

# Why You Should Be Eating More Porcini Mushrooms

Analysis by [Dr. Joseph Mercola](#)

✓ Fact Checked

July 31, 2023

## STORY AT-A-GLANCE

- › Mushrooms are a good source of fiber, vitamins B and C, calcium, potassium, phosphorus, magnesium, selenium and zinc, as well as the master antioxidants ergothioneine and glutathione
- › Ergothioneine appears to have a very specific role in protecting your DNA from oxidative damage, while glutathione is important for detoxification of heavy metals and other contaminants
- › Ergothioneine and glutathione are considered important antiaging compounds that may offer protection against age-related conditions such as cancer, heart disease and Alzheimer's
- › Wild ceps, aka porcini mushrooms, contain the highest amounts of ergothioneine and glutathione of the 13 mushrooms tested, but even white button contains more of these antioxidants than most other foods
- › Mushrooms high in glutathione are also high in ergothioneine, and both compounds are heat stable, so cooking mushrooms does not significantly affect their health benefits

***Editor's Note: This article is a reprint. It was originally published November 27, 2017.***

Aside from being rich in valuable nutrients such as fiber, vitamins B and C, calcium, potassium, phosphorus, magnesium, selenium and zinc, mushrooms are also excellent sources of antioxidants, including some that are entirely unique to mushrooms. Ergothioneine and glutathione, both of which are found in mushrooms, are recognized

as "master antioxidants" that inhibit oxidative stress. Both are considered important antiaging compounds.

As noted in The Guardian,<sup>1</sup> "... [S]cientists think [ergothioneine and glutathione] may help to protect the body against the maladies of old age, such as cancer, coronary heart disease and Alzheimer's disease." Ergothioneine appears to have a very specific role in protecting your DNA from oxidative damage,<sup>2</sup> while glutathione is important for successful detoxification of heavy metals and other contaminants.

According to Robert Beelman, Professor Emeritus of food science and director of Penn State Center for Plant and Mushroom Products for health:<sup>3</sup>

*"[C]ountries that have more ergothioneine in their diets, countries like France and Italy, also have lower incidences of neurodegenerative diseases, while people in countries like the United States, which has low amounts of ergothioneine in the diet, have a higher probability of diseases like Parkinson's Disease and Alzheimer's.*

*Now, whether that's just a correlation or causative, we don't know. But, it's something to look into, especially because the difference between the countries with low rates of neurodegenerative diseases is about 3 milligrams per day, which is about five button mushrooms each day."*

## **Porcini Mushrooms – An Antioxidant Powerhouse**

While all edible mushrooms have beneficial properties, some are more potent than others. As noted by Beelman, "... [W]ithout a doubt, mushrooms are the highest dietary source of these two antioxidants taken together, and some types are really packed with both of them." When it comes to the antioxidants ergothioneine and glutathione, wild ceps (*Boletus edulis*<sup>4</sup>), commonly referred to as porcini mushrooms, contain the highest amounts.

Beelman and colleagues at Penn State measured levels of these two antioxidants in 13 different species of mushrooms, and wild porcini mushrooms were the clear winner.<sup>5,6,7,8</sup>

That said, even the white button mushroom contains more of these antioxidants than most other foods.

They also found that mushrooms high in glutathione are also high in ergothioneine, so the two appear to be correlated. More good news: Ergothioneine and glutathione are heat stable, so cooking your mushrooms does not significantly affect their health benefits.

## **Porcini Are Popular With Gourmet Chefs**

With a strong, nutty flavor, porcini mushrooms are commonly found in Italian dishes and are a favorite among gourmet chefs. [Mushroom-appreciation.com](#)<sup>9</sup> offers a number of recipes and serving suggestions for porcini mushrooms. The dense and meaty porcini mushroom cap can grow to a diameter of 12 inches, and a mature specimen can weigh as much as 2 pounds.

Wild porcini is found in hardwood forests, as they form a symbiotic relationship with trees. The mycorrhizal fungi with their hyphae (long, branching filamentous structures) help shuttle nutrients to the trees' roots, while the mushrooms are nourished by plant sugars. Porcini mushrooms are not mass cultivated since they're mycorrhizal and need the symbiotic relationship with other plants to thrive.

