been studied enough to know if it will help you lose weight.

Is it safe?

Capsaicin is safe (at up to 33 mg a day for 4 weeks or 4 mg a day for 12 weeks), but it can cause stomach pain, burning sensations, nausea, and bloating.

Carnitine

Your body makes carnitine, and it's also found in meat, fish, poultry, milk, and dairy products. In your cells, it helps break down fats.

Does it work?

Carnitine supplements might help you lose a small amount of weight.

Is it safe?

Carnitine supplements seem to be safe (at up to 2 g a day for 1 year or 4 g a day for 56 days). They can cause nausea, vomiting, diarrhea, abdominal cramps, and a fishy body odor.



Chitosan

Chitosan comes from the shells of crabs, shrimp, and lobsters. It's claimed to bind fat in the digestive tract so that your body can't absorb it.

Does it work?

Chitosan binds only a tiny amount of fat, not enough to help you lose much weight.

Is it safe?

Chitosan seems to be safe (at up to 15 g a day for 6 months). But it can cause flatulence, bloating, mild nausea, constipation, indigestion, and heartburn. If you're allergic to shellfish, you could have an allergic reaction to chitosan.

Chromium

Chromium is a mineral that you need to regulate your blood sugar levels. It's claimed to increase muscle mass and fat loss and decrease appetite and food intake.

Does it work?

Chromium might help you lose a very small amount of weight and body fat.

Is it safe?

Chromium in food and supplements is safe at recommended amounts, which range from 20 to 45 micrograms a day for adults. In larger amounts, chromium can cause watery stools, headache, weakness, nausea, vomiting, constipation, dizziness, and hives.



Coleus forskohlii

Coleus forskohlii is a plant that grows in India, Thailand, and other subtropical areas. Forskolin, made from the plant's roots, is claimed to help you lose weight by decreasing your appetite and increasing the

breakdown of fat in your body.

Does it work?

Forskolin hasn't been studied much. But so far, it doesn't seem to have any effect on body weight or appetite.

Is it safe?

Forskolin seems to be safe (at 500 mg a day for 12 weeks), but it hasn't been well studied. It can cause frequent bowel movements and loose stools.



Conjugated linoleic acid (CLA)

CLA is a fat found mainly in dairy products and beef. It's claimed to reduce your body fat.

Does it work?

CLA may help you lose a very small amount of weight and body fat.

Is it safe?

CLA seems to be safe (at up to 6 g a day for 1 year). It can cause an upset stomach, constipation, diarrhea, loose stools, and indigestion.



Fucoxanthin

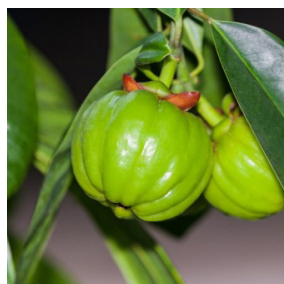
Fucoxanthin comes from brown seaweed and other algae. It's claimed to help with weight loss by burning calories and decreasing fat.

Does it work?

Fucoxanthin hasn't been studied enough to know if it will help you lose weight. Only one study in people included fucoxanthin (the other studies were in animals).

Is it safe?

Fucoxanthin seems to be safe (at 2.4 mg a day for 16 weeks), but it hasn't been studied enough to know for sure.



Garcinia cambogia

Garcinia cambogia is a tree that grows throughout Asia, Africa, and the Polynesian islands. Hydroxycitric acid in the fruit is claimed to decrease the number of new fat cells your body makes, suppress your appetite

and thus reduce the amount of food you eat, and limit the amount of weight you gain.

Does it work?

Garcinia cambogia has little to no effect on weight loss.

Is it safe?

Garcinia cambogia seems to be fairly safe. But it can cause headache, nausea, and symptoms in the upper respiratory tract, stomach, and intestines.

Glucomannan

Glucomannan is a soluble dietary fiber from the root of the konjac plant. It's claimed to absorb water in the gut to help you feel full.

Does it work?

Glucomannan has little to no effect on weight loss. But it might help lower total cholesterol, LDL ("bad") cholesterol, triglycerides, and blood sugar levels.

Is it safe?

Most forms of glucomannan seem to be safe (at up to 15.1 g a day for several weeks in a powder or capsule form). It can cause loose stools, flatulence, diarrhea, constipation, and abdominal discomfort.

