

# Glaxon Supershrooms Level Up Your Health with MitoPrime! (2023 Update)

written by Mike Roberto | January 30, 2023

The Goons over at **Glaxon** are always working hard in the supplement lab to develop new, innovative, and effective products. No longer an industry newcomer, Glaxon has found a role for itself as an ingredient pioneer.



It seems like every time we look, Glaxon is coming out with a new hit. We recently covered their new *Multi+ Mood + Metabolism* product that utilizes SAM-e, one of our favorite mood-enhancing ingredients. Honing in on what works is the Glaxon way.

Today, we're discussing a new update to an "older" product. Glaxon Supershrooms, an immunity-boosting mushroom blend, was originally released in 2020. The team has tinkered with the formula since then, adding in ergothioneine, which is an *extremely* cool ingredient that we'll dive into down below.

## Supershrooms: Immunity, Endurance, and More

Supershrooms debuted with a *powerful* blend containing 7 different types of mushrooms with an eye for bolstering overall health from every angle. The synergy between mushrooms like **lion's mane**, **cordyceps**, **reishi**, and **shiitake** targets whole-body wellness, from the immune system and recovery to boosting brain function.



Prepare to meet NNB Nutrition's *MitoPrime*

Since then, Glaxon has added **MitoPrime** (*L-ergothioneine*) from NNB Nutrition to the mix. MitoPrime *ergothioneine* is an antioxidant amino acid that serves as an awesome addition to the mix, especially if looking for immunity protection. Far from being the kind of brand to add fillers and fluff to their formulas, Glaxon focuses in on providing the best bang for your buck.

Before we get into it, let's check for some Glaxon deals on PricePLOW:

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## SuperShroom Ingredients

Glaxon recommends taking 2-4 capsules for optimal results. Each dose has the following ingredients:

- **Supershroom Organic Mushroom Blend – 1200mg**

**SUGGESTED USE:** As a dietary supplement, take 2 capsules daily. Do not exceed 2 servings (4 capsules) in a 24-hour period.

<b>SUPPLEMENT FACTS</b>	
Serving Size 2 Capsules	
Servings Per Container 30	
Amount Per 2 Capsules	
<b>Supershrooms® Organic Mushroom Blend</b>	<b>1200 mg</b>
Maitake (Grifola frondosa) Mushroom [Mycelium & Fruiting Body] Powder, Cordyceps militaris [Mycelium & Fruiting Body] Powder, Reishi (Ganoderma lucidum) Mushroom [Mycelium & Fruiting Body] Powder, King Trumpet (Pleurotus eryngii) Mushroom [Mycelium & Fruiting Body] Powder, Shiitake (Lentinula edodes) Mushroom [Mycelium & Fruiting Body] Powder, Lion's Mane (Hericium erinaceus) Mushroom [Mycelium & Fruiting Body] Powder, Turkey Tail (Trametes versicolor) Mushroom [Mycelium & Fruiting Body] Powder	
L-Ergothioneine (as MitoPrime®)	5 mg
†Daily Value (DV) not established	

The Supershroom organic mushroom blend is a blend of seven mushroom strains: **Maitake** (*Grifola frondosa*), **Cordyceps Militaris**, **Reishi** (*Ganoderma lucidum*), **King Trumpet** (*Pleurotus eryngii*), **Shiitake** (*Lentinula edodes*), **Lion's Mane** (*Hericium erinaceus*), and **Turkey Tail** (*Trametes versicolor*), which are all 100% organically grown in the U.S.[1] This blend also uses a combination of both the *fruiting body* (portion that grows above ground) and mycelium (the roots underground) for added benefits.[1]

Mushrooms may sound simple, but they're actually incredibly complex and researchers don't fully understand how they operate. Mushrooms are technically classified as fungi, which have been living on this earth much longer than you or I. Even though there is still plenty to learn, research does point out some profound benefits from consuming an adequate amount of mushrooms for an extended period of time.

