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6 Benefits of Cordyceps, All Backed by Science



Written by [Gavin Van De Walle, MS, RD](#) on May 9, 2018

Cordyceps is a genus of parasitic fungi that grows on the larvae of insects.

When these fungi attack their host, they replace its tissue and sprout long, slender stems that grow outside the host's body.

The remains of the insect and fungi have been hand-collected, dried and used in Traditional Chinese Medicine for centuries to treat fatigue, sickness, kidney disease and low sex drive.

Supplements and products containing *Cordyceps* extract have become increasingly popular due to their many purported health benefits.

Of the more than 400 species of *Cordyceps* discovered, two have become the focus of health research: *Cordyceps sinensis* and *Cordyceps militaris*.

However, much of this research is limited to animal or lab studies, so health experts currently can't draw conclusions about their effects on people.

However, their potential health benefits are promising.

This article highlights 6 potential benefits of *Cordyceps*, based on science.

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1. May Boost Exercise Performance

Cordyceps are thought to increase the body's production of the molecule adenosine triphosphate (ATP), which is essential for delivering energy to the muscles.

This may improve the way your body uses oxygen, especially during exercise (1, 2).

In one study, researchers tested their effects on exercise capacity in 30 healthy older adults using a stationary bike. Participants received either 3 grams per day of a synthetic strain of *Cordyceps* called CS-4 or a placebo pill for six weeks.

By the end of the study, VO2 max had increased by 7% in participants who had taken CS-4, while participants given the placebo pill showed no change (3).

VO2 max is a measurement used to determine fitness level (4).

In a similar study, 20 healthy older adults received either 1 gram of CS-4 or a placebo pill for 12 weeks (5).

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performance.

One study also tested the effects of a *Cordyceps*-containing mushroom blend on exercise performance in younger adults (6[👍]).

After three weeks, participants' VO2 max had increased by 11%, compared to a placebo.

However, the current research suggests *Cordyceps* are not effective at improving exercise performance in trained athletes (7[👍], 8).

SUMMARY

Cordyceps have been shown to improve measures of exercise performance in older and younger adults, but not in well-trained athletes.

2. Anti-Aging Properties

The elderly have traditionally used *Cordyceps* to reduce fatigue and boost strength and [sex drive](#).

Researchers believe their antioxidant content may explain their anti-aging potential (9[👍]).

Several studies have found that *Cordyceps* increase antioxidants in aged mice, helping improve memory and sexual function (10[👍], 11[👍], 12[👍]).

Antioxidants are molecules that fight cell damage by neutralizing free radicals, which can otherwise contribute to disease and aging (13[👍], 14[👍], 15[👍]).

One study found that mice that given *Cordyceps* lived several months longer than mice given a placebo (16).

Another study found that *Cordyceps* extended the lives of fruit flies, further supporting the belief that they have anti-aging benefits (17[👍]).

However, it's unknown if *Cordyceps* have these same anti-aging benefits in humans.

SUMMARY

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Research in mice suggests *Cordyceps* have anti-aging properties. While these findings are promising, it's unknown whether they apply to humans.

3. Potential Anti-Tumor Effects

Cordyceps' potential to slow the growth of tumors has generated significant interest in recent years.

Researchers believe the fungi may exert anti-tumor effects in several ways.

In test-tube studies, *Cordyceps* have been shown to inhibit the growth of many types of human cancer cells, including lung, colon, skin and liver cancers (18[✓], 19[✓], 20[✓], 21[✓]).

Studies in mice have also shown that *Cordyceps* have anti-tumor effects on lymphoma, melanoma and lung cancer (22[✓], 23[✓], 24[✓], 25[✓]).

Cordyceps may also reverse the side effects associated with many forms of cancer therapy. One of these side effects is leukopenia.

Not to be confused with the cancer leukemia, leukopenia is a condition in which the number of white blood cells (leukocytes) decreases, lowering the body's defenses and increasing the risk of infection (26[✓]).