Green coffee bean extract

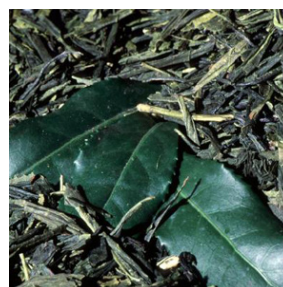
Green coffee beans are unroasted coffee beans. Green coffee bean extract is claimed to decrease fat accumulation and help convert blood sugar into energy that your cells can use.

Does it work?

Green coffee bean extract might help you lose a small amount of weight.

Is it safe?

Green coffee bean extract seems to be safe (at up to 200 mg a day for 12 weeks). It might cause headache and urinary tract infections. Green coffee beans contain the stimulant caffeine, which can cause problems at high doses or when it's combined with other stimulants (*see the section on Caffeine*).



Green tea and green tea extract

Green tea (also called *Camellia sinensis*) is a common beverage all over the world.

Green tea and green tea extract in some weight-loss supplements are claimed to reduce body

weight by increasing the calories your body burns, breaking down fat cells, and decreasing fat absorption and the amount of new fat your body makes.

Does it work?

Green tea might help you lose a small amount of weight.

Is it safe?

Drinking green tea is safe, but taking green tea extract might not be. Green tea extract can cause constipation, abdominal discomfort, nausea, and increased blood pressure. In some people, it has been linked to liver damage.

Guar gum

Guar gum is a soluble dietary fiber in some dietary supplements and food products. It's claimed to make you feel full, lower your appetite, and decrease the amount of food you eat.

Does it work?

Guar gum probably doesn't help you lose weight.

Is it safe?

Guar gum seems to be safe (at up to 30 g a day for 6 months) when it is taken with enough fluid. But it can cause abdominal pain, flatulence, diarrhea, nausea, and cramps.

Guarana (*see the section on Caffeine*)



Hoodia

Hoodia is a plant from southern Africa, where it's used as an appetite suppressant.

Does it work?

There hasn't been much research on hoodia, but it probably won't help you eat less or lose weight.

Analyses showed that some "hoodia" supplements sold in the past contained very little hoodia or none at all. It's not known whether this is true of hoodia supplements sold today.

Is it safe?

Hoodia might not be safe. It can cause rapid heart rate, increased blood pressure, headache, dizziness, nausea, and vomiting.

Kola (or cola) nut (*see the section on Caffeine*)

Mate (*see the section on Caffeine*)

Probiotics

Probiotics are microorganisms in foods, such as some yogurts, and some dietary supplements that help maintain or restore beneficial bacteria in your digestive tract.

Does it work?

It's unclear whether probiotic supplements have any effect on weight or body fat.

Is it safe?

Probiotics are safe in healthy people but may cause gas or other gastrointestinal problems.

Pyruvate

Pyruvate is naturally present in your body. Pyruvate in weight-loss supplements is claimed to increase fat breakdown, reduce body weight and body fat, and improve exercise performance.

Does it work?

Pyruvate in supplements might help you lose a small amount of weight.

Is it safe?

Pyruvate seems to be safe (at up to 30 g a day for 6 weeks). It can cause diarrhea, gas, bloating, and rumbling noises in the intestines due to gas.



Raspberry ketone

Raspberry ketone, found in red raspberries, is claimed to be a "fat burner."

Does it work?

Raspberry ketone has only been studied as a weight-loss aid in combination with other ingredients and not alone. Its effects on body weight are unknown.

Is it safe?

Raspberry ketone hasn't been studied enough to tell if it's safe.

Vitamin D

Your body needs vitamin D for good health and strong bones. People who are obese tend to have lower levels of vitamin D, but there is no known reason why taking vitamin D would help people lose weight.

Does it work?

Vitamin D doesn't help you lose weight.

Is it safe?

Vitamin D from foods and dietary supplements is safe at the recommended amounts of 600–800 IU a day for adults. Too much vitamin D (more than 4,000 IU a day) can be toxic and cause nausea, vomiting, poor appetite, constipation, weakness, and irregular heartbeat.



White kidney bean/ bean pod

White kidney bean or bean pod (also called *Phaseolus vulgaris*) is a legume grown around the world. An extract of this bean is claimed to block the absorption of carbohydrates and suppress your appetite.

Does it work?

Phaseolus vulgaris extract might help you lose a small amount of weight and body fat.

Is it safe?

Phaseolus vulgaris seems to be safe (at up to 3,000 mg a day for 12 weeks). But it might cause headaches, soft stools, flatulence, and constipation.

Yerba mate (*see the section on Caffeine*)



Yohimbe

Yohimbe is a West African tree. Yohimbe, which contains a compound called yohimbine, is an ingredient found in some dietary supplements claiming to increase weight loss, improve libido, increase muscle mass, or

treat male sexual dysfunction.

