

A sunburst graphic with numerous thin, light gray lines radiating from a central point behind the text.

Healthy Moms Podcast

BY **Wellness Mama**[®]
simple answers for healthier families

Episode 163: Fascinating Fungi and How to Use
Medicinal Mushrooms With Tero Isokauppila

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Katie: Hello, and welcome to The Healthy Moms Podcast. I'm Katie from wellnessmama.com and I am super excited about today's guest because I have admired his work for years and I can't wait to share him with you. His name is Tero Isokauppila and he's leading a worldwide mushroom movement. You might have heard of him as the Founder of Four Sigmatic because I talk about them all the time. But he is making functional mushrooms accessible to any and every one. Cool thing, he was born in Finland and he grew up on a farm that his family has owned since 1619, so longer than our country has existed. That's pretty amazing.

He has learned to forage for mushrooms and other wild foods while also learning about natural food space at an early age and I can't wait to jump in and talk about that and how do we impart this to our children as well. And after growing frustrated with the local mushroom products on the market and discovering how difficult it was to obtain these mushrooms here, Tero founded Four Sigmatic in 2012. He's also the author of the bestselling book "Healing Mushrooms" and considered a worldwide expert. So, Tero, welcome and thanks for being here.

Tero: Thanks for having me on, excited to chat.

Katie: Me too. And I feel like this is such a fascinating topic and I will try to keep from getting too nerdy but my instinct is to totally geek out with you on all things with mushrooms. But to start I want to like kind of go through some of the basics to make sure we really understand the starting points. So can you start really broad level and just take us through the difference between like culinary mushrooms for instance and medicinal mushrooms and are there other categories of mushrooms as well?

Tero: Yeah, there actually are. So mushrooms are technically not even all kinds of fungi. So fungi or fungi, there's no right or wrong way to say it are on kingdoms, say more as plants are kingdom or animals are a kingdom. There's many kinds of animals, mammals, and reptiles, and the same way there's many kinds of fungi and they obviously get looped in, a little more differently than just culinary and functional and there's different kinds of genesis and families, but there's all kinds of mushrooms.

One fascinating fact is about 25% of the earth's biomass, so 25% of the earth's biomass is fungal matter. So they're really everywhere and the other fact that kind of illustrates the diversity of mushrooms is that every breath we take, we inhale mushroom spores or seeds of mushrooms. So they're in the air, not all of them are visible, some are underground and they grow on trees and on the ground. So they're kind of all over the place.

Katie: That's so fascinating. And so you mentioned that they are in a separate kingdom even from plants because I think that's maybe a common misconception. People think that there are just another type of plant but they're completely, some of them are really different, correct?

Tero: Yeah. it's definitely probably the biggest myth around fungi is that they're a vegetable, you know? It's like you have your vegetables on pizza and then you have a little bit of mushrooms on top. Or if you don't want meat on your pasta, people have like a mushroom pasta or something like that, that's kind of the common things that you see on the marketplace. But they are actually their own kingdom, same way as bacteria is different from plants and obviously animals as well. So they are technically kind of part of a plant-based diet but they're not plants and they actually are both kind of vegan and paleo. But because they're a kingdom not all of them are good for you. Same way as some plants will actually hurt you, they're either poisonous or allergenic, same way as some mushrooms are not good for you and then some mushrooms are incredibly good for you.

Katie: Are there any kind of general rules as to like within the kingdom of that encompasses mushrooms to kind of determine which ones are gonna be beneficial versus not?

Tero: There's a pretty good rule of thumb, and the rule of thumb is if they grow or should grow on trees they are never poisonous and always functional. Like with anything, there might be one exception maybe to that rule, but generally speaking, if they grow on trees they're safe and good for you. If they grow on the ground you really need to know what you're getting.

Katie: That makes sense, good rule of thumb. And so if I'm remembering correctly, back to like high school biology that penicillin is actually grown from a fungi? Is that right? And if so, like that to me explains why they can be so beneficial at such small doses because they're used I believed in pharmaceuticals as well, right?