Mushrooms have been shown to have various health-boosting properties, including *anti-inflammatory, antioxidant, anti-hypertensive, anti-viral, anti-microbial, anti-cancer, anti-diabetic, anti-obesity, liver protection, and cholesterol-lowering effects*. [1] Mushrooms are very complex, but we're going to simplify things by focusing on the *main benefits* you can expect to receive from SuperShroom. So let's get right to it!

- **Improved Gut Health**

Mushrooms contain a wide variety of carbohydrates, such as *beta and alpha glucans, mannans, xylans, galatians, chitin, and hemicellulose*. [2] Because of this unique feature, mushrooms can act as a *prebiotic fiber* within the digestive tract. As a result, there's an increase in the growth of *gut microbiota*. [2] Enhancing the amount and diversity of microbiota within your digestive system can lead to several beneficial effects.



You can also find SuperShroom in SuperGreens!

It's highly likely that you've heard of both *prebiotics* and *probiotics*, but do you understand the difference between the two? **Prebiotics** are specific forms of fiber that can feed the good bacteria in your gut, whereas **probiotics** are *live* bacteria that are found in several fermented foods. Both play an important role in overall gut health, but just understand that they result in different effects when ingested.

Studies show acting as a prebiotic fiber is one of the reasons why mushrooms have *anti-cancer*, *anti-diabetic*, and *anti-obesity properties*. [2] Because microbiota take on multiple key roles that keep you healthy, including the breakdown of various nutrients for increased *absorption*, *immunomodulation*, and *drug metabolism*. [2] Therefore, if you're not feeding your good bacteria with enough fuel (prebiotic fiber), then you're more likely to have less optimal gut health, which can lead to some major problems later on.

Furthermore, by acting as a prebiotic, mushrooms can help reduce *endogenous pathogens* that may enter the gastrointestinal tract, [2,3] which allows for enhanced functioning of the immune system. This is a very interesting effect, and we'll dive deeper into mushrooms' immune-boosting benefits in the next section!

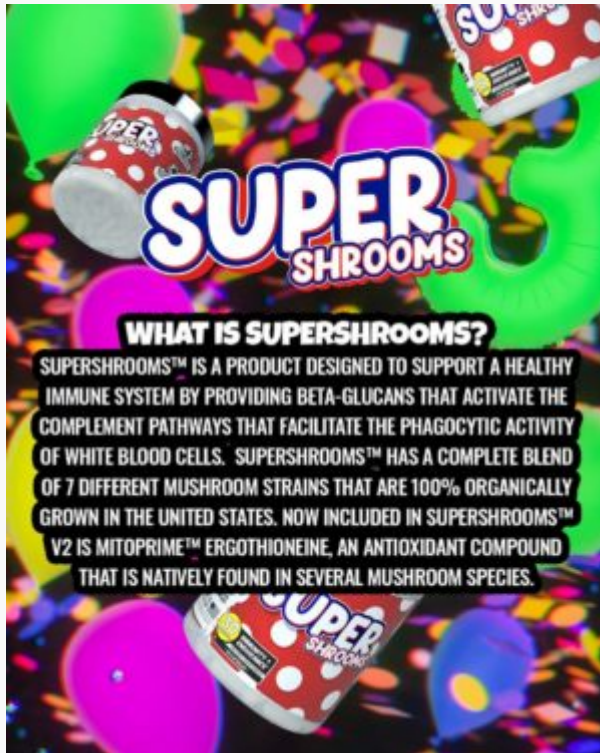
But just know that a healthier gut is definitely linked to a stronger immune system!

## • Stronger Immune System

There are several natural herbs, plants, and fungi that are touted for their immune-boosting effects. Essentially, they help your internal defense mechanisms work more efficiently, leading to a decreased risk of getting sick, or if you're already sick, they may reduce the duration and severity of your symptoms. Your immune system is a very complex network consisting of a wide variety of specialized cells, organelles, and biological processes that all are designed to defend against foreign pathogens. The two main divisions of the immune system are the *innate (nonspecific)* and *adaptive (specific)* immune systems. [4,5]

### **Innate vs Adaptive Immune System**

The innate immune system serves as your first line of defense and is typically able to eliminate or prevent entry of foreign viruses or bacteria through various mechanisms. The innate immune system comprises *physical and anatomical barriers (skin, intestinal lining)*, and the following *effector cells: natural killer (NK) cells, phagocytes, macrophages, monocytes, and neutrophils*. [4] The barriers work to keep out any exogenous pathogens from entering the body in the first place. But if those fail, the effector cells will get to work by tracking down the invader and destroying it.