The best places to forage for wild porcini are near pine, chestnut, hemlock and spruce trees, during summer through fall. While Italy is famous for its porcini mushrooms, they can also be found in Europe, the U.S., New Zealand and even South Africa. Other types of mushrooms, such as the white button, can be more easily cultivated and are therefore less expensive than wild porcini.

In the U.S., half of the nation's mushroom crop come from Chester County, Pennsylvania, where indoor farms produce more than a million pounds of mushrooms per day.<sup>10</sup> It's important to eat only organically grown mushrooms, though, as they absorb and concentrate whatever they're grow in, for better or worse. Mushrooms are known to

concentrate heavy metals, as well as other air and water pollutants that can defeat their medicinal value.

## **Mushrooms Offer Potent Immune Support**

Mushrooms also contain a number of compounds that modulate and strengthen immune function.<sup>11,12,13</sup> This is one reason why they're so beneficial for your health. Immune-regulating compounds include not only vitamin D but also long-chain polysaccharides, which have a variety of beneficial properties, including:

- Anti-inflammatory
- Hypoglycemic
- Anti-ulcer
- Antitumorigenic
- Immunostimulant

Alpha and beta glucan molecules are among the most important polysaccharides. Beta glucan<sup>14</sup> in particular enhances immunity through a variety of mechanisms, many of which are similar to those of echinacea or astragalus root. For example, it binds to macrophages and other scavenger white blood cells, activating their anti-infection activities. The beta-glucan in mushrooms also plays a role in fat metabolism and may help support healthy cholesterol levels.

Mushrooms also contain a number of other unique nutrients that many do not get enough of in their diet, including B vitamins like riboflavin, niacin and pantothenic acid, as well as copper, the latter of which is one of the few metallic elements accompanied by amino and fatty acids that are essential to human health.

Since your body can't synthesize copper, your diet must supply it regularly. Copper deficiency can be a factor in the development of coronary heart disease. Other bioactive and medicinal compounds include terpenoids, steroids, phenols and all of the essential amino acids (they're especially good sources of lysine and leucine).

## Mushrooms Have Valuable Anticancer Properties

Cordyceps, also called Caterpillar fungus or Tochukasu, have been studied for their antitumor properties. This parasitic mushroom is unique because, in the wild, it grows out of an insect host instead of a plant host. It has long been used within both traditional Chinese and Tibetan medicine.

Scientists at the University of Nottingham have been studying cordycepin, one of the active medicinal compounds found in these fungi, as a potential cancer drug.<sup>15</sup> A protein extract from turkey tail mushrooms is also being used to boost cancer patients' immune function in countries including Japan.<sup>16</sup> Mushrooms may also have direct anticancer effects. For instance:

- In a Japanese animal study, mice suffering from sarcoma were given shiitake mushroom extract. Six of 10 mice had complete tumor regression, and with slightly higher concentrations all 10 mice showed complete tumor regression<sup>17</sup>
- In another study,<sup>18</sup> the lentinan in shiitake mushrooms was found to increase the survival rate of cancer patients. Lentinan also has antiviral, antibacterial, antifungal and immune-boosting effects
- Extracts from maitake mushrooms, when combined with vitamin C, were shown to reduce the growth of bladder cancer cells by 90%, as well as kill them<sup>19</sup>
- In Japan, the top two forms of alternative medicine used by cancer patients are a mushroom called *Agaricus subrufescens* and shiitake mushroom extract<sup>20</sup>
- Ganoderic acid in reishi mushrooms may be useful in treating lung cancer<sup>21</sup>

## Mushrooms Are a Superfood Worth Indulging In

Considering the scientific evidence, it's easy to understand why mushrooms have been valued for their medicinal properties for centuries. In ancient Egypt, mushrooms were thought to bring long life, and today we know that this may be due to the many beneficial phytochemicals and other compounds they contain.

For example, Herbal Medicine: Biomolecular and Clinical Aspects has the following to say about reishi mushrooms:<sup>22</sup> "... there are data that support its positive health benefits, including anticancer effects; blood glucose regulation; antioxidant, antibacterial and antiviral effects; and protection against liver and gastric injury."