Tero: Super widely, actually. So I guess the other thing is that a lot of people, besides lumping them with vegetables, is like, "Hey, I've been told I can't have mushrooms or I don't know if mushrooms really work." There's actually the animal kingdom, Animalia, and the fungi kingdom used to be part of the same super kingdom in the past and that's why we are very close, much closer to fungi than we are to plants. So mushrooms, for example, breathe oxygen like we do and expel CO₂, they need to eat things, they can't produce their own food. Plants can use photosynthesis. So there's a lot of similarities and probably because of that DNA similarity, up to 50% of our DNA share it with fungi and over 85% of our RNA, how we synthesize proteins, for example, is similar to fungi. And they can be very bioavailable and their "medicine" can be very powerful.

So about 40% of all pharmaceuticals utilize fungi and the latest statistic I saw was that out of the 20 bestselling pharmaceuticals in the world, 10 utilize fungi. So you see them, penicillin is the famous one but you can see them in immunosuppressants and for diabetes, there's various drugs that use fungi. So autoimmune is probably the one that has recently popped up with a lot of fungal-based medicine.

Katie: That is fascinating. I had no idea that number was so high at that large of a percentage. And I'm guessing this is not a new thing, correct? Because I have seen references to people using mushrooms for their benefits for thousands of years. But there's a really long history of humans using medicinal type mushrooms throughout history, right?

Tero: Yeah. So let's take the psychedelics out that are often talked about in this concept but even without that we know very, very long time indigenous cultures utilized fungi, sometimes for Vitamin D. So for example, Finland where I come from there is really long dark winters so people ate mushrooms during the winter time for seasonal depression and getting Vitamin D, basically fungi mushrooms are kind of like the only places to get plant-based Vitamin D and sometimes because of this DNA similarity it's just very good for us and so we've used them for a long time.

I guess from a more paleo-esque environment, the iceman, Otzi, it might be familiar to some listeners. So they found a man in the Austrian Alps, so the Austrian-Italian border frozen in ice and that's how we partly figured out how some of these... our ancestors lived and this Otzi iceman actually had two medicinal mushrooms with him, one was said to be with him to carry fire and the other one, because he had worms in his digestive tracts. So he used these antiviral, antibacterial fungi kind of to heal his gut and keep his immunity in check. So that's what we assume now at least, so. But there are multiple thousands of years of historical use with mushrooms for functional purposes.

Katie: Wow, that's really cool. And before we go further, I'd love to hear your own personal story and how you came into this world and became such an expert. I know that the bio mentioned that you grew up on a farm in Finland which sounds amazing in its own right. But I'm curious how that developed into this passion for spreading education about mushrooms.

Tero: Yeah. It's definitely a lineage thing to get going. So I'm a 13th generation farmer and forager and my mom took me and my older brother foraging for mushrooms but also berries and shoots and leaves and that's kind of how I got going. And my great-grandfather started this the ecological school that follow up the normal curriculum but it also had kind of aspects of Waldorf and Steiner type schooling. So we built nests for owls and dried herbs and stuff. So that Finnish educational system, in general, is pretty odd and different from the American. And then later I studied chemistry and nutrition and about 13 years ago kind of randomly won an innovation award for discovering this rare mushroom growing in Finland and that kind of caught me deeper into the mushroom rabbit hole.

And then finally, just personal experiences using these functional mushrooms that grow on trees and their effects, it was kind of like, so there's multiple waves but starting with the lineage and educational system and then having this discovery of a rare mushroom that kind of got me going into the world of fungi.

Katie: Wow, so I want to go deeper on all the different types of mushrooms that you're familiar with but first, I'd love to hear a little bit more if you don't mind sharing about the Finnish school system and also just the way that things are taught there. Because I know statistically, you guys typically are highest in the world in pretty much every educational category and you mentioned that it's unconventional. So I'd love to hear a little bit more for all the moms listening.

Tero: Yeah. So I personally studied in five countries, the UK, France, Finland, Canada, and the U.S. and there's definitely differences between all educational systems. And I think where Finland really thrives is the early

part of education when, how to make everyone be pretty engaged and what's kind of the differences that I've seen in, for example, the U.S. system is that really I didn't get grades until much later. So they always know the competition or if you're a smart student or not a smart student didn't come in until more like high school.

