National Institutes of Health
Office of Dietary Supplements

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 by 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 actually 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 health care provider. This is especially important if you have high blood pressure, diabetes, heart 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 may be surprised to learn that makers of weight-loss supplements rarely carry out studies in people to find out whether their product really works and is safe. And when studies are done, they usually involve only small numbers of people taking the supplement for just a few weeks or months. To know whether a weight-loss supplement can really 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.

Bitter orange

Bitter orange contains synephrine (a stimulant), and is claimed to burn calories, increase the breakdown of fat, 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, 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 the breakdown of fat. Often added to weight-loss dietary supplements, caffeine is found naturally in tea, guarana, kola 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 develop a tolerance to it. This tolerance might lessen any effect of caffeine on body weight over time.

Is it safe?

Caffeine is safe at low doses. But it can make you feel nervous, jittery, and shaky. It can also affect your sleep. At high doses (above about 400 milligrams [mg] a day for adults), 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 does not 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) may increase your risk of kidney stones.

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. 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 35 micrograms a day for adults. In larger amounts, chromium can cause watery stools, headache, weakness, nausea, vomiting, constipation, dizziness, and hives.

Cola (or kola) nut (*see the section on Caffeine*)

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 fairly safe. But people have taken it for only a few weeks in the studies done to date.

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?

Studies lasting up to 1 year show that CLA may help you lose a very small amount of weight and body fat.

Is it safe?

CLA appears to be fairly safe. It can cause an upset stomach, constipation, diarrhea, loose stools, and indigestion. In some people, CLA supplements decrease HDL ("good") cholesterol levels and increase insulin resistance (a risk factor for diabetes).

Ephedra

Ephedra (also called ma huang) is a plant that's native to China. It contains substances that stimulate your nervous system, increase the amount of energy you burn, increase weight loss, and may suppress your appetite. Once found in weight-loss supplements, ephedra was taken off the market in the United States in 2004 because of safety concerns.

Does it work?

Ephedra may help you lose weight over the short term. But its long-term effects are unknown.

Is it safe?

Ephedra is not safe. It can cause nausea, vomiting, anxiety, mood changes, high blood pressure, abnormal heartbeat, stroke, seizures, heart attack, and even death.

Fucoxanthin

Fucoxanthin is a substance that's found in brown seaweed and other algae. It's claimed to help with weight loss by burning calories and decreasing fat.

Does it work?

Fucoxanthin may help you lose weight. But it hasn't been studied alone as a weight-loss aid. Only one study in people included fucoxanthin (the other studies were in animals).

Is it safe?

Fucoxanthin seems to be safe, but it hasn't been studied enough to know for sure if it really is safe.

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 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. A few people who were taking weight-loss supplements containing *Garcinia cambogia* developed liver damage. But experts don't know whether this ingredient or the combination of ingredients in the weight-loss supplements was responsible.

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, triglyceride, and blood sugar levels.

Is it safe?

Most forms of glucomannan appear to be safe. When used for a short time, it can cause loose stools, flatulence, diarrhea, constipation, and abdominal discomfort. Glucomannan's safety when it's used for a longer time is unknown. Tablet forms of glucomannan can block the esophagus, which is a serious problem.

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?

The safety of green coffee bean extract has not been studied. It might cause headache and urinary tract infections. Green coffee beans contain the stimulant caffeine. Caffeine 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 may help you lose weight, but only slightly.

Is it safe?

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

Guarana (*see the section on Caffeine*)

Guar gum

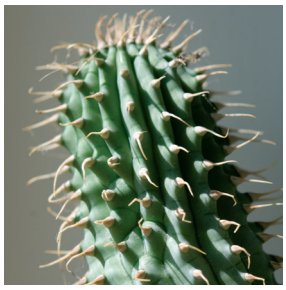
Guar gum is a soluble dietary fiber in some dietary supplements and food products. It's claimed to make you feel full, lower your appetite, and decrease the amount of food you eat.

Does it work?

Guar gum probably does not help you lose weight.

Is it safe?

Guar gum seems to be safe when it is taken with enough fluid. But it can cause abdominal pain, flatulence, diarrhea, nausea, and cramps.



Hoodia

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

Does it work?

There hasn't been a lot of research on Hoodia, but it probably won't help you eat less or lose weight. In the past, analyses showed that some "hoodia" supplements contained very little hoodia or none at all. It's not known whether this is true for 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.

Mate (*see the section on Caffeine*)

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 only a small amount of weight.

Is it safe?

Pyruvate's safety hasn't been well studied. It can cause gas, bloating, diarrhea, and rumbling noises in the intestines (due to gas).

Raspberry ketone

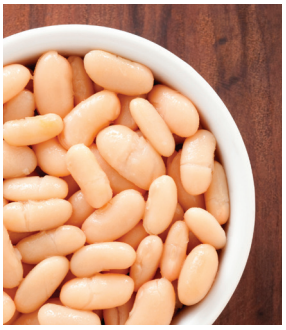
Raspberry ketone, found in red raspberries, is claimed to be a "fat burner."

Does it work?

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

Is it safe?

Raspberry ketone has not been studied enough to tell if it's safe.



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 fairly safe. 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 extract is an ingredient in supplements used to improve libido, increase muscle mass, and treat male sexual dysfunction. Yohimbe is also found in some weight-loss supplements and is claimed to increase weight loss.

Does it work?

Yohimbe doesn't help you lose weight.

Is it safe?

Yohimbe might not be safe. Only use it 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 even death.

How are weight-loss dietary supplements regulated?

The FDA regulates weight-loss supplements differently from prescription or over-the-counter drugs. As with other dietary supplements, the FDA does not test or approve weight-loss supplements before they are sold. Manufacturers are responsible for making sure that their supplements are safe and that the label claims are truthful and not misleading.

When the FDA finds an unsafe dietary supplement, it may remove the supplement from the market, or ask the supplement maker to recall it. The FDA and the Federal Trade Commission may also take 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. Almost all weight-loss supplements have several ingredients that have not been tested in combination with one another, and their combined effects are unknown.

Tell your health care 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.

Interactions with medications

Like most dietary supplements, some weight-loss supplements may interact or interfere with other medicines or supplements you take. For example, caffeine's effect may be stronger if you take it with other stimulants (such as bitter orange), and chitosan might increase the blood-thinning effects of warfarin (Coumadin®) to dangerous levels.

If you take dietary supplements and medications on a regular basis, be sure to talk about this with your health care provider.

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 supplements may not help you lose weight—and they could be dangerous.

Weight-loss supplements are sometimes adulterated with prescription drug ingredients or controlled substances. Because U.S. law doesn't allow these ingredients to be in dietary supplements, they won't be listed on the product label and they could harm you.

Weight-loss supplements can be sold without being tested or approved by the U.S. Food and Drug Administration (FDA). Once a supplement that's suspected of causing serious health problems is on the market, the FDA can recall that product. Visit www.fda.gov and search "Tainted Weight Loss Products" to view the FDA's public notifications about tainted weight-loss products.

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 health care 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 on the government's food guidance system:

- Dietary Guidelines for Americans
- ChooseMyPlate

National Institutes of Health

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

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