One dietary analysis found that mushroom consumption was associated with better diet quality and improved nutrition. Other health benefits associated with mushroom consumption include:<sup>23</sup>

- **Weight management** – One study<sup>24</sup> found that substituting red meat with white button mushrooms can help enhance weight loss. Obese participants with a mean age of just over 48 years ate approximately 1 cup of mushrooms per day in place of meat. The control group ate a standard diet without mushrooms.

At the end of the 12-month trial, the intervention group had lost an average of 3.6% of their starting weight, or about 7 pounds. They also showed improvements in body composition, such as reduced waist circumference, and ability to maintain their weight loss, compared to the control group.

- **Improved immune response to pathogens** – A study<sup>25</sup> done on mice found that white button mushrooms enhanced the adaptive immunity response to salmonella, a common foodborne pathogen that can cause food poisoning.
- **Enhanced athletic performance and more** – Cordyceps is a favorite of athletes because it increases ATP production, strength and endurance, and has anti-aging effects.<sup>26</sup> Cordyceps also has hypoglycemic and possible antidepressant effects, protects your liver and kidneys, increases blood flow, and has been used to treat Hepatitis B.
- **Anti-inflammatory effects** – Cordyceps are also recognized for their potent anti-inflammatory characteristics, which may be useful for conditions such as asthma, rheumatoid arthritis, renal failure and stroke damage. One of the active medicinal compounds in cordyceps responsible for many of these effects is cordycepin.

Research suggests the mechanism responsible for cordycepin's many varied effects may stem from its ability to alter the synthesis of many classes of rapidly induced genes that help counteract inflammatory genes, thereby slowing down otherwise rapid cellular responses to tissue damage. It may also help prevent overactivation of inflammatory responses. According to researcher Cornelia de Moor:<sup>27</sup>

*"We have shown that cordycepin reduces the expression of inflammatory genes in airway smooth muscle cells by acting on the final step in the synthesis of their messenger RNAs (mRNAs) which carry the chemical blueprint for the synthesis of proteins. This process is called polyadenylation.*

*Commonly used anti-inflammatory drugs either work much earlier in the activation of inflammatory genes, such as prednisone, or work on one of the final products of the inflammatory reaction (e.g., ibuprofen). These findings indicate that cordycepin acts by a completely different mechanism than currently used anti-inflammatory drugs, making it a potential drug for patients in which these drugs don't work well."*



## Examples of Medicinal Mushrooms to Add to Your Diet

With all the evidence supporting mushrooms' medicinal superfood status, I highly recommend adding some to your diet. They're an excellent addition to any salad and go

great with all kinds of meat and fish. "Let food be thy medicine" is good advice indeed, and with mushrooms that is especially true, as they contain some of the most powerful natural medicines on the planet.

Just make sure they're organically grown, to avoid harmful contaminants that the mushroom absorbs and concentrates from soil, air and water. Also, avoid picking mushrooms in the wild unless you are absolutely sure you know what you're picking.

There are a number of toxic mushrooms and it's easy to get them confused unless you have a lot of experience and know what to look for. Growing your own is an excellent option and a far safer alternative to picking wild mushrooms. A few of my favorite health-enhancing mushroom species include:

- **Shiitake (*Lentinula edodes*)** — Shiitake is a popular culinary mushroom used in dishes around the world. It contains a number of health-stimulating agents, including lentinan, which has antitumor properties<sup>28</sup> and helps protect liver function,<sup>29</sup> relieve stomach ailments (hyperacidity, gallstones, ulcers), and may lower your risk of anemia, ascites and pleural effusion.

Shiitake mushrooms also demonstrate antiviral (including HIV, hepatitis and the "common cold"), antibacterial and antifungal effects; blood sugar stabilization; reduced platelet aggregation and reduced atherosclerosis.<sup>30</sup>

- **Reishi (*Ganoderma lucidum*)** — Reishi is known as Lingzhi in China, or "spirit plant." It's also been given the rather telling nickname of "mushroom of immortality." Reishi has been used medicinally in Asia for thousands of years. One of its more useful compounds is ganoderic acid (a triterpenoid), which is being used to treat lung cancer,<sup>31</sup> leukemia and other cancers.