So most of the elementary school and even middle school really got like pass or fail or a very simple grading. So you didn't know who was like necessarily smarter than the others. The other one that is really odd is we have fairly little school. So I think we have the least amount of schooling hours and the least amount of homework around the world. So we don't compete as much. They really let you have hobbies, you know, noncompetitive organized way, a lot of playtime, playtime is huge. There really isn't as...teachers are usually top of their class. So if you're a teacher in Finland it's very highly well respected and that's also kind of a big thing I think that the teachers are top of the class and there's limited homework and there's a lot of playtime. So I'd probably say those are the biggest differences. Also, all education is free on all levels, so even if you want to go to the best med school, medical school, or business school or whatever, they're all free. So I think that also kind of separates Finland from a lot of other countries.

Katie: That's so fascinating. I think back to my own childhood and I was definitely like a very type A student and I internalized very early because of the grading system that like any answer that was wrong was bad and so I like became very, very concerned with getting perfect grades and it was because of that very early age, that competitiveness kind of was ignited and it was like to a child like those red X's are pretty bad. So that's fascinating that they do that and I love that they make playtime a priority because as a mom and a homeschooling mom, that's always been my gut is that the world needs right now critical thinkers and free thinkers and entrepreneurs to fix a lot of these problems that we have in the world, people like you, and I love that that seems to be something kind of built into the education system in Finland. It's so cool.

Tero: One really random fact and, obviously these are generalized with facts, all kinds of things, but in the Finnish language we really don't have a word like accountability. That really doesn't exist. I guess it's built in that you do what you're supposed to do. There really isn't a word for it darkly, so that's also I think a pretty funny way is like you culturally built in to do good work but also work is also playtime and other things like that so I think that's also pretty fascinating.

Katie: Definitely a lesson we can learn for sure. And so I want to make sure we have time to delve into all the different types of mushrooms because I have so many questions. To start, can you kind of just take us through in general what are some of the beneficial properties in mushrooms that offer benefit to the body? I mean like I said these are not a new trend. People have been using these for thousands of years, but what are some of the ways that they interact with the body?

Tero: So let's talk more about the culinary and functional mushrooms and there's a little bit of an overlap. So culinary mushrooms tend to be the mushrooms if you go to the grocery store that you see, that's a Button mushroom, Cremini mushroom. Those mushrooms tend to have pretty good fibers and prebiotics for the body. Some have protein in them so they can be used a little bit like a substitute for protein or in addition to other proteins sources. And some of them have Vitamin D, some of them have B Vitamins.

That being said, some people cannot eat culinary mushrooms such as if you have Candida, for example, you are not supposed to eat Portobello. So Portobello can be not good for everyone and the benefits are like okay. And then we have a group of these functional mushrooms that are like the most nutrient-dense mushrooms and some of those have culinary elements such as Shiitake, is also a culinary, great mushroom, tastes

delicious, has protein and fibers, and Maitake or Enoki might be the ones that you might find. Maitake's other name is Hen of the Woods. So again, fibers, mushrooms are a great source of Vitamin D. They can have B Vitamins and they can have sort of minerals.

But then what these functional mushrooms that shiitake and maitake are also but there's also these sturdier mushrooms such as Reishi or Reishi, R-E-I-S-H-I, and Chaga, C-H-A-G-A, they also have these more immune supporting properties. So in a very simple way functional mushrooms have two kinds of properties, water soluble, things that soak in water and those are great for immunity. There's especially compounds like polysaccharides and a very particular type of polysaccharides like beta D-glucans, and these are amazing to moderate the immune system and really good for your gut biomes. So I think almost all mushrooms are... top mushrooms are good for immunity and gut health. And through that, they can affect positively energy production and other elements.

