

THE MODEL **HEALTH** **SHOW**

EPISODE 673

The Truth About Medicinal Mushrooms

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SHAWN STEVENSON: Welcome to the Model Health Show. This is fitness and nutrition expert, Shawn Stevenson, and I'm so grateful for you tuning in me today. On this episode, we're doing a masterclass on some of the most studied medicinal mushrooms backed up by peer-reviewed data. Mushrooms exist within an entire kingdom of fungi, of which there are over 1.5 million species of fungi on planet Earth. That's about six times more species of fungi on earth than there are plants. Now, unlike species in the plant kingdom, the DNA of mushrooms are much more identical to human DNA than anything else. Historically, the three categories of mushrooms that humans have intentionally interacted with are culinary mushrooms. So that's the button mushrooms, that's the Portabello's. All right. This is the mushrooms that we generally are adding into the mix in food, in culinary items. That's category one. Category two, psychedelic mushrooms, shrooms. All right. So, this is another category that humans have interacted with for thousands of years. And right now, they're having a resurgence in interest in psychedelic versions of mushrooms.

But for our intents and purposes today, we're talking about medicinal mushrooms. This category that has remarkable healing attributes, regenerative attributes, influence on our immune system to our sexual function, to our metabolic health. And again, I think you're going to be really blown away by this episode because we're digging into the peer-reviewed data and really looking at what's been proven as far as this category of medicinal mushrooms. Now, I want to start off by sharing some data, affirming how medicinal mushrooms can actually prevent us from getting sick, and if we happen to get sick, dramatically accelerate our recovery. I'm talking about the impact that medicinal mushrooms have on our immune system function. Now, this is top of mind for so many of us today. And rightfully so this is an important part, a critical part of human health and not just our ability to survive, but to thrive, to be more resilient in the world. Our immune system is hyper intelligent.

It has evolved over millions of years of evolution, and it is incredibly intelligent. Now, with that said, today we're faced with exposures that our immune system has never faced before. Chronic levels of stress, and of course, all of these environmental toxicants that we are coming in contact with. But here's the thing, we have an innate immune system. We also have an adaptive immune system, and both of these help to keep us from getting sick, but also learning from their exposure so that we don't get sick again. Now, medicinal mushrooms have been found to influence the performance of both aspects of the immune system. We're going to start off with research that was published in the Journal of Pharmacological Sciences. And this research found that polysaccharides in the medicinal mushroom known as reishi have extensive immunomodulating effects, including promoting the function of antigen presenting

cells, humoral immunity and cellular immunity overall. So, a variety of different interactions and how it's improving the intelligence, essentially, of our immune cells.

Now, this is a journal that's dedicated to pharmacology, publishing data on this long renowned medicinal mushroom, reishi Ganoderma. Now this particular medicinal mushroom has been utilized for thousands of years, documented history in traditions like Chinese medicine. Now, we have a plethora of modern day scientific rigorous testing, affirming how remarkable it can be for improving the function of our immune system. Another study. This was cited in the journal, Mediators of Inflammation, showed that polysaccharides in reishi were found to enhance the proliferation of our T cells and our B cells. So, mounting inappropriate response, but also helping our immune system to learn from exposures and to adapt, this kind of immuno memory and helping to support that. And polysaccharides, by the way, these are akin to... If we're talking about long chain and short chain fatty acids, for example, we also have the same thing when it comes to poly meaning many, saccharides, meaning sugars. So there's a spectrum there on sugars as well, carbohydrates. Now, again, we think about this in terms of dietary fats, but what about the carbohydrate fraction of various foods?

Well, many sugars sounds bad. But it's the short chain sugars that are generally more problematic. Polysaccharides, it's creating more of a bitter construct as those polysaccharides, as we're adding in more dimensions to this particular compound. Now, polysaccharides are just one aspect, just one of this particular medicinal mushrooms, we're talking about reishi, and as well as the entire body of evidence that we're going to be talking about of medicinal mushrooms. There are so many other aspects. Again, polysaccharides are just one, and they've been found to enhance the proliferation of our T cells and B cells. Let's move on. Let's talk about another renowned medicinal mushroom. If reishi is the queen of the mushroom kingdom, Chaga would be the king of the mushroom kingdom. Studies indicate that Chaga significantly increases the activity and effectiveness of our natural killer cells. Chaga is very likely the most antioxidant rich substance used by humans. It is so dense in a variety of antioxidants. It's been found to increase superoxide dismutase, a... Truly, even in the name, super, we want super.