If the innate immune system isn't strong enough to take care of the pathogen, then that's where the body recruits the adaptive immune system to step in. Think of your adaptive immune system as a secret weapon, you only use it when all else fails.

The adaptive immune system mainly consists of *T* and *B lymphocytes*, which not only help kill the existing bacteria or virus, but also produce *antibodies* that prepare your body for future exposure to the same pathogen.[5] In general, this is how you build up immunity, and is one of the main reasons why vaccines are so effective. Your body gets exposed to an "inactive" form of a specific virus and it produces antibodies to make sure it's prepared for future attacks.

### **Mushrooms' Effects On The Immune System**

At this point, you're probably wondering what does Supershrooms have to do with all this?

Well, research shows because mushrooms are rich in *beta-glucans*, they have the ability to activate various pathways of the immune system,[6-8] leading to increased recognition and phagocytosis of foreign bacteria and viruses, as well as damaged or infected cells.

### **Synergy between Maitake and Shiitake Mushrooms**



A study done in 2014 found that oral supplementation of *Maitake* and *Shiitake* mushrooms, both of which are present in Supershrooms, significantly stimulated multiple effector cells of the innate immune system after just two weeks.[7] They also found that the combination of the two was more powerful than either on their own, suggesting there's a *synergistic effect*.

### **Turkey Tail provides polysaccharides**

Another study showed that *polysaccharides* extracted from the fruiting bodies of *Turkey Tail* mushrooms led to the activation of macrophages,[8] which play a key role in getting rid of foreign invaders through phagocytosis (engulfment). And as we mentioned in the previous section, mushrooms have the ability to positively affect the gut,[2,3] further strengthening several aspects of the immune response.

Improved gut health and immune system response are not the only things mushrooms are capable of, they also can enhance performance and recovery!

- **Enhanced Recovery**

We have to start off by saying that *Joey Savage*, the main formulator and borderline *crazy scientist* at Glaxon, still questions the ability of mushrooms to enhance recovery. However, with their mechanism of action on the immune system, it seems very *possible*.



SuperShroom puts the 'super' in SuperGreens.

That's why we're still going to cover it here, because as more research comes out, we will be better able to understand exactly how much they impact recovery. The majority of things we will discuss in this section goes back to the mushroom's ability to activate the immune system, because several of the cells involved in fighting against pathogens are also recruited to repair damaged muscle fibers. And as you'll see there is a close connection between the two.

When you go to the gym and do bicep curls until you can't move your arms, on a physiological level, you're creating tiny *micro tears* within the muscle, and this results in an inflammatory response. Inflammation can be good or bad depending on the context of the situation: if you have significant swelling, pain, and redness after rolling your ankle, you can blame this discomfort on inflammation. But if you feel sore after maxing out on squats, that's also inflammation.

In both scenarios, your body is trying to heal from some sort of damage. It achieves this by recruiting a wide variety of cells that are also connected to the immune system, to come clean up the debris and start the repair process. This primarily includes cells capable of phagocytosis, such as *neutrophils and macrophages*. The neutrophils are first to arrive on the scene, followed closely behind by macrophages. This dynamic duo works to clean up the damaged tissue, ultimately allowing the body to start the repair process.

Again, what does this have to do with fungi? Well as we mentioned in the immune section, mushrooms have *immunostimulatory* properties, leading to *increased phagocytic cell activity*. [6-8] If the neutrophils and macrophages can be activated quicker and more efficiently, then the body can start healing much faster.

Long story short: Due to mushrooms' mechanism of action, it *makes sense* that they can lead to enhanced recovery, but we would of course like to see more research before making any definite claims.