Then they have more fat-soluble or non-water-soluble elements that are more adaptogenic so they can help with things like improving cognitive function or sleep quality but that's sometimes very mushroom dependent. So Lion's Mane mushroom, for example, would be great for brain and productivity versus Reishi mushroom might be more calming and grounding mushroom for the afternoon and evening and so they have slightly different skills but the kind of overall theme is immunity and gut health. And then for culinary mushrooms, it's fiber and certain vitamins and minerals in them.

Katie: That makes sense. And I know, so you run Four Sigmatic which I love all your products. I'm a huge fan of your coffee and I want to go into more depth on each of those but can we kind of do a broad overview of the different mushrooms that you guys have chosen to use and why. So you mentioned them I think in what you just said but to go a little deeper, probably the most well-known one that I've seen in just the natural health world, in general, is Cordyceps. Is that, and you guy, you said as well. Can you explain what are the reasons you use that specifically and what kind of purposes someone might use it for if they were gonna drink it like in your products?

Tero: Yeah. Cordyceps is the most known functional or medicinal mushroom in the United States. And one of the reasons is that it supports energy production, and in my experience, everybody wants more energy even if they're tired, it's the thing that people want. So this mushroom can potentially help increase VO2 max which is your maximum oxygen intake. So if you can have more oxygen in your body you don't need caffeine and sugar necessarily to be energized. If you have more oxygen you usually feel better in so many different ways, and this can help it. And it's also shown to help with ATP production and ATP is almost like the energy factory within every cell of your body. So in every cell of your body, there's a way how that cell produces energy and the ATP production and Cordyceps can improve it up to 50%. So having energy without caffeine, sugar, or other kind of stimulants is kind of why Cordyceps has become the most popular of these functional mushrooms.

Katie: That makes sense. And another one you guys use quite often is Chaga. Is that a similar benefit or does it have different properties?

Tero: Different. So both of them again would be great for immunity and gut health but Chaga also known as King of Medicinal Mushrooms is slightly different in quite many ways like it takes it a little bit longer to grow but it is incredibly high in antioxidants. The Internet loves to debate about this but Chaga might be the most antioxidant-rich food gram per gram. So a cup of Chaga tea would equal to like 30 pounds of carotene

antioxidants so, it's pretty insane. It's particularly high in melanin where some people you know is related to a skin and also a few other energy productions but it is antioxidant. It is particularly good for the skin. And so Chaga besides being good for immunity and gut health also is really high in antioxidants and good for the skin.

And I think antioxidants is one of those where they get thrown out a lot but I think there's many kinds of antioxidants and they offer different kinds of benefits but I really like the color black in general with antioxidants. I know there's a lot of talk about the rainbow diet which is good but I really like black foods for longevity and a beautiful radiant skin, so black olives, coffee, real cacao, and Chaga mushroom. So those are...black sesame seeds as well. So Chaga is great for our skin and a general antioxidant that helps, for example, if you're traveling a lot or exposed to a lot of pollutions.

Katie: That's so cool, I wouldn't have thought of that as black being part of the... even the rainbow, but it makes perfect sense and there's... since it's not coming from a diet there has to be some natural property there that's creating the color. That's a really cool point and so...and did you say it's higher in antioxidants, one cup in 30 pounds of carrots, that's incredible?

Tero: Correct. So, yeah, it's incredibly, incredibly high. It was used in Finland as a coffee substitute. So Finland, while having a great educational system, is also known for coffee drinking. So we drink more than any other nation per capita and about three times more amount of coffee than Americans which is kind of insane sometimes. And during Second World War, we were attacked both by the Germans and the Russians and we run out of coffee beans and we figured out that we'll start brewing this mushroom growing on a birch tree and it looks like coffee, it tastes more like black tea, and creates this incredibly alkaline beverage that has these huge amounts of antioxidants but also minerals like cesium and other things like that that really nourish the body.

Katie: That's impressive that you guys drink more coffee than Americans. I thought we were like cornering the market on that one. But, you guys also statistically have much better health outcomes and like every report that comes out, you guys rank much higher than the U.S. in both health and happiness, so maybe there's something to it. That's awesome. Also, so you mentioned melanin which is what basically creates that pigment in skin that protects you from the sun. So you can actually get that in a dietary sense from Chaga?