We want that superhero capacity, but it's really akin to being a super performing antioxidant with a variety of roles in the body. And so Chaga has been found to increase superoxide dismutase in the body. It's a natural antioxidant enzyme produced within our bodies that plays a significant role as a free radical scavenger. It essentially acts as a Kevin Costner, a bodyguard that protects your DNA from damage and helps to reduce the workload placed on your immune system. It frees up energy. So, our immune system, if it's just bombarded by reactive oxygen species. So, these pro-inflammatory events in the body, it's making our immune system more susceptible to intrusions. And so, by activating this powerful antioxidant, we're freeing up more energy and intelligent decision making by our immune system. This is why these medicinal mushrooms are known as immunomodulators.

Immunomodulators. It's not an immune system stimulant. It's not an immune system depressant or suppressant. It has an intelligence to increase our immune system activity, if need be, or bring it down if it's hyperactive. In the same vein as things like autoimmune conditions, for example, where the immune system is overactive to a degree. And so, there's an intelligence here. It's selectively helping to raise or lower the volume of our immune system based on what we're exposed to. Again, mounting an appropriate response. So that's just a little bit about Chaga. And we're going to talk more about these master. We're talking about the top tier medicinal mushrooms that, again, have thousands of years of documented use. But today, a plethora. There were so many studies for me to go through, a plethora of modern-day peer-reviewed data affirming how incredible they are for a variety of functions in the human body.

Let's move on. Let's look at another. This is a randomized eight-week study, including 79 adult test subjects, and they supplemented with another medicinal mushroom. This one is cordyceps. Cordyceps medicinal mushroom. And in this eight-week study, again, this is a randomized study, the researchers found that cordyceps led to a significant 38% increase in the activity of our natural killer cells. And this is a type of white blood cell that protects against infection. Now, there's an intelligence here, again, if we're talking about this NK cell activity, because our natural killer cells can be trained, essentially. They're kind of like being able to take different types of martial arts based on their exposures. They're able to get trained and to perform differently. So, it's a natural killer cell.

There isn't just one way to kill. You got to find multiple ways to kill. You kind of got to have like a Steven Seagal vibe to these medicinal mushrooms or a Keanu Reeves, a John Wick vibe to these immune system weapons. So, it's giving this variety of training inputs potentially by having this NK cell proliferation and understanding that our NK cells have the ability to learn new languages, to learn new martial arts, new cellular martial arts to kick the respective asses of viruses, of bacterial infections and the like. Now, let's just talk about a specific component of our immune system function and what can get us into trouble. Now we need this thing that's become a bit of a dirty word in our society right now, if we're looking at the sphere of health, and I'm talking about inflammation. All right. Inflammation could sound like this bad thing, but without inflammation, we would never heal from an infection. Without inflammation, we would never heal from an injury or a cut. Inflammation is a critical aspect. We wouldn't have cellular regeneration. Inflammation is present in essentially every aspect of human functionality in human health.

Now, the problem is when we have chronic inflammation or the inflammation is overblown, the volume is too high because inflammation is an aspect of our immune response, it's sending out a distress signal for immune cells to come and... Macrophages and NK cells, and basically

to come and clean up the site of the problem and activate calling in reparative enzymes and all these other things. It's really a launching pad for healing. Now with that said, again, chronic inflammation is truly a low-grade fire that's burning the building down. And so, we want to keep inflammation in check. We want to have an appropriate inflammation or inflammatory response. And with that said, a 2014 study publishing recent patents on inflammation and allergy drug discovery revealed that renowned medicinal mushroom, reishi, again, as potent anti-inflammatory and anti-allergic action. Plus, it was found to possess immunomodulating and immune potentiating capabilities. This is another journal. They're trying to find drugs for stuff. They're trying to find drugs. But reishi, thousands of years of use, safe, safe. A myriad of benefits. If we're talking about, again, allergy drugs, anti-inflammatory drugs, the list of side effects is absurd.