- **Ergothioneine – 5 mg**

**Ergothioneine** (ET) is an *amino acid* that occurs naturally in familiar “superfoods”, like wheat germ, black (fermented) garlic, liver, kidney, black beans, kidney beans, and oat bran.

It's also found in many species of *edible medicinal mushroom*, which is why Glaxo had the idea to include a little extra dose of it ET Supershrooms.



Found in mushrooms and organ meats, **ergothioneine** is the oldest – and most overlooked – energy-supporting immune system booster / antioxidant on the market. Prepare to have your mind blown by this ingredient.

Before we start discussing ET's almost unbelievable potential to improve human health and performance, we should point out that the *whole-body bioavailability* of the amino acid is relatively high.

This is thanks to the existence of a transporter protein called organic cation transporter novel-type 1 (OCTN1), which happens to be present in most tissue cells, and is extremely efficient at transporting ergothioneine *into* cells.[9,10]

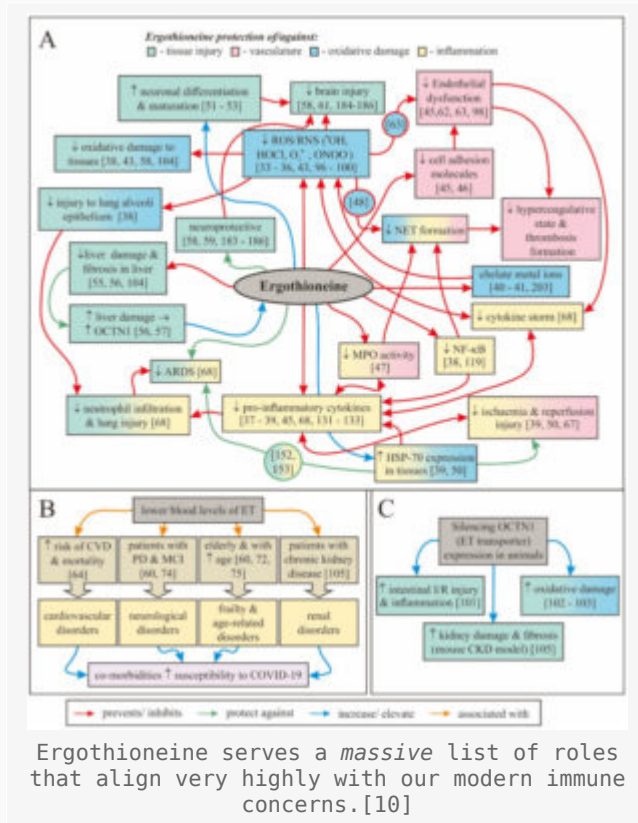
Research shows that the body absorbs and distributes ET with great efficiency. The high *bioavailability* of ET, and its distribution throughout the *entire* body, is thought to be evidence that it plays an important role in human



physiology.[11]

- Immune effects

Whenever we talk about *adaptogenic compounds*, like the medicinal mushrooms used in Glaxon Supershrooms, one of the first topics to raise is *immunological effects*.



Given that acute or chronic infections can substantially reduce quality of life and interfere with one's ability to flourish, there's arguably nothing *more* important for an adaptogenic supplement to do than help maintain proper immune function.

Both *in vitro* and in animal studies, ET has been shown to possess powerful anti-inflammatory qualities that can potentially alter the outcome of disease.

In one *in vitro* study conducted with *muscle cells*, ET significantly downregulated cells' inflammatory response to *palmitic acid*, a pro-inflammatory free fatty acid.[12] Compared to unadulterated cells, those that were *pre-treated* with ET survived at a much higher rate, and produced significantly less *interleukin-6*, which is a type of inflammatory cytokine.[12]

Given that ET can improve the survival rate of cells *in vitro*, does this mean it can limit the extent of tissue damage during inflammatory illness

as well?

In order to answer that question, let's look at a couple *animal studies*.

### • **Anti-inflammatory effects**

In one of these, *rats* were supplemented with either ET or a placebo for 15 days before researchers induced *ischemia*. [13]



Prime your Mitochondria by sending it the strongest antioxidant they're already wired for – **ergothioneine** via MitoPrime.