Tero: Correct. So it's a group of these dark black color pigments and it can be produced on the skin but it's also an antioxidant, so. And in really having a high amount of skin, high amounts of melanin will protect the skin against UVB radiation for example. And I know you've talked about it in the past but I for example personally really don't use any sunscreen. I have basically antioxidants from Chaga and I use a lot of xanthine. I was just into Little Mexico and I live in California so occasionally I'm exposed to sun, so unless I'm sailing or surfing or somewhere, a reason why I'm completely unable to get shade every now and then, I really don't use any sunblock but I, so far, haven't been sunburned in a long, long time and partly because I think the Chaga and the melanin and the antioxidants are protecting the skin from within.

Katie: Yeah, I 100% agree. We don't use sunscreen either. If we're in the sun for a long time we just opt to cover up and put on a hat and a shirt versus the sunscreen because there are, as you know, are so many problems with many sunscreens.

Tero: So many.

Katie: But I did notice years ago when we started eating a much more natural diet that had a lot more antioxidants that I just didn't burn. I'm Irish, so I don't have very many protective compounds naturally on my skin. I'm not naturally tan but I found I don't burn ever since changing my diet and Chaga was one of the things I added in right around that time, so that's really cool to know. Another one you mentioned in conjunction was Lion's Mane. So can you take us through what that is and what it does?

Tero: Yeah. It's not that the hair of a lion but it's a mushroom that grows on trees that kind of does look like mane of a lion. It's also known as a Pom Pom mushroom, so it kind of looks like a white mini cheerleader pom pom or something like that. It grows a lot on the northeast. What makes it different from almost any of the food because, for example, if you want energy, Cordyceps is not your only solution, there's a lot of natural products from B Vitamins to Rhodiola to ginseng to all kinds of, obviously, caffeine as well to get energy. But what Lion's Mane does is really hard to get elsewhere. It helps to protect and rebuild nerve growth factors. And really, like really helps with the neurons, the nervous system and through that with brain function, the memory.

So it is kind of one of the really only culinary edible "nootropics." A lot of the nootropics, even the ones, good ones that work tends to be kind of on the risky side especially long-term use versus Lion's Mane is a culinary mushroom that also can help with your brain and nervous system. So it's a pretty fascinating one, the monks used to call it, "the smart food" so it's kind of a smart food in its own way and I think it's used for meditation but I think there's pretty interesting studies now showing its brain power but boosting benefits as well.

Katie: That's super fascinating and I've recently cut back on drinking caffeine every day and just I feel like it's more effective when I cycle it. So on days when I'm not doing caffeine I love... you guys have a Lion's Mane like elixir type thing like it mixes into hot water and I felt like that turns my brain on just as well as caffeine if not more so. And I've loved that that's out there now because...and I know there are people who have to avoid caffeine for whatever reason as well, so I love that there are now options that... or are coffee-free as well that you guys have.

Tero: Yeah. We actually started it all caffeine-free and then we realized that people still crave for it. And caffeine is actually...and coffee is really incredible. It's actually the number one antioxidant in our diet and there's really impressive meta studies already, so studies of studies and how it can help prepare, protect the body against all kinds of dementia-related and prevent things like that. So coffee is incredible but it is a stimulant and if you use it excessively and you don't take breaks either over the weekends or a couple of weeks using it and one week not using it or whatever, it stops working for its kind of energy-protecting. The antioxidants will still be there but if you want the best of coffee, you have to cycle it and then using something else to kind of spark you up during those times such as Lion's Mane Elixir is kind of a smart way of still maintaining the ritual of a hot beverage that turns you ready for work or productive things.

Katie: Yeah, absolutely. We have an entire basket of everything Four Sigmatic in our coffee bar and that's pretty much my go-to place every morning. Another mushroom you guys use, and I'd love for it at nighttime, is Reishi. But can you explain how it's different and how it's the same to the others?