You know how they do it on those commercials. There's this new drug, get Acisil, ask your doctor. May cause... And they go into very quiet, very quick dictation of all the side effects, may cause headaches, nausea, back aches, leg pain, anal bleeding. Wait, what? Death, what? Huh? They say death. They say death a lot in these commercials. You know why they say death? 'Cause somebody died in the clinical trial. Or some peoples, that's why they say death included in the list of "side effects." That's a hell of a side effect. You die, and you're just like, oh, you get to wherever you go and you're just like, so how'd you die? Side effect. It's not a side effect at that point. All right. So again, affirming this other angle, this important angle with helping to support our immune system health, reishi is another standout here with its benefits as far as helping to regulate inflammation in our bodies. Now, with today's episode, I want you to keep in mind that there are different aspects are facets of medicinal mushrooms, as with any of the mushroom kingdom that are utilized. And there are specific parts of the mushroom that are more advantageous to human health than others in different areas.

And we'll talk more about this. And so, we have the mycelium aspect of the medicinal mushroom. And that's really the root system or the underground network. And it doesn't necessarily even have to be underground. This can be within the tree, for example. But the root system, the mycelium, is really the Earth's original worldwide web. If you start to look into some of the research on the mycelium network in a forest, it will blow your mind. You start to realize that there is some Avatar level stuff going on right here on planet Earth. These characters in this fictitious film, Avatar, they have this deep relationship with their home, with the forest, and they know that it's a lie.

But truly, we know today that mycelium network within a forest, it's how the trees and other plants are communicating with each other. And literally, they found that trees can send nutrients to its own kin to help to support them if they're fighting something or if there's something needed for growth, literally to their own kin, the same type, and/or being able to trade with other species. But in particular, there is a neural network, there's this intelligence

within the forest floor, within planet earth itself. And it's all built on mycelium, it's built on fungi, it's built on mushrooms. It is so fascinating, so fascinating. And so, these trees know, for example, plants know, for example, when they're under threat or when surrounding trees, even, it can literally be miles away when they're under threat.

We talk about deforestation. Those trees, this network is going apeshi*t. We think about this, we think about, for example, Lord Of The Rings, the two towers we had Treebeard, all We had the trees out there, the tree herders, and seeing their families getting devastated by Saruman the White wizard. And if you're like, not into the nerd realm, nerd with me for a moment, geek with me. We're blending coolness and geek together, is what we do. So, if you're just like, I don't know anything about Lord Of The Rings, you could still get this analogy, which is understanding that there is a governing force, there's an intelligence there within all of life, especially if we're talking about an ecosystem that with our ignorance and our lack of ability to... We speak a certain language; we speak a language that we can hear. We can't even hear motion. There's millions of other frequencies of communication that we can't even hear. A simple popular example is like a dog whistle. You can't hear that. But other species, other animals, there's frequencies, there is light variations that we can't see.

We're talking about different light systems that even reptiles can see, for example. Heat signatures. So, we get trapped in a sense or limited because we're existing through our senses that we're acclimated to. And we forget that there's an entire language of the planet, there's an entire language of all of nature. And all of it, is trying to survive, and to thrive, and to live. And also, there's an intelligence within all of it, 'cause it's all connected that respects itself, that respects all of its parts. Us humans, with our... We're so evolved. We got electric cars, we got Air Jordans. So, we think that we really know what's going on with nature. And the kind of fallacy in science and having the gall to think that we are going to dominate nature. When in reality, this planet can shake us off like that if it really came down to it. And so respecting and finding out about something like this kind of neural network, the mind within an ecosystem, being mycelium in this worldwide web that the planet been made is mind-blowing.

And so, the respect here is just immense for me. So, we got mycelium, then we've got the fruiting body, that's what... When we see a mushroom presented, that's what we're seeing. We're seeing the fruiting body of the mushroom. And that's a major place for if we're talking about utilizing these medicinal mushrooms, it's the fruiting body is what we're looking for. And then we have mushroom spores and essentially those are the reproductive...

It's the mushrooms spraying out in the environment and spreading its fungi capacity all over. Like literally, you cannot escape mushroom spores. Essentially, every breath you take, unless you're boy-in-the-bubble status, you're breathing in spores. It's bananas. There's spores out in the Earth's outer atmosphere. In the outer space, there's mushroom spores. This leads into the

conversation that there are some theories that mushrooms aren't from here, right? There's some theories that we're not from here. You know, that's a whole other conversation and craziness, but the thing is, who really, really knows? What we know is these mushrooms have evolved along with us, again, for millions of years, and there's an intelligence here. And thousands of years ago, our ancestors figured out, and we're talking about human ancestors, figured out that these medicinal mushrooms can do so much for us to make us more resilient and also to prevent us from falling ill, and experiencing the devastation that we're seeing today in all manner of areas of human health.