For several hours after the ischemia, the researchers measured blood levels of *inflammatory mediators*, like cytokines. They also analyzed all the rats' intestinal tissue under a microscope.

They found that rats treated with ET had *significantly less inflammation* than the control group – and moreover, their intestinal tissue *recovered* from the ischemia much better. When viewed under the microscope, it was clear that the ET group's intestinal tissue structure was preserved much better than the controls'. [13]

In another study, rats were subjected to an experimental model of ARDS, an inflammatory condition of the lung. ARDS is of particular topical relevance these days because it can be triggered by the "cytokine storm" of runaway lung inflammation that's been observed in many cases of SARS-CoV-2 infection.' [14]

Compared to the control rats, ET rats had significantly less cytokine activity and tissue damage in their lungs. [14]

### **Ergothioneine inhibits pro-inflammatory myeloperoxidase (MPO)**

As it turns out, ET can also act as a potent myeloperoxidase (MPO) inhibitor. [15] The reason this matters is that upregulated MPO activity is

a *major* contributor to inflammation-driven tissue injury. So *downregulating* MPO can potentially spare cells and tissues from inflammatory damage.

*Neutrophils*, a type of white blood cell, rely heavily on MPO for functioning, which is why high neutrophil count is strongly associated with adverse outcomes in SARS-CoV-2 cases.[16,17] But it's not exactly the neutrophils themselves doing the damage – it's the MPO bundled with neutrophils.



Patented synthesis process pioneered by our scientific team

Free amino acid, not in a salt form so it's more concentrated

Thione form, more active and available at physiologic pH than Thiol form

L-isomer, biologically active

HPLC tested for purity and optical rotation tested for active isomer

Natural fermentation process

The benefits of using MitoPrime branded ergothioneine, as taken from NNB Nutrition's website

Amazingly, ET has been shown to *scavenge* (i.e., clean up) the inflammatory *free radicals* generated by MPO-containing neutrophils *even better* than *glutathione* and *vitamin C*,[15] molecules both famed for their high antioxidant capacity.

This strongly suggests that ET can help prevent the *inflammatory cytokine storm* syndrome from occurring in patients with certain viral infections.

The *high bioavailability* of ET makes it *potentially* therapeutic for such conditions.[10]

The same mechanism of action makes ET a promising *antithrombotic* and *anticoagulant agent as well*.

This is because MPO plays a key role in developing extracellular matrices around neutrophils – *neutrophil extracellular traps*, or NETs for short – and these NETs bind to red blood cells.

When NETs get out of control, *thrombosis* (a clot) can be the result.[10,18]



So if our goal is to *prevent clotting*, inhibiting MPO activity is a promising strategy to adopt – and ET has been shown to do this.

#### Does ergothioneine have direct antiviral effects?

Although studies have shown that ET-containing mushroom extracts can directly inhibit the replication of certain viruses *in vitro*, [10] we're not aware of studies that isolated ET, meaning we can't be totally sure ET is the cause of the antiviral activity.