Tero: Yeah. Again, Reishi can be used for gut health. There's pretty impressive studies in the last two years on gut biome improvement with people who've used Reishi, also studies with animals, rats, about the topic. But what makes it different from the others and why is it often called "the queen of all mushrooms" is that it really has these triterpenes or terpenes have now become pretty popular with all these cannabis and hemp-based

products on the market. But triterpenes are very calming and grounding things. They can work your endocrine system which is a kind of slow-moving messenger system and hormonal system. And so that's why Reishi's, even though it's not sedative like things like Valeriana or Kava that can be sedative to your body. Reishi is very adaptogenic in its way in how it calms the body.

Sometimes we sleep eight hours and wake up tired and that's not because we didn't get enough sleep, it's more the quality of the sleep was not there. Reishi is one of those safe ways of supporting body's own ability to sleep deeper.

Katie: Got it. And so you guys have all of these in like a basically a powdered form and people can add to water. And so I'd love to delve into like what is the actual, the best way to get the benefits of these mushrooms? Because when we're talking about the plant kingdom there are certainly a lot of people who think that raw is best and you should have like fresh foods. But you've already explained that mushrooms are on their own kingdom and they're different. Is there a difference in how they should be extracted and prepared versus like plants that can be eaten raw?

Tero: Yes, a huge difference. Mushrooms are extremophiles and they've learned themselves to protect themselves from all kinds of damage and they built this... especially they have this structure and compound called chitin, and chitin might be familiar to some people being for example on the shell of a lobster. But it's a compound, we can digest. And some plants do this as well like you have to prepare them to be in a usable form by soaking or something like that. But mushrooms cannot be eaten raw and should not be eaten raw. Most mushrooms you physically can eat raw but even the ones you could you should not. You need to cook them. Think of them more like bone broth. You're not eating the bone you're drinking the liquid that comes from extracting it, and so mushrooms are very similar to that.

So they require cooking and some added solvent be it in alcohol, so a tincture that you can later get rid of the alcohol but you use the alcohol as a solvent. But hot water is the most common one. But mushrooms really like heat and lipids. So even if you're having culinary mushrooms I highly recommend cooking them, sautéing them on any kind of a good fat, and that's how the magic comes out, heat and lipids, or heat and alcohol.

Katie: Okay, cool. And so from what I've read I've a little bit of background in like herbalism and studying that so that would mean for mushrooms you would either be extracting as a decoction or an alcoholic extraction and a tincture. Is that...am I getting it right?

Tero: Yeah, exactly. So if you make coffee or tea you're actually making an herbalist practice by doing an infusion which is few minutes long depending on the particle size and type of leaf. But with most sturdy substances such as these functional mushrooms or certain roots that grow, the ginsengs of the world, they need a little more time and that's often from one hour to 24 hours and that will be more like a decoction, so you're absolutely right. The most important part about using mushrooms is doing a decoction and the second most important part is some kind of a compound that helps dissolve the non-water-soluble things, most commonly a tincture which is also by the way part water and part alcohol because it's never fully alcohol. So those are the two things that we do. And if you combine them that's often called a dual extraction.

And if you don't want the alcohol, the tincture, also, you can drop tinctures into hot water and the alcohol will evaporate. So that's also a pretty clever way if you have bought tinctures for your children from the natural product stores and...or using glycerin is another one which is I don't like personally the flavor but it is another

way how you can extract some of these mushrooms and other herbs that are more sturdy.

Katie: Okay, very cool. So at Four Sigmatic, are you guys using the dual extraction method for both because I love that they're in convenient powders and I'm so curious to understand how they get from like a fresh mushroom on a tree to amazing tasting coffee products or mushroom products?

Tero: Yeah, it's the path from the forest to the cup. It's a pretty fascinating one and it's actually kind of funny because so many foods we eat at the grocery store as well we don't always think how they got there, even natural paleo food sometimes require quite a few steps. And yes, we use dual extraction in all our products. With some mushrooms, there's very strong evidence saying that you should use both the water soluble and non-water-soluble compounds. With some mushrooms, we don't yet know but we just figure out that it's better to use it with everyone and so we use hot water and alcohol extraction. And in order for them to be extracted, we have to collect them. About one-third of our mushrooms are... top mushrooms that we use are wildcrafted so we collect them in the forest or they're grown in tree stumps. So mushrooms can also be grown in a laboratory. I'm not the biggest fan of that. Actually, most mushrooms on the U.S. market are grown on grains. So if you have problems with starches or grains just make sure that your mushroom is not mushroom mycelium or it's not grown on any sort of grains. Usually, it's rice that they grow it in but there's also other types of growing mediums.