And so, moving on, we're going to look at another area of human health that is experiencing skyrocketing rates of dysfunction, and that is sexual health and function and fertility. A lot of folks still don't realize, or they haven't been able to access this information, which should be headline news everywhere, that human fertility, if we're talking about rates of miscarriage, if we're talking about sperm count, has been decreasing about 1% every year for the last 50 years. 1% is terrible, first and foremost, but we might hear it and be like, oh, that's not a big deal. 1% every year, though. We're talking about an additional 1% each year that passes. And if you're watching the video version, we'll put up a report for you to get a little bit of an insight or to glean some of that truth, because it's a really worrisome situation that we need to take a look at and understand. There are a lot of films and TV shows about humans losing the ability to reproduce, except a certain guild of humans, and it's just like, is life imitating art, art imitating life, this kind of thing? This is a huge issue.

This is a huge issue, and we need to get more education about this. The question would be why, what's going on? Well, obviously, again, how do we create these things? If we're talking about our reproductive health, the eggs, the sperm, it's all going to be made from the compounds that we're bringing in. It's all made from food, and this is a fact. You don't just make this stuff; it doesn't just happen out of thin air. And so, obviously, that's a big part of this. Our diet is largely devolved to today. The average American, according to the BMJ, is eating about 60% of their diet is ultra-processed food, just fake sh*t. It's so distant from anything real, it's ultra-processed that it doesn't even have any resemblance to anything natural anymore. That's the basis, that's the majority of our diet is that sh*t now. So, again, what are we making our tissues out of? What are we making our hormones out of? We're making our tissues now, and our cells, and what our cells are using to communicate out of absolute trash, out of things that have never existed before in our evolution. Synthetic, not just that.

Not just the fact that they are toxic themselves, not just the fact that they are not even real, sustainable materials, but the fact that they are bringing a level of toxicity to the body as well, these synthetic chemicals, synthetic flavors, synthetic colors, and all these different things. And so, it's truly throwing off this system of communication within our bodies that the toxicants in our environment, obviously, in our lifestyle, life begets life. Movement begets

movement, principles in physics. Objects in motion tends to stay in motion, objects at rest tend to stay at rest, life is movement, life is movement. And so, being in motion, this capacity, it's generating all the things necessary to keep moving, to keep humanity moving. And so, we are also the most sedentary culture in the history of the world. So, this is just piling on to help to create this situation. And of course, we've talked about this on past episodes. Those are just highlighting some of the things, but these are just abnormal conditions that we're exposed to.

What are we going to do about it? We could point fingers and say, you know, they're doing this. They, in the words of DJ Khaled, "Stay away from they." You know, the brilliant modern-day sage, DJ Khaled, "Stay away from they." Now, I'm totally, I'm totally being sarcastic here with modern day sage. Shout out to DJ Khaled, no disrespect at all. But truly, we can't keep pointing fingers outward, we have to look back to what we can do right now with what we have, and we have the ability to do so much. And so, let's look at some of the, again, proven benefits here with sexual function, sexual health, when it comes to medicinal mushrooms. A meta-analysis, and this included over 100 studies published in Pharmacognosy Review, detailed a variety of studies on cordyceps and sexual health. One of the studies reported that when cordyceps was supplemented and administered to male test subjects for eight weeks, they showed a 33% increase in their sperm count and a 29% decrease in sperm malformations and a 79% increase in their sperm survival rate.

The sperm was more robust, more robust through the utilization of cordyceps. Another one of the studies included in this meta-analysis showed that cordyceps can help to prevent dysfunction of adrenal glands and thymus hormones. Thymus is a hub of our immune system function as well, and reduce infertile sperm count by upwards of 300%. Yet another one of the studies in this meta-analysis reported that when cordyceps was utilized by 189 men and women with decreased libido, there was an improvement in their symptoms and desire by 66%. Shout-out to Rick James, Fire and Desire.