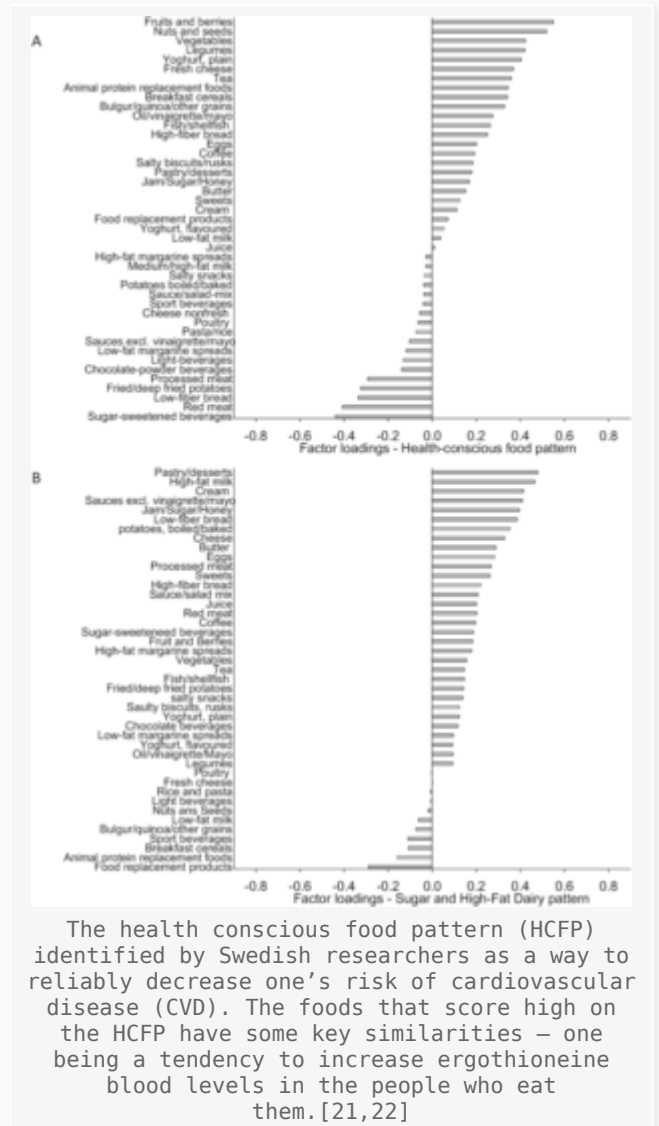
#### • **Cardiometabolic benefits**

As we alluded to earlier, a person's ET blood levels can effectively predict their risk for disease. The *less* ET you have, the *more* likely you are, statistically speaking, to develop some pretty serious age-related neurological [19,20] and cardiovascular [21] ailments.

In fact, according to the study on the association between ET and CVD, "*Ergothioneine was the metabolite most strongly connected to the HCFP [health conscious food pattern] and was associated with a lower risk of coronary disease (HR per 1 SD increment of ergothioneine, HR=0.85, p=0.01), cardiovascular mortality (HR=0.79, p=0.002) and overall mortality (HR=0.86, p=4e-5).*" [21]

The HCFP referenced in this direct quotation stands for *health-conscious food pattern*, a way of eating that the researchers behind this study had previously identified as *lowering* a person's risk of CVD. Using

statistical methods to weight the contribution of specific foods to CVD risk, the researchers noted that certain foods (e.g. fruits, berries, nuts, legumes, and yogurt) are associated with a significantly lower incidence of CVD.[22]



The health conscious food pattern (HCFP) identified by Swedish researchers as a way to reliably decrease one's risk of cardiovascular disease (CVD). The foods that score high on the HCFP have some key similarities – one being a tendency to increase ergothioneine blood levels in the people who eat them.[21,22]

The foods that score high on the HCFP have some obvious characteristics in common. For one, they're *lower in sugar and high in fiber*. With the exceptions of yogurt and cheese, they're also generally pretty low in dietary fat. We've all seen lists like this before – these are the foods we all know we're supposed to eat.

Well, as it turns out, the HCFP has another really interesting effect. *Eating foods with a high HCFP score correlates with higher ET levels in the blood.*[22]

The researchers behind the HCFP analyzed its characteristics in a follow-up study, and tried to identify a common molecular mechanism behind the health-promoting effects of all these different foods – a unified theory

of nutrition, if you will.

Their conclusion?

*“Ergothioneine had the strongest association with the HCFP and also the most evident protective associations with cardiometabolic morbidity and mortality independent of traditional risk factors.”*[21]

In other words, they believe ET is the most important thing all these very different *healthy foods* have in common.

It should be stressed that these relationships are *correlational*. It's not possible to assert, based on these studies, that increased ET intake is the *cause* of improved mortality – but they can definitely be the basis for future investigations.