The magic of mushrooms really come from the trees, their host, and like I said in the very beginning mushrooms like animals cannot produce their own food so they have to eat something. And the best mushrooms like to eat the tree and the tree makes them stronger. So if a cow wants to eat grass and not grains it's kind of similar with mushrooms except they don't want to eat grass, they want to eat trees and decompose trees. And that's where the magic comes from. So you just want to have that and then it gets dried and if it's sundried it gets Vitamin D then it's cooked and maybe tinctured and then you spray dry it into a powder so you blow it through high heat and it becomes... the liquid turns into powder. Mushrooms are soft fibers and sturdy, they don't require binders, but some products on the markets might have like binders such as maltodextrin in them. But if you use a really good kind of mushrooms you don't need that.

And then you combine it with something else because the end result is very bitter and very earthy and some people don't like bitter so we combine it with a little bit of cacao or a little bit of coffee or herbs and that's how we try to make it in a way that it doesn't necessarily even taste like mushrooms.

Katie: Well, you guys had done a good job. It's definitely it's my go-to coffee these days. I'm curious if there's a specific like health benefit to the combination of mushrooms and coffee or is it just for taste because you mentioned coffee has all these antioxidant benefits on its own and so do mushrooms. Is there a benefit to that synergy?

Tero: Yes, 100%. So as you know, studying herbalism it's not really... we never really use a single herb, or even when you cook at home you combine flavors but also benefits like you add some kind of a lipid or you add your salt to get this flavor out but you also usually makes it more bioavailable, and mushrooms are not any different.

In this case, coffee, while amazing for energy and brain power and cardiovascular health with those antioxidants can also be very stimulating and draining for, for example, our adrenals and our other energy production systems. It's also kind of acidic. Some people get heartburn and through that stimulation, they

might get jittery. And mushrooms actually kind of do the opposite. They are very healing for the gut, they are easy for the gut, and mushroom like a Chaga is incredibly high in those minerals that make it more alkaline forming, so it balances the acidity of the coffee without spoiling the flavor.

And then these mushrooms that are more adaptogenic helps the body's own energy production system to kind of support the energy so you necessarily don't need as much caffeine, you still feel energized. Or if you absolutely want a full dose of caffeine at least it kind of supports those systems. So it's not as draining for the body. So there's definitely synergies and like I mentioned Chaga also has antioxidants so it really doubles down on the benefits of antioxidants in the coffee.

Katie: That makes sense.

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Katie: And so you've mentioned like some mushrooms have more of grounding, calming benefits, others are more energizing. So is there any good rule of thumb as to what time of day to consume different ones just to like not interfere with sleep or productivity?

Tero: Yes, there are. And that being said, when you use real whole foods and especially these so-called adaptogens you can break these rules but the other following rules that I'm gonna tell is a very good starting point, because I definitely know that if you're listening to this and you're not used to using some of these mushrooms and they have difficult names like Reishi or Chaga it can be overwhelming at first. So it's good to kind of break it down where to start.

I would say is that if you really want to start the day right, I recommend Chaga. I don't think in the morning we need energy but we need protection from the days and the stress and Chaga is really amazing for that and also soothing for the gut. So Chaga mushroom is kind of my favorite morning. And then midday when we start to naturally get a little bit of a slump, we might want to do a little siesta or we need... our brain kind of focused goes off, I really recommend Cordyceps or Lion's Mane for that kind of energy and concentration. Also if you like to go work out and do some sort of a movement, Cordyceps can be great before that workout or movement.