The list of Reishi's health benefits includes:<sup>32</sup> antibacterial, antiviral (herpes, Epstein-Barr) and antifungal (including *Candida*) properties; anti-inflammatory properties; immune system upregulation; normalization of blood pressure; reduction of prostate-related urinary symptoms in men.



- **Turkey Tail (*Trametes versicolor*)** – Turkey Tail is also known as *Coriolis versicolor*, or "cloud mushroom." Two polysaccharide complexes in Turkey Tail are getting a great deal of scientific attention, PSK (or "Kreskin") and PSP, making it the most extensively researched of all medicinal mushrooms with large scale clinical trials.

A seven-year, \$2 million NIH-funded clinical study in 2011 found that Turkey Tail mycelium improves immune function when dosed daily to women with stage I to III breast cancer. Immune response was dose-dependent, with no adverse effects.

PSP has been shown to significantly enhance immune status in 70% to 97% of cancer patients.<sup>33</sup> Turkey tail is also being used to treat many different infections, including *aspergillus niger*, *Candida albicans*, *E. coli*, HIV, herpes and streptococcus pneumonia. It's also hepatoprotective and may be useful for chronic fatigue.

- **Himematsutake (*Agaricus blazei*)** – Himematsutake, also called Royal Sun Agaricus, is a relative of the common button mushroom. Himematsutake mushroom is attracting worldwide scientific attention due to its remarkable anticancer properties<sup>34</sup> related to six special polysaccharides.

Like many other medicinal mushrooms, this fungus can also protect you from the damaging effects of radiation and chemotherapy. But its benefits don't stop there. Himematsutake may also help decrease insulin resistance in diabetics, improve your hair and skin, and even treat polio.

## Sources and References

---

- <sup>1</sup> [The Guardian November 14, 2017](#)
- <sup>2</sup> [Nature 2010; 17, 1134–1140](#)
- <sup>3</sup> [Penn State News November 9, 2017](#)
- <sup>4</sup> [The Spruce February 28, 2017](#)
- <sup>5</sup> [Food Chemistry 2017 Oct 15;233:429-433](#)
- <sup>6</sup> [Science Daily November 9, 2017](#)
- <sup>7</sup> [Medical News Today November 10, 2017](#)
- <sup>8</sup> [Newsweek November 9, 2017](#)
- <sup>9</sup> [Mushroom-appreciation.com, Porcini Mushrooms](#)
- <sup>10</sup> [PBS.org November 11, 2017](#)

- <sup>11, 12</sup> [Journal of Biological Chemistry January, 2010](#)
- <sup>13, 25</sup> [Nutrition Horizon April 24, 2013](#)
- <sup>14</sup> [Beta Glucan Research Organization](#)
- <sup>15, 27</sup> [Medical News Today November 17, 2012](#)
- <sup>16, 20</sup> [The Guardian March 2, 2014](#)
- <sup>17, 28</sup> [Cancer Research November 1970 30; 2776](#)
- <sup>18</sup> [Advances in Therapy August 2008; 25\(8\): 787-794](#)
- <sup>19</sup> [Alternative Medicine Review 2007 March;12\(1\):63-8](#)
- <sup>21, 31</sup> [Life Sciences 2006 Dec 23;80\(3\):205-11](#)
- <sup>22</sup> [Herbal Medicine: Biomolecular and Clinical Aspects, Chapter 9, Ganoderma lucidum](#)
- <sup>23</sup> [Medical News Today April 26, 2013](#)
- <sup>24</sup> [Medical News Today April 24, 2013](#)
- <sup>26</sup> [American Journal of Chinese Medicine 2010;38\(6\):1093-106](#)
- <sup>29</sup> [Molecules 2010 Jun;15\(6\):4478-89](#)
- <sup>30</sup> [J Atheroscler Thromb. 2002;9\(3\):149-56](#)
- <sup>32</sup> [Herbal Medicine: Biomolecular and Clinical 2nd Edition](#)
- <sup>33</sup> [The Use of Mushroom Glucans and Proteoglycans in Cancer Treatment by Parris M. Kidd, PhD \(PDF\)](#)
- <sup>34</sup> [SB3.com Nutrition Notebook, Hime-Matsutake](#)