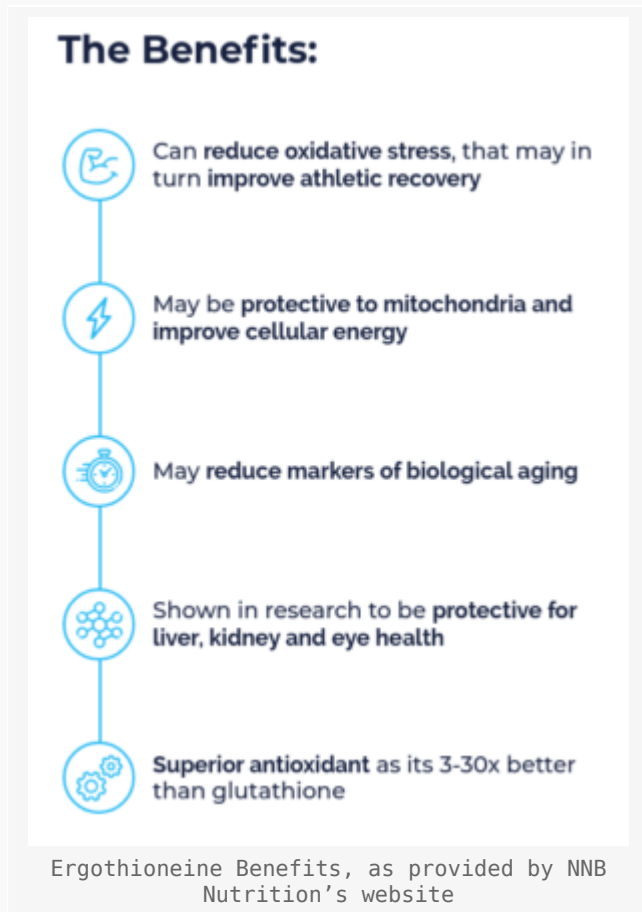
- **Neurological benefits**

The *brain* is exquisitely sensitive to *oxidative stress* and the resulting inflammation. So in the event of any inflammatory event – say, infection with a novel virus – it's not a bad idea to think about how your brain tissue could be protected from being damaged by the condition.

#### **Defense against toxins**

We've written about a lot of neuroprotective compounds here on the PricePlow Blog lately. One of these is *lion's mane*, an ET-rich **mushroom** that has been shown to protect neurons against damage by amyloid plaques.

One 2012 animal study found that *purified, isolated ET* can protect neurons against amyloid-induced injury,[23] so that's undoubtedly one of the mechanisms of action behind the ability of *lion's mane extracts* to do the same.



*In vitro* evidence suggests that ET can protect neurons from being damaged by *excitotoxicity*, a state in which the uncontrolled firing of neurons can cause neuroinflammation and even low-grade brain damage.[24]

But perhaps most interesting is a study in *mice* from 2010 showing that ET can protect brain tissue from being damaged by *cisplatin*,[25] which is a *chemotherapy* drug.

### Neuronal growth and repair

Studies of the ET *transporter protein*, *OCTN1*, indicate that ET plays an important role in helping neurons *grow and differentiate*,[26] which is crucial for the process of *brain healing* following brain injury.

This process of neuronal growth is called *neurogenesis*.

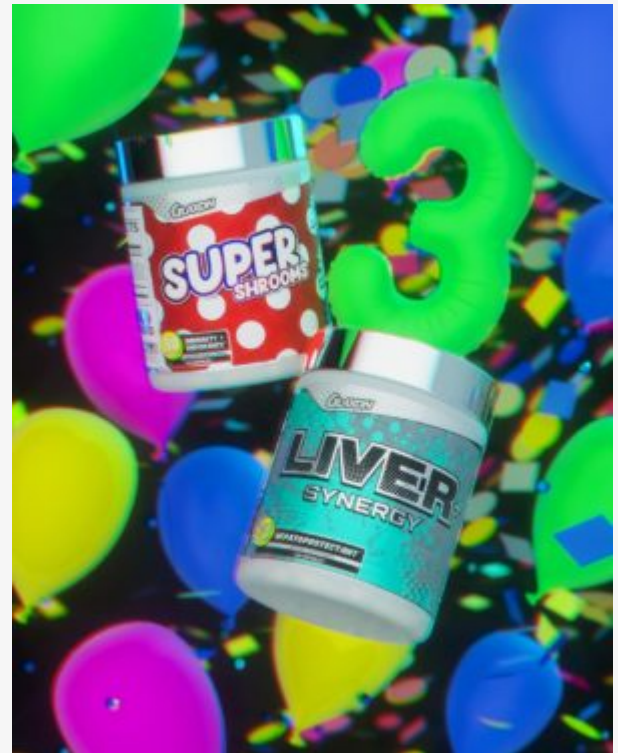
A 2021 study in *mice* found that supplemental ET's ability to increase neurogenesis was significant enough to improve the rodents' performance on a memory test.[27]