One study tested the effects of *Cordyceps* on mice that developed leukopenia after radiation and treatments with Taxol, a common chemotherapy drug (27[✓]).

Interestingly, *Cordyceps* reversed the leukopenia. These results suggest the fungi may help reduce complications associated with some cancer treatments.

However, it's important to note that these studies were performed in animals and test tubes, not humans.

The effects of *Cordyceps* on leukopenia and tumor growth in humans is unknown, so health experts can't currently draw conclusions.

SUMMARY

Test-tube and animal studies suggest *Cordyceps* may have the potential to treat cancer, as well as some side effects of cancer

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treatments. However, these effects have not been shown in humans, and more research is needed.

4. May Help Manage Type 2 Diabetes

Cordyceps contain a special type of sugar that may help treat diabetes.

Diabetes is a disease in which the body either does not produce or respond to the hormone [insulin](#), which normally transports the sugar glucose into your cells for energy.

When your body does not produce enough insulin or respond well to it, glucose cannot enter the cells, so it stays in the blood. Over time, having too much glucose in the blood can cause serious health problems.

Therefore, it's important for people with diabetes to make sure their blood sugar levels are [well controlled](#).

Interestingly, *Cordyceps* may keep blood sugar levels within a healthy range by mimicking the action of insulin.

In several studies in diabetic mice, *Cordyceps* have been shown to decrease blood sugar levels ([28](#), [29](#), [30](#)).

Some evidence suggests that they may also protect against kidney disease, a common complication of diabetes.

In a review of 22 studies including 1,746 people with chronic kidney disease, those who took *Cordyceps* supplements experienced improved kidney function ([31](#)).

However, these results aren't conclusive. The authors of the review stated that many of the studies were low quality. Therefore, no conclusions could be made about the effects of *Cordyceps* on kidney function in humans with chronic kidney disease.

SUMMARY

Chronically elevated blood sugar levels are common in people with uncontrolled diabetes and can have serious health effects. Research in animals suggests *Cordyceps* may have potential as a diabetes treatment.

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5. Possible Benefits for Heart Health

As research emerges on the effects of *Cordyceps* on heart health, the benefits of the fungi are becoming increasingly apparent.

In fact, *Cordyceps* are approved in China for the treatment of arrhythmia, a condition in which the heartbeat is too slow, too fast or irregular (32 [👍]).

A study found that *Cordyceps* significantly reduced heart injuries in rats with chronic kidney disease. Injuries to the heart from chronic kidney disease are thought to increase the risk of heart failure, so reducing these injuries may help avoid this outcome (33 [👍]).

The researchers attributed these findings to the adenosine content of *Cordyceps*. Adenosine is a naturally occurring compound that has heart-protective effects (34 [👍]).

Cordyceps may also have a beneficial effect on [cholesterol levels](#).

Animal research has shown that *Cordyceps* decrease “bad” LDL cholesterol (35 [👍], 36 [👍], 37).

LDL can raise your risk of heart disease by leading to the buildup of cholesterol in your arteries.

Similarly, *Cordyceps* have been shown to decrease triglyceride levels in mice (35 [👍]).

Triglycerides are a type of fat found in your blood. High levels are linked to a greater risk of heart disease (38 [👍]).

Unfortunately, there is insufficient evidence to determine whether *Cordyceps* benefit heart health in humans.

SUMMARY

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cholesterol.

6. May Help Fight Inflammation

Cordyceps is said to help fight inflammation in the body.

Although some inflammation is good, too much can lead to diseases like heart disease and cancer.

Research has shown that when human cells are exposed to *Cordyceps*, special proteins that increase inflammation in the body become suppressed (39[👍], 40[👍], 41[👍], 42[👍]).

Thanks to these potential effects, researchers believe *Cordyceps* may serve as a useful anti-inflammatory supplement or drug (42[👍]).

In fact, *Cordyceps* have been shown to reduce inflammation in the airways of mice, making them a potential therapy for asthma. However, the fungi appear to be less effective than commonly prescribed drugs used to provide relief for inflamed areas of the body (43[👍]).