One more of these studies, again, this is over 100 scientific references in this particular meta-analysis, this study reported that cordyceps caused improvement in libido and desire in women. It found that improved libido and desire by 86%. Shout-out to Tina Marie wasn't just Rick James, Tina Marie, Fire and Desire. Again, there are so many scientific references published in prestigious peer-reviewed journals affirming how remarkable this category of nutrition is. And I really, I love it, and it's a huge part of my daily life because it's been utilized by our ancestors for thousands of years. You're not going to find a culture that doesn't have a connection with mushrooms. And we know today with the very best of the best are. I don't want the 30th best medicinal mushroom. What's the top three, what's the top five dead or alive? That's what I'm going for, and that's what we're talking about here today. And so, in particular, if we're looking at sexual health and sexual function, cordyceps is the go-to. But we're also going to talk about cordyceps in regard to athletic performance and stamina. So,

stamina can go sexual whatever, it could jump side to side whatever, but also with athletic performance, exercise performance as well.

And so just the word, you might hear about these benefits and go looking online for where can I get my hands on some of that cordyceps? I'm trying to have that more robust, I would implore you to not do that, because this is a not so fun fact, a lot of the so called medicinal mushroom companies out there, there are very little, if any, of the medicinal mushrooms in the product. They're selling wolf tickets out here. It's not the good stuff. And so, I implore you to make sure that you are getting your medicinal mushrooms from companies that truly care, that go above and beyond, that are good humans who are hourly out here sharing their sourcing, sharing their insights, education, empowerment just good people.

And fortunately, I was able to get access to this many years ago because I've been tinkering with medicinal mushrooms for about 17 years now, and I would get a tincture over here, I get a hot water extract over here, I was combining stuff, whatever. And then I happened upon the folks at Four Sigmatic, my friends from Finland, who had this deep ancestry in utilizing medicinal mushrooms, in particular mushrooms like Chaga. And they were doing a dual extract of the medicinal mushrooms to actually pull out the beneficial compounds that might not even get utilized by the mushroom if you're not using the right technology, so decoction, alcohol extract, hot water extract, and combining it together, in addition, making sure that they are organic or wild-crafted.

So, we're talking about the very very best, avoiding toxicants, avoiding pesticides and all that nonsense, and they're making sure you're getting real medicinal mushrooms and the parts of the mushroom that are most valuable for the thing that you're going for. And in this context, if we're talking about sexual health, and we're talking about the benefits of cordyceps, they have an incredible Cordyceps Elixir, it's dual extracted, but they also have a cordyceps-infused coffee, organic coffee that if I'm going to train, If I know that I'm about to go do a heavy lifting day, I love having my cordyceps coffee. It's also infused with L-theanine, extra L-theanine, which helps to really heighten and support our alpha brain waves and balance, so you're not feeling over-stimulated, but it has a nice balance to it as well. But head over there, check them out. It's fourSigmatic.com/model, and you actually get 10% off your entire purchase. But they also have incredible subscriptions now that they're doing. You can save even more. So I highly encourage you to check them out. It's F-O-U-R-S-I-G-M-A-T-I-C.com/model. 10% off your entire order, plus and they've got some other additional goodies that you're really going to love.

This is the place by far, and I'm telling you these guys have been working their asses off to make sure that these are accessible to more people because they know about the garbage that's out there. So, they started off by having their online store, then they were able to get into some of the higher end markets, places like Whole Foods and Erewhon, things of the like.

Now, they're getting into everyday places as well, Targets and things like that. But again, for the very best discount, store shelving, mark-ups and all that stuff, go to foursigmatic.com/model. Now, let's move on. Let's look at these medicinal mushrooms in regard to human longevity. Now, if we're talking about longevity, we have to look at the medicinal mushroom that has the name. Its nickname is the mushroom of immortality in Chinese medicine, and I'm talking about reishi. Now, a study published in the journal, Aging and Disease, found that reishi has definite anti-aging properties specifically through defending the body against excessive oxidation, by improving immuno modulation, and by defending against neurodegeneration, so the breakdown of our brain cells.

The researchers found that in particular, is the triterpenes in reishi that were specifically notable through the study. Again, going back to, we have to have the right extraction method to get the triterpenes out of the medicinal mushrooms. Hot water extract, alcohol extract. You're going to get the antioxidant compounds, and you're going to get the triterpene compounds. You're going to get everything, these kinds of hormonal-leaning compounds as well. So dual extraction is ideal. So, reishi, the nickname in Chinese medicine, the mushroom of immortality. Dang, why would they give it a name like that? That's... Must be something about it. Let's look at cordyceps in regard to longevity. A study published in the International Journal of Molecular Medicine found that... This was looking at some animal type studies and some insect studies here, but this particular study, again, this was published in the International Journal of Molecular Medicine, found that fruit flies given cordyceps live 32% longer than the controls who didn't.

