

11 Science-Backed Health Benefits of Black Pepper

Black pepper is one of the most commonly used spices worldwide.

It's made by grinding peppercorns, which are dried berries from the vine *Piper nigrum*.

It has a sharp and mildly spicy flavor that goes well with many dishes.

But black pepper is more than just a kitchen staple. It has been deemed the “king of spices” and used in ancient Ayurvedic medicine for thousands of years due to its high concentration of potent, beneficial plant compounds ([1Trusted Source](#), [2](#)).

Here are 11 science-backed health benefits of black pepper.

Free radicals are unstable molecules that can damage your cells. Some free radicals are created naturally — such as when you exercise and digest food.

However, excessive free radicals can be formed with exposure to things like pollution, cigarette smoke, and sun rays ([3Trusted Source](#)).

Excess free radical damage may lead to major health problems. For example, it has been linked to inflammation, premature aging, [heart disease](#), and certain cancers ([4Trusted Source](#), [5Trusted Source](#), [6Trusted Source](#)).

Black pepper is rich in a plant compound called piperine, which test-tube studies have found to have potent [antioxidant](#) properties.

Studies suggest that a diet high in antioxidants may help prevent or delay the damaging effects of free radicals ([1Trusted Source](#), [7Trusted Source](#)).

Test-tube and rodent studies have observed that ground black pepper and piperine supplements may reduce free radical damage ([8Trusted Source](#)).

For instance, rats fed a high-fat diet plus either black pepper or a concentrated black pepper extract had significantly fewer markers of free radical damage in their cells after 10 weeks compared to rats fed a high-fat diet alone ([9Trusted Source](#)).

summary

Black pepper is rich in a potent antioxidant called piperine, which may help prevent free radical damage to your cells.

Chronic inflammation may be an underlying factor in many conditions, such as arthritis, heart disease, diabetes, and cancer ([10Trusted Source](#), [11Trusted Source](#)).

Many laboratory studies suggest that piperine — the main active compound in black pepper — may effectively fight inflammation ([12Trusted Source](#)).

For example, in studies in rats with arthritis, treatment with piperine resulted in less joint swelling and fewer blood markers of inflammation ([13Trusted Source](#), [14Trusted Source](#)).

In mouse studies, piperine suppressed inflammation in the airways caused by asthma and seasonal allergies ([15Trusted Source](#), [16Trusted Source](#))

However, the [anti-inflammatory](#) effects of black pepper and piperine have not yet been studied extensively in people.

summary

Black pepper contains an active compound that has been shown to decrease inflammation in animals. Still, it's unclear whether it has the same effects in humans.

Piperine has been shown to [improve brain function](#) in animal studies.

In particular, it has demonstrated potential benefits for symptoms related to degenerative brain conditions like Alzheimer's and Parkinson's disease ([17Trusted Source](#), [18Trusted Source](#)).

For example, a study in rats with Alzheimer's disease found that piperine improved memory, as the distribution of piperine enabled the rats to repeatedly run a maze more efficiently than rats not given the compound ([19Trusted Source](#)).

In another rodent study, piperine extract seemed to decrease the formation of amyloid plaques, which are dense clumps of damaging protein fragments in the brain that have been linked to Alzheimer's disease ([20Trusted Source](#), [21Trusted Source](#)).

Yet, studies in humans are needed to confirm whether these effects are also seen outside animal studies.

summary

Black pepper extract has improved symptoms of degenerative brain diseases in animal studies, but studies in humans are needed to verify these results.

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Studies suggest that piperine may help improve blood sugar metabolism ([22Trusted Source](#), [23Trusted Source](#), [24Trusted Source](#)).

In one study, rats fed a black pepper extract had a smaller [spike in blood sugar](#) levels after consuming glucose compared to rats in the control group ([25Trusted Source](#)).

Additionally, 86 overweight people taking a supplement containing piperine and other compounds for 8 weeks experienced significant improvements in [insulin sensitivity](#) — a measure of how well the hormone insulin removes glucose from the bloodstream ([26Trusted Source](#)).

However, it's unclear whether the same effects would occur with black pepper alone, as a combination of many active plant compounds was used in this study.

summary

Black pepper extract may improve blood sugar control, but more research is needed.

High blood cholesterol is associated with an increased risk of heart disease, which is the leading cause of death worldwide ([27Trusted Source](#), [28Trusted Source](#)).