Cordyceps may also have topical uses. One study found it reduced skin inflammation when applied topically in mice, further demonstrating its anti-inflammatory properties (44[👍]).

The potential inflammation-fighting properties of *Cordyceps* have yet to be observed in humans.

SUMMARY

Research suggests *Cordyceps* decrease inflammatory markers in animals. However, their effects on inflammation in humans remain unknown.

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Taking *Cordyceps* Supplements

Cordyceps sinensis is difficult to harvest and carries a price tag of more than \$9,000 USD per pound (32 [👁]).

For this reason, the majority of *Cordyceps* supplements contain a synthetically grown version called *Cordyceps* CS-4.

To ensure you buy high-quality *Cordyceps* supplements, look for brands that carry the United States Pharmacopeia (USP) or NSF International (NSF) seal (45 [👁]).

These are third-party organizations that ensure supplements contain the ingredients listed on the label, without impurities.

Dosages

Due to limited research in humans, there is no consensus on dosages.

The dosage commonly used in human research is 1,000–3,000 mg per day. This range is not associated with side effects and has been found to have certain health benefits.

Side Effects and Safety

No studies have yet examined the safety of *Cordyceps* in humans.

However, a long history of use in Traditional Chinese Medicine suggests they are nontoxic.

In fact, the Chinese government approved *Cordyceps* CS-4 for use in hospitals and recognizes it as a safe, natural drug (32 [👁]).

SUMMARY

Cordyceps supplements are grown in labs due to the high costs of wild-harvested *Cordyceps sinensis*. Dosages in humans range from 1,000–3000 mg. There are currently no studies on their safety in humans.

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Cordyceps are well known in Traditional Chinese Medicine and have been used for centuries to treat many health ailments.

Though the fungi show promise in many areas, there's little research on their effects in humans. Thus, more research is needed before experts can make any recommendations.

Animal and lab studies suggest *Cordyceps* have the potential to improve heart health and fight inflammation, cancer, diabetes and aging. However, many of these studies are poor quality, and the results cannot be extended to humans.

Nevertheless, there have been human studies on *Cordyceps*' effects on exercise performance. The fungi have been found to potentially boost energy and oxygen use during exercise.

Currently, there is no consensus on the dosage people should take to reap its potential health benefits, or how safe it is.

If you choose to take *Cordyceps* supplements, make sure they've been tested by a third-party organization for purity and quality.

Only time will tell if the health benefits of *Cordyceps* observed in animal and laboratory studies apply to humans.

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HISTORY

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 May 9, 2018

Written By

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7 Impressive Benefits of Oyster

Mushrooms

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Medically reviewed by [Kim Rose-Francis RDN, CDCES, LD](#), Nutrition — Written by [Jillian Kubala, MS, RD](#) on May 26, 2021

Oyster mushrooms, or *Pleurotus* species, are a group of gilled mushrooms. While mushrooms are classified as fungi, which are technically different from plants, they are a great addition to any meat-free diet.

There are around 40 types of oyster mushrooms, including *Pleurotus ostreatus* (or *P. ostreatus*), commonly known as the American oyster mushroom. All types are edible and are commonly enjoyed in dishes like pasta and stir-fries (1[👍]).

They're known for their impressive health-promoting properties and contain a variety of powerful compounds. In fact, they've been used in traditional medicine approaches for centuries (1[👍], 2[👍]).

This article covers seven impressive benefits of oyster mushrooms.



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1. Rich in nutrients

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choice for people following [low carb dietary patterns](#).

Here's the nutritional content of 1 cup (86 grams) of raw *P. ostreatus* oyster mushrooms (3[👍]):

- **Calories:** 28
- **Carbs:** 5 grams
- **Protein:** 3 grams
- **Fat:** <1 gram
- **Fiber:** 2 grams
- **Niacin:** 27% of the Daily Value (DV)
- **Pantothenic acid (vitamin B5):** 22% of the DV
- **Folate:** 8% of the DV
- **Choline:** 8% of the DV
- **Potassium:** 8% of the DV
- **Iron:** 6% of the DV
- **Phosphorus:** 8% of the DV
- **Zinc:** 6% of the DV

The mushrooms also contain smaller amounts of other nutrients, including vitamin D and selenium.