Now, for fruit flies that don't live very long, this is basically like they had a whole other life. They were born again, they were twice borners in this study, thanks to being able to have access to cordyceps. So, you had highlander fruit flies walking around here. There can only be one battling for immortality and dominance. Another study published by the Federation of American Societies for Experimental Biology, or the FASEB Journal, in this particular study, found that mice given cordyceps lived several months, months longer than the control group that didn't receive the cordyceps. Again, do you know how long that is in mouse years? That's a long time. They're having a serious glow up. The mice are going from regular mice lifespan to Master Splinter. I need to find more purpose in my life.

I got more time on my hands. I started training some Ninja Turtles out here. Another study that was published in the American Journal of Chinese Medicine found that cordyceps protects our mitochondria, so the energy power plants within our cells, by scavenging reactive oxygen species. And several other human studies have found that cordyceps improves cardiovascular function, our VO2 max, insulin, sensitivity and more. And speaking of VO2 max and cordyceps, this is going to lead us into looking at endurance in sports performance. A study published in Medicine & Science in Sports & Exercise tested 30 healthy athletes for six weeks to record the

effects of cordyceps on their performance. The group that added cordyceps to their daily regimen had twice the oxygen uptake of the control group. This oxygen is essential in supplying nutrients to our muscles, preventing fatigue, preventing the buildup of lactic acid.

Another study done by the same group also found that utilization of cordyceps led to a 9% increase in aerobic activity, 9% increase in endurance. It's incredible, incredible. So, in that same vein, when it comes to exercise and sports performance, and again, I mentioned how I utilize cordyceps, especially again, if I'm going to be doing some big-time training, I love to pair that with cordyceps coffee. But whether it's training at home or at the gym, right now, I'm just in this vibe where I'm training at home, I've accumulated these different pieces of equipment over the past few years, whether it's being able to push a sled, my battle rope, that's actually... My son, Jordan, is here. He's in the backseat of his car. He's throwing that big boy around and using it for his clients that he's going to see. And our steel clubs, our steel maces, our primal kettlebells, even our yoga mats, they're all spicy.

They're all so fly. We get them from Onnit. That is the premier place to get your exercise equipment for unconventional training. We want unconventional levels of health, unconventional bodies. We're redefining what a dad body is out here on these streets. Head over there, check them out. It's onnit.com/model. You get 10% off all of their incredible exercise equipment. That's O-N-N-I-T.com/model, 10% off. Not just that, also their human health performance snacks and supplements and all that good stuff as well. By the way, you might find a pre-work out there that's based on cordyceps mushrooms. I'm just saying. I'm just saying. So, people that are doing it right, those are the places that we want to go. And again, just add a piece, add a piece of equipment to your repertoire, grab yourself a... 'Cause that's what I did.

I just got a piece or two at a time over years, and now I've got so many cool tools for myself and my family to play with and to utilize for our fitness. And I love those guys. Their equipment is so cool. Their primal kettlebells are just so awesome. Actually, my youngest son painted... We've got a variety, we've got a howler monkey, we've got the chimps, we've got the gorilla, we've got the orangutan. But something fun. Also, you can look at having your kids to do some projects and maybe paint the primal kettlebells. A lot of cool stuff to include for yourself and for your family onnit.com/model. Now, let's look at metabolic health and body composition when it comes to medicinal mushrooms. In the study titled *Ganoderma lucidum*, and this is reishi, it's the scientific name, fancy pants name.

The study titled *Ganoderma lucidum* reduces obesity in mice by modulating the composition of the gut microbiota. And this study was published in the journal, *Nature Communications*. The researchers gave mice standard obesity-inducing chow, or some obesity-inducing chow supplemented with reishi. All of the mice gained weight as expected, but something

remarkable happened with the mice receiving supplemental reishi. Compared to the non-supplemented group, the mice supplemented with reishi mushroom showed, number one, a decrease in body weight of approximately 8% to 16%. Two, decreases in the fat deposited within the body cavity of about 20 to 29%. So, we're talking about visceral fat. Three, decreases in subcutaneous fat beneath the skin of approximately 44% to 59%. Four, a decrease in liver weight, which we can build up. Obviously, liver fat, non-alcoholic fatty liver disease is another issue that's skyrocketed in our society recently. They found a decrease in liver weight by utilizing reishi, and that benefit was seen about 17% reduction in fat deposits within the liver. And five, they discovered a reduction in the size and fat contents themselves of the adipocytes or the fat cells. Again, this is where fat cells are storing excess content.