### Inverse correlation between blood ET and risk of neurological disease

Research indicates that ET might be *essential* for neurological health – low ET levels have been observed in patients with serious neurological diseases[19] as well as mild cognitive impairment.[20]

## How much ergothioneine do we need?

A 2020 article published in the *Journal of Nutritional Science* speculates that relatively poor health outcomes in the United States – high incidence of neurological diseases in particular – correlate with the population's *low average intake of ET* compared to other, similarly developed countries.[28]



If you're looking for good stacking options, Supershrooms pairs extremely well with Glaxo's Liver Synergy.

On average, *Italians* get 4.6 milligrams of ET per day from their diet, whereas Americans only get 1.1 milligrams.[28]

Of the *five* countries examined in a study assessing average ET intake, Italy was shown to get the *most* and the U.S. the *least*, so that means anything in that range (1.1 mg to 4.6 mg) is likely a physiologically appropriate dose.

**This makes the 5-milligram dose of ET used by Glaxo Supershrooms a particularly good choice** – when used on a daily basis, Supershrooms can get you even a *little more ET* than the Italians get!

## Is 5 milligrams of ergothioneine too much?

So how much is too much?

Nobody really knows yet – because so far, nobody has even successfully created a state of ergothioneine toxicity in animal models.

In safety trials of ET, doses as large as 1500 milligrams ET per kilogram body



weight per day[29] and 1600 mg/kg/day[30] have been administered to mice and rats, without any observable increase in mortality.

The human equivalent dose of 1500 mg/kg/day is 250 mg/kg/day. This works out to a 17,000 milligram daily dose of ET for a 150 pound (or 68 kilogram) person.

Obviously, we aren't getting anywhere near doses that large.



Both the U.S. Food and Drug Administration (FDA) and the the European Union's EFSA Panel on Dietetic Products, Nutrition and Allergies (NDA) has ruled that synthetic ETC supplements dosed at 5 milligrams per day are safe for use in humans.[10,31-33]

### **How can I get more ergothioneine from food?**

Mushrooms! After all, they're the reason we're writing about Glaxo Supershrooms in the first place.

According to a 2020 study that analyzed ET intake in the United States, Americans aren't getting much ET because we don't eat a lot of mushrooms compared to Western European countries like Italy.[28]

The common white button mushroom (*Agaricus bisporus*), sold in virtually all U.S. supermarkets, contains about 630 milligrams of ET per kilogram dry weight.[28]

So if you want to get more ET in your diet, eat more mushrooms.

Or you could just take Glaxon Supershrooms instead. You can learn more in our article titled *Glaxon Supershrooms Level Up Your Health with MitoPrime! (2023 Update)*.

## Do You Want To Know More About Supershrooms? Check Out This Video From The Supplement Lab!

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## Hit Your Daily Dose of Fungi With Supershrooms!

Fungi are *underrated*. Partly due to the fact that we still don't know exactly how they work, mushrooms have been overlooked by much of the supplement industry. That is, until the last few years. All of the sudden, we're seeing tons of brands recognizing the potential of mushrooms and adding them to their formulas. With such a wide-ranging assortment of potential benefits, it's no surprise.



Glaxon, as usual, is ahead of the curve – even more so with the addition of **MitoPrime**. Ergothioneine is another ingredient that we are just beginning to understand how effective it is for wellness promotion on many different levels. Benefits ranging from immune support to increased cognitive function are common with ergothioneine, and we're excited to see it included in the Supershrooms formula.

It's an exciting time in the supplement industry, and Glaxon is consistently at the *tip of the spear*.

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