SUMMARY

Oyster mushrooms are a good source of fiber, protein, and a variety of vitamins and minerals.

2. Source of antioxidants

Oyster mushrooms provide [antioxidants](#), which are substances that help reduce cellular damage in your body (4[👍]).

For example, seven phenolic compounds have been detected in *P. ostreatus* extracts, including gallic acid, chlorogenic acid, and naringenin — all of which act as antioxidants in your body (5[👍], 6[👍], 7[👍], 8[👍]).

These mushrooms also contain the amino acid ergothioneine, which has powerful antioxidant effects (9[👍]).

A 2007 study in rodents found that treatment with oyster mushroom

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Similarly, a 2020 rat study observed that the extract showed antioxidant effects and helped reduce liver damage caused by toxic chemicals (11 ).

What's more, a 2016 test-tube study found that extract from gray oyster mushroom (*Pleurotus pulmonarius*) inhibited oxidative damage to human artery cells and prevented oxidation of LDL (bad) cholesterol, possibly thanks to the amino acid ergothioneine (12 ).

Oxidation of LDL (bad) cholesterol is involved in the process of atherosclerosis, which is the buildup of plaque in the arteries that can lead to heart disease (12 ).

Although animal and test-tube studies suggest that oyster mushrooms provide antioxidants and may protect against cellular damage, more research in humans is needed.

SUMMARY

Oyster mushrooms are a good source of antioxidants. According to test-tube and animal research, they may protect against cellular damage, but studies in humans are needed to confirm this.

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risk factors like high cholesterol and high blood pressure.

P. ostreatus is especially high in several compounds that benefit heart health, including fibers called beta-glucans (13 ).

Beta-glucans are fermented by gut bacteria to produce short-chain fatty acids that can help reduce cholesterol production in your body. Interestingly, *P. ostreatus* provides twice as many beta-glucans as white button mushrooms (*A. bisporus*) (14 ).

A small 2011 randomized control trial in 20 people found that eating a soup containing 30 grams of dried *P. ostreatus* for 21 days decreased triglycerides, total cholesterol, and oxidized LDL (bad) cholesterol levels compared with placebo treatment (15).

Plus, a 2020 review of eight human studies found that *P. ostreatus* intake helped lower blood sugar, triglycerides, blood pressure, and insulin levels, all of which could decrease heart disease risk.

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However, the authors acknowledged that all available studies have a high risk of bias and that future well-designed studies are needed to better understand how *P. ostreatus* intake may improve heart health (16[👍]).

SUMMARY

Some research suggests that eating oyster mushrooms may reduce heart disease risk factors like high blood pressure and cholesterol. However, more well-designed human studies are needed.

4. May promote blood sugar regulation

In addition to promoting heart health, oyster mushrooms may help regulate blood sugar levels.

A study in 22 people with and without type 2 diabetes found that taking powdered *P. ostreatus* reduced [post-meal blood sugar levels](#). The authors speculated that the mushrooms increased sugar use in body tissues while inhibiting certain blood sugar-increasing proteins (16[👍], 17[👍]).

Similarly, a 2007 study in 30 hospitalized people with type 2 diabetes found that eating 150 grams of cooked *P. ostreatus* daily for 7 days reduced fasting blood sugar by 22% and post-meal blood sugar by an average of 23% (16[👍], 18[👍]).

After participants had stopped the mushroom treatment for 1 week, fasting and post-meal blood sugar increased by an average of 13% and 20%, respectively. The treatment also significantly reduced participants' blood pressure, cholesterol, and triglyceride levels (16[👍], 18[👍]).

What's more, a study in 27 men with type 2 diabetes and high blood pressure found that treatment with 3 grams of powdered *P. ostreatus* powder per day for 3 months significantly reduced hemoglobin A1c (HbA1c), a marker for long-term blood sugar control (16[👍], 19).

