

# What Are The Health Benefits Of Black Pepper?



*Written by Alicia Sparks Akers - Medically reviewed by Sade Meeks, MS, RD*

Black pepper, and its alkaloid component piperine, have associations with many health benefits, including anti-inflammatory effects and potential cancer-fighting properties.

People have used pepper in traditional medicine for thousands of years, especially in Ayurveda, the traditional Indian system of medicine. Individuals used it mainly for treating menstrual and ear, nose, and throat disorders.

However, consuming too much black pepper can lead to gastrointestinal side effects, so people need to be careful not to use too much.

Keep reading to learn more about black pepper, including nutritional information, the health benefits, and the potential risks.

## **Nutrition information**

The table below shows the amount of nutrients in a teaspoon of ground black pepper, weighing in at 2.3 grams (g).

<b>Nutrient</b>	<b>Value</b>
Energy in calories	5.77
Protein, grams (g)	0.239
Carbohydrates (g)	1.47
Fiber (g)	0.582
Sugars (g)	0.015
Calcium (mg)	10.2
Iron (mg)	0.223
Magnesium (mg)	3.93
Phosphorus (mg)	3.63
Potassium (mg)	30.6
Sodium (mg)	0.46
Zinc (mg)	0.027
Manganese (mg)	0.294
Selenium (mcg)	0.113
Fluoride (mcg)	0.787
Niacin (mg)	0.026
Folate (mcg)	0.391
Betaine (mg)	0.205
Beta carotene (mcg)	7.13
Lutein + zeaxanthin (mcg)	10.4
Vitamin E (mg)	0.024
Vitamin K (mcg)	3.77
Vitamin A (mcg retinol activity equivalents)	12.6

Currently, there are no dietary guidelines on how much black pepper a person of any sex or age group should consume.

However, the Dietary Guidelines for Americans: 2020–2025 notes that adding herbs and spices can help add flavor to a dish when a person is attempting to reduce their dietary intake of added sugar, sodium, and saturated fat.

## **Health benefits**

There are several potential health benefits of black pepper for the body and brain, and many of them come from the black pepper compound piperine.

## **High in antioxidants**

Piperine, the plant compound in black pepper, has strong antioxidant properties.

The body creates free radicals, unstable molecules that can damage cells, both naturally and in response to environmental stresses. Excess free radical damage can lead to serious health problems, including inflammatory diseases, heart disease, and certain cancers.

Research has shown that diets high in antioxidants could lessen free radical damage. For example, one review of both test tube and rodent studies found that black pepper and piperine supplements may

prevent or slow the advancement of free radical damage and related diseases such as atherosclerosis, diabetes, and cancer.

## **Anti-inflammatory benefits**

While there is no extensive human research on the anti-inflammatory benefits of black pepper and piperine, several rodent studies suggest that piperine may help ease inflammation.

For example, during one study aimed at learning whether or not piperine could suppress cardiac injury associated with doxorubicin, an anti-cancer drug, researchers found that lab mice injected with piperine experienced reduced inflammation.

Another rodent study suggests piperine's anti-inflammatory properties may help protect renal tissue damage associated with ischemia-reperfusion. Ischemia-reperfusion refers to tissue damage that occurs when a part of the body does not receive enough oxygen.

Researchers have also found that specific piperine supplements may help decrease the chronic inflammation that people with metabolic syndrome experience, but more human research is necessary.

## **Antibacterial properties**

A handful of reviews and studies point to piperine's antibacterial potential.

For example, after a small review of studies involving black pepper's antibacterial properties against gram-positive bacteria, such as *Staphylococcus aureus*, researchers concluded the spice could be a powerful ingredient for future therapies against both infectious diseases and foodborne pathogens.

Another larger-scale review examined lab and human studies involving the many pharmacological properties of piperine, including antibacterial properties.

Similarly, one test tube study found that piperine and piperlongumine — a component of the long pepper plant — may help fight multidrug-resistant pathogens. The study's authors concluded that both compounds might be helpful as bioactive compounds for new antibacterial drugs. However, authors from both reviews suggested more research is necessary.

## **Cancer-fighting properties**

Although there have not been any human studies to date, several laboratory studies suggest the piperine in black pepper may have cancer-fighting properties.

For example, one comprehensive review of spices and cancer treatments notes that studies found piperine suppressed cancer cell replication in breast, prostate, and colon cancer.

Similarly, the substance showed promise as a therapeutic agent in treating osteosarcoma, a type of bone cancer. However, more scientists need to conduct more studies to investigate this effect fully.

## **Increasing “good cholesterol”**

Researchers conducted a study of piglets randomly assigned a diet supplemented with or without black pepper and noted changes during their growing and fattening periods.

They found the piglets that consumed a diet supplemented with black pepper experienced a significant increase in high-density lipoprotein — which people call the “good cholesterol” — compared to other piglets.

The researchers believe these results might warrant further studies to explore the potential beneficial effects on lipid metabolism in humans.

## **Helping blood sugar control**

A small 2013 study on humans on the effects of a supplement containing several bioactive food ingredients — including piperine — on insulin resistance found an improvement in insulin sensitivity. This means the hormone insulin was better able to regulate the uptake of glucose.

However, because the supplement contained multiple food ingredients, it is not clear if piperine alone would have produced the same results.

## **Nutrient absorption and gut health**

Research from 2013<sup>Trusted Source</sup> suggests black pepper may help boost nutrient absorption, as well as display prebiotic-like behavior, helping regulate intestinal microbiota and enhance gastrointestinal health.

## **Boosting brain function**

Several animal studies have shown piperine may improve brain function, particularly for symptoms associated with degenerative brain conditions such as Alzheimer’s disease.

For example, researchers have found that piperine helped improve memory in rats with Alzheimer’s, as well as reducing the formation of amyloid plaques. These are damaging protein fragments that first develop in the areas of the brain linked with memory and cognitive function.

A study on humans found an association between Alzheimer’s and levels of piperine, but the researchers concluded they were not able to draw a reason for the link and stated more research is necessary.

## **Risks and side effects**

There is not much scientific evidence to suggest black pepper causes any major health risks and side effects.

While consuming too much black pepper may cause digestive distress, this is true of most herbs and spices. And eating large quantities of black pepper may cause burning sensations in the mouth and throat.

However, some research does suggest that black pepper, or more specifically, piperine, can potentially lead to adverse effects in certain situations.

For example, studies involving rodents<sup>Trusted Source</sup> and humans have shown that piperine may boost the absorption of certain medicines, such as antihistamines. This might be helpful for poorly absorbed drugs, but it may result in overly high absorption of other medications.

Therefore, it is important to consult a healthcare provider about possible drug interactions before increasing black pepper intake or taking piperine supplements.

## Summary

For thousands of years, folk and traditional systems of medicine have incorporated black pepper and piperine.

While much of the research on the benefits of black pepper on health and wellness is preliminary and involves more animals than humans, it is promising and warrants additional studies.

Pepper is an antioxidant that provides anti-inflammatory and antimicrobial effects, among other health benefits. It may also boost brain function and increase levels of good cholesterol.

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