Black pepper extract has been studied in animals for its potential to reduce cholesterol levels ([29Trusted Source](#), [30Trusted Source](#), [31Trusted Source](#)).

In one 42-day study, rats fed a high-fat diet and a black pepper extract had decreased blood cholesterol levels, including LDL (bad) cholesterol. The same effects were not seen in the control group ([31Trusted Source](#)).

Additionally, black pepper and piperine are believed to boost the absorption of dietary supplements that have potential cholesterol-lowering effects like turmeric and [red yeast rice](#) ([32Trusted Source](#), [33Trusted Source](#)).

For example, studies have shown that black pepper may increase the absorption of the active component of turmeric — [curcumin](#) — by up to 2,000% ([34Trusted Source](#)).

Still, more studies are needed to determine whether black pepper itself has significant cholesterol-lowering effects in humans.

summary

Black pepper has demonstrated cholesterol-lowering effects in rodent studies and is believed to boost the absorption of potential cholesterol-lowering supplements.

Researchers hypothesize that the active compound in black pepper, piperine, may have cancer-fighting properties ([35Trusted Source](#), [36Trusted Source](#)).

Though no human trials have been performed, test-tube studies found that piperine slowed the replication of breast, prostate, and colon cancer cells and induced cancer cell death ([37Trusted Source](#), [38Trusted Source](#), [39Trusted Source](#), [40Trusted Source](#)).

Another test-tube study screened 55 compounds from spices and observed that piperine from black pepper was the most effective at enhancing the efficacy of traditional treatment for triple-negative breast cancer, the most aggressive cancer type ([41Trusted Source](#)).

What's more, piperine has shown promising effects in laboratory studies for reversing multidrug resistance in cancer cells — an issue that interferes with the efficacy of chemotherapy treatment ([42Trusted Source](#), [43Trusted Source](#)).

Though these results are promising, more studies are needed to understand the potential [cancer-fighting properties](#) of black pepper and piperine.

summary

Black pepper contains an active compound that has slowed the replication of cancer cells and induced cancer cell death in test-tube studies. However, these effects have not been studied in people.

Black pepper may benefit health in many other ways according to preliminary research:

- 7. Boosts absorption of nutrients.** Black pepper may increase the absorption of essential nutrients like calcium and selenium, as well some beneficial plant compounds, such as those found in green tea and [turmeric](#) ([1Trusted Source](#), [44Trusted Source](#)).

8. **May promote gut health.** The makeup of your gut bacteria has been linked to immune function, mood, chronic diseases, and more. Preliminary research suggests that black pepper may increase the good bacteria in your gut ([1Trusted Source](#), [45Trusted Source](#)).
9. **May offer pain relief.** Though it has yet to be studied in humans, studies in rodents suggest that the piperine in black pepper may be a natural pain reliever ([46Trusted Source](#), [47Trusted Source](#)).
10. **May reduce appetite.** In a small study, 16 adults reported reduced appetite after drinking a black-pepper-based beverage compared to flavored water. However, other studies did not show the same effects ([48Trusted Source](#), [49Trusted Source](#)).

summary

Black pepper increases the absorption of essential nutrients and beneficial plant compounds. According to preliminary research, it may also promote gut health, offer pain relief, and reduce appetite.

Black pepper has become a kitchen staple in households worldwide.

With its subtle heat and bold flavor, it's versatile and can enhance almost any savory dish.

A dash of ground black pepper can be a tasty seasoning for cooked vegetables, pasta dishes, meat, [fish](#), poultry, and many more.

It also pairs well with other healthful seasonings, including turmeric, [cardamom](#), cumin, garlic, and lemon zest.

For an extra kick and a little crunch, try coating tofu, fish, chicken, and other proteins with coarsely ground peppercorns and additional seasonings.

summary

Black pepper has a subtle heat and a bold flavor that makes it a tasty addition to almost any dish.

Black pepper and its active compound piperine may have potent antioxidant and anti-inflammatory properties.

Laboratory studies suggest that [black pepper](#) may improve cholesterol levels, blood sugar control, and brain and gut health.

Despite these promising findings, more studies in humans are needed to better understand the exact health benefits of black pepper and its concentrated extracts.

Regardless, this versatile flavor-enhancer is worth adding to your daily cooking routine, as its bold flavor is a great addition to almost any dish.

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