A 2020 review suggested that these potential blood sugar-lowering effects may be attributed to the mushroom's high concentration of beta-glucans, as this type of fiber slows down carbohydrate digestion and absorption (16[👍]).

SUMMARY

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aspects of health when taken as a supplement or consumed as part of the diet.

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5. Immune-supportive benefits

Oyster mushrooms may support your immune system in several ways.

For example, pleuran — a type of beta-glucan fiber derived from *P. ostreatus* — has been shown to have immune-modulating properties. Plus, the mushrooms may boast antiviral and antibacterial effects.

In a 130-day study in 90 people with [herpes simplex virus type 1 \(HSV-1\)](#), treatment with a combined pleuran, vitamin C, and zinc supplement improved HSV-1 symptoms and reduced the duration and severity of respiratory symptoms more than vitamin C alone (20[👍]).

Pleuran treatment has also been shown to significantly improve symptoms in children with recurrent respiratory tract infections and significantly reduce the incidence of upper respiratory tract infections in athletes (21[👍], 22[👍]).

Additionally, an 8-week study in 41 people found that compared with placebo, taking a daily oyster mushroom extract supplement heightened the immune system by activating interferon- γ (IFN- γ), a molecule that plays a critical role in protecting against infection (23[👍]).

These mushrooms have also been shown to have antiviral and antibacterial effects (24[👍], 25[👍]).

However, studies focusing on the potential immune health-promoting properties of whole oyster mushrooms — and not just extracts and supplements — are needed.

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Researchers have speculated that certain extracts from oyster mushrooms may support immune health. However, human studies focusing specifically on the immune benefits of eating the mushrooms are needed to learn more.

6. Other potential benefits

In addition to the possible benefits listed above, research suggests oyster mushrooms may promote health in other ways:

- **Potential anti-tumor properties.** Research in test tubes and animals suggests that these mushrooms may provide anti-tumor effects. However, human research is lacking (26[👍], 27[👍], 28[👍]).
- **Gut health benefits.** A 2021 rodent study found that supplementing the diet of obese rats with oyster mushrooms decreased the growth of **pathogenic bacteria** and increased the production of beneficial short-chain fatty acids in their guts (29[👍]).
- **Anti-inflammatory effects.** These mushrooms contain anti-inflammatory compounds. A 2020 rat study found that oral treatment with *P. ostreatus* extract significantly reduced induced paw inflammation (30[👍]).

SUMMARY

Oyster mushrooms may have anti-tumor, anti-inflammatory, and gut health-promoting properties. However, more research is needed to confirm these potential benefits.

7. Versatile and delicious

In addition to offering potential health benefits, these mushrooms are prized for their culinary uses. All their parts are edible, including the caps, gills, and stems.

Here are a few ways to incorporate oyster mushrooms into your diet:

- Add them to soups and stews.
- Cook and add them to pasta and grain dishes.
- Sauté them with olive oil and garlic for a nutritious side dish.
- Chop and add them to sauces and gravy.

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- Grill them on skewers with vegetables and a protein source like shrimp or chicken.
- Roast them in the oven.

As you can see, they can be prepared in many ways, so don't be afraid to try them in your favorite savory [recipes](#).

SUMMARY

Oyster mushrooms are tasty and pair well with a variety of foods. Use them in meals like soups, stews, pasta dishes, and stir-fries.

The bottom line

Oyster mushrooms are a popular type of mushroom linked to several health benefits.

In addition to being highly nutritious, they may promote heart and immune system health, encourage healthy blood sugar control, and provide antioxidant and anti-inflammatory effects.

Try adding these versatile mushrooms to your diet by using them in dishes like pasta, stews, and omelets.

Last medically reviewed on May 26, 2021

How we reviewed this article:

HISTORY

Our experts continually monitor the health and wellness space, and we update our articles when new information becomes available.

Current Version

 **May 26, 2021**

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