So, they actually found a reduction in the size and the content of the adipocytes. The scientists stated, "Our research indicates that *Ganoderma lucidum*," again, this is reishi mushroom, "and its molecular weight polysaccharides may be used as a prebiotic agent to prevent gut dysbiosis and obesity-related metabolic disorders in obese individuals." Obviously, again, we see crossover... We've mentioned a variety of human studies today, but also in animal models, it's seen again and again and again. But this is highlighting the influence, potentially, that reishi can have on helping to optimize or rebalance the functionality and the makeup of our microbiome. So again, it's pretty cool. And if we understand what we have within our microbiome and within our gut, we have probably heard this at this point, that the majority of our immune system is located within our gut. But if we're talking about the exposure to bacteria, we are ripe with bacteria.

We have trillions and trillions of bacteria cells in and on the human body. The same with viruses. We have over 400 trillion virus particles. This is making up the human virome. So, we have the microbiome, we have the virome, we also have the microbiome, talking about the plethora of fungi that live in and on the human body. And again, this is a natural normal thing. We want to have healthy ratios of things, and we understand that there's a relationship, a symbiotic relationship, ideally, where these different aspects or species are creating critical things in us for us. And so, we want to help to create an environment where this relationship is healthy, and we don't have pathogenic species of different things, of these different things taking over our system and causing problems. And so reishi might be able to bring an assist in that equation. Now, one of the thing that I love about reishi in the context of health and wellness is its benefits for improving our sleep quality.

Generally, if I'm having a Reishi Elixir, which I use from Four Sigmatic, I'm having it in the evening, maybe an hour to 30 minutes before bed, and it really like every single time, notably improved sleep quality. And this is highlighted in a study published in the journal, *Pharmacology Biochemistry and Behavior*. The researchers found that reishi was able to, number one, significantly decrease sleep latency, meaning you fall asleep faster. They found

that, number two, it increased overall sleep time. And number three, it was able to increase non-REM deep sleep time and light sleep time as well. So pretty cool. Now, one more area that I want to share in regard to medicinal mushrooms, and what we're doing, we're talking about the four most remarkable, again, scientifically-validated medicinal mushrooms in the world. So, if you want to look at, this is a quartet. Shout-out to the quartet, Boyz II Men.

Color Me Badd. We got, what, 98 Degrees. If you want to get a little bit more modern. Where's the quartet, at Jagged Edge? Come on. Quartets are strong. So, this would be, to round things out, the four corners, looking at brain health, looking at cognitive performance, looking at mental health, that would be in the domain of the medicinal mushroom lion's mane. Scientists at the University of Malaya discovered that compounds and lion's mane are able to significantly improve the activity of human nerve growth factor in our brains. Nerve growth factor is essential in the regulation, growth, maintenance, and proliferation of a variety of our brain cells, and also the survival of our brain cells.

Our brain cells are not like other cells in our bodies. We have to keep them for a long time. We got to protect them. This medicinal mushroom has been found to actually improve the survival of our incredibly valuable and important brain cells. In a study published in Biomedical Research, test subjects with a variety of health complaints, including anxiety and poor sleep quality, were given lion's mane or a placebo for four weeks. The participants who utilize lion's mane had significantly reduced levels of irritation and reduced levels of anxiety than those who were in the placebo group. So, we've got a placebo-controlled study here, again, helping to affirm lion's mane benefit with our mental wellbeing. The researchers in the study stated, "Our results show that lion's mane intake has the possibility to reduce depression and anxiety."

So, these are the four most remarkable medicinal mushrooms, and there are many more in this kingdom. Medicinal mushrooms exist within their own kingdom. They're not within the plant kingdom or the animal kingdom. They have their own kingdom. And in particular, we got to understand that as I started off with... In this episode, there are over 1.5 million species of fungi here on planet Earth. That's about six times more species of fungi on earth than there are plants. And human DNA is much closer to mushroom DNA than it is to other plants. There's something about it, there's a bridge here, and there's an interesting interaction, if we look at the health benefits, that can be seen in time-tested, but also affirmed by modern day technology, these medicinal mushrooms can truly, truly help to support human health and functionality. I hope that you got a lot of value out of this episode.

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