Does it work?

Yohimbe doesn't help you lose weight.

Is it safe?

Yohimbe might not be safe (especially at yohimbine doses of 20 mg or higher). Use it only with guidance from your health-care provider because the side effects can be severe. Yohimbe can cause headaches, high blood pressure, anxiety, agitation, rapid heartbeat, heart attack, heart failure, and death.

Ephedra, an ingredient banned from dietary supplements?

Ephedra (also called má huáng) is a plant containing substances that can stimulate your nervous system, increase the amount of energy you burn, increase weight loss, and suppress your appetite. In the 1990s, ephedra was a popular ingredient in dietary supplements sold for weight loss and to enhance athletic performance. In 2004, the U.S. Food and Drug Administration (FDA) banned ephedra in dietary supplements, concluding that it isn't safe. Ephedra can cause nausea, vomiting, anxiety, mood changes, high blood pressure, abnormal heartbeat, stroke, seizures, heart attack, and death.

How are weight-loss dietary supplements regulated?

The FDA is the federal agency that oversees dietary supplements in the United States. Unlike over-the-counter and prescription drugs—which must be approved by the FDA before they can be sold—dietary supplements don't require review or approval by the FDA before they are put on the market. Also, manufacturers don't have to provide evidence to the FDA that their products are safe or effective before selling these products.

When the FDA finds an unsafe dietary supplement, it can remove the supplement from the market or ask the supplement maker to recall it. The FDA and the Federal Trade Commission can also take enforcement action against companies that make false weight-loss claims about their supplements; add pharmaceutical drugs to their supplements; or claim that their supplements can diagnose, treat, cure, or prevent a disease.

For more information about dietary supplement regulations, see the Office of Dietary Supplements publication, *Dietary Supplements: What You Need to Know*.

Can weight-loss dietary supplements be harmful?

Weight-loss supplements, like all dietary supplements, can have harmful side effects and might interact with prescription and over-the-counter medications. Many weight-loss supplements have ingredients that haven't been tested in combination with one another, and their combined effects are unknown.

Tell your healthcare providers about any weight-loss supplements or other supplements you take. This information will help them work with you to prevent supplement-drug interactions, harmful side effects, and other risks..

Fraudulent and adulterated products

Be very cautious when you see weight-loss supplements with tempting claims, such as “magic diet pill,” “melt away fat,” and “lose weight without diet or exercise.” If the claim sounds too good to be true, it probably is. These products might not help you lose weight—and they could be dangerous.

Weight-loss products marketed as dietary supplements are sometimes adulterated with prescription drugs or controlled substances. These ingredients won't be listed on the product label, and they could harm you. The FDA puts out public notifications about tainted weight-loss products.

Interactions with medications

Like most dietary supplements, some weight-loss supplements can interact or interfere with other medicines or supplements you take. If you take dietary supplements and medications on a regular basis, be sure to talk about this with your healthcare provider.

Choosing a Sensible Approach to Weight Loss

Weight-loss supplements can be expensive, and they might not work. The best way to lose weight and keep it off is to follow a healthy eating plan, reduce calories, and exercise regularly under the guidance of your healthcare provider.

As a bonus, lifestyle changes that help you lose weight might also improve your mood and energy level and lower your risk of heart disease, diabetes, and some types of cancer.

Where can I find out more?

For general information on weight-loss dietary supplements:

- Office of Dietary Supplements Health Professional Fact Sheet on Weight-Loss Dietary Supplements
- Weighing the Claims in Diet Ads, Federal Trade Commission

For publications about weight control, obesity, physical activity, and nutrition:

- The Weight-control Information Network, National Institute of Diabetes and Digestive and Kidney Diseases, NIH
- Weight Control, MedlinePlus, NIH

For more advice on buying dietary supplements:

- Office of Dietary Supplements Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?

For information about building a healthy diet:

- *Dietary Guidelines for Americans*
- MyPlate

Disclaimer

This fact sheet by the Office of Dietary Supplements (ODS) provides information that should not take the place of medical advice. We encourage you to talk to your healthcare providers (doctor, registered dietitian, pharmacist, etc.) about your interest in, questions about, or use of dietary supplements and what may be best for your overall health. Any mention in this publication of a specific product or service, or recommendation from an organization or professional society, does not represent an endorsement by ODS of that product, service, or expert advice.



For more information on this and other supplements, please visit our Web site at: <http://ods.od.nih.gov> or e-mail us at: ods@nih.gov

Updated: June 20, 2019