And then Reishi, as I mentioned before, is kind of an evening time, afternoon time product. So, for example, having Chaga Elixir in the morning and/or mushroom coffee with Chaga and then in the afternoon have a little Cordyceps cocoa or elixir or a Lion's Mane Elixir like you said is a great choice and then in the evening having like a Reishi calming hot chocolate which is great also.

Katie: Got it. And I feel like mushrooms are an interesting thing because they do kind of skirt the line between like medicinal and also just like food. So is there a maximum dose of these mushrooms? Like can they be taken all the time or is there a maximum or a time that you should cycle them?

Tero: Yeah, that's actually fascinating because food is in my mind, it is medicine and all food should give us energy and have a functional purpose. Obviously, some have a little bit less than others and mushroom is definitely are very effective. That being said they are a food that has been consumed for thousands of years. So there's a lot of safety around them especially these top functional mushrooms. That being said I would say depending how they're extracted and how they're processed, somewhere between like 1 to 5 grams, 1 to 3 grams or 1,000 to 3,000 milligrams per day of mushroom extracts is kind of where you're probably gonna plateau the benefits and instead of having more that day, you might just want to split it out over multiple days.

So especially these gut and immune system supporting polysaccharides are really amazing for like a small dose everyday kind of consumption because they slowly build up your immune system over months and weeks and really support the guts over months and weeks, and so I really recommend using smaller amounts on a consistent basis. And mixing them is really also beneficial. So think of them like dark, leafy greens, you don't always want to have kale or spinach, you want to have different kinds of dark, leafy green and different ways of getting chlorophyll into your body, so same with these type of mushrooms. So mix up Shiitake, Maitake, Enoki, Lion's Mane, Reishi, and Chaga there's no reason why not you can't mix and match them.

Katie: Good to know. And that means also like for your elixirs and coffees you're unlikely to overdose just making them a part of your daily routine. You're not gonna hit any too high levels of that. In fact, you're just kind of supporting like you said over time you're building up the body by doing that. Correct?

Tero: Correct. So one to three cup of mushrooms or one to...or adding them to smoothies and foods is a good place to be. So you're not gonna overdose, that being said you probably get more bang for your buck if you split it over a longer time period more evenly.

Katie: Good to know. Another question I get all the time is what about pregnant and nursing moms. There's a pretty large segment of my listeners and readers and I get asked about everything I talked about but especially about mushrooms and coffees. So can you weigh in on that?

Tero: Yeah. Well, first that I wanted to say is like probably any research paper or scientific article, I think the few hundred thousand years of motherly instinct will probably tell you what you're craving for. So I think if you're embarking on that journey it's just good to taste small amounts of things and see how your body feels, and if you're craving more of them or if it's saying no. So I can give general rules and tips but at the end of the day it's just good to taste just very small amounts and, for example, caffeine because of our genetic background and for other reasons like some people can handle coffee better than others and just the fact and having small amounts and see how you feel is probably the best way to go.

The one mushroom that I see most pregnant mothers or new mothers using a lot is Reishi, probably because it's calming and grounding benefit and there can be a lot of stress in physical, mental, and emotional stress around pregnancy during that time and when you're breastfeeding. So having a calm, grounded body is probably what a lot of people crave for. Chaga and Lion's Mane obviously a nervous system support and antioxidant is also super interesting.

The one that I kind of would be more careful with is the Cordyceps one. Generally, like energy products even natural and their the ability to kind of increase the yin in the body is something maybe you should first lower the dose and see how you feel and/or have just a smaller amount at first and see if you can handle more. But I will be more most pro with Reishi and then most careful with Cordyceps then. But you definitely can have them during pregnancy but it's always good to consult your doctor or professionals on is it specifically for you suited.

Katie: Absolutely. And one note that I should point out, I think if I'm remembering your coffees have less caffeine than most normal coffee, anyway, correct? So if you're trying to reduce caffeine while pregnant that was one of the things I thought fine having a little bit of your coffee every day or every few days while pregnant because I knew it was like lower in caffeine. Am I remembering that right?

Tero: Yeah. It's like half or even like a third of a normal coffee depending what normal coffee to you means. So, yeah, it's also it's more like having a cup of green tea than a cup of coffee as far as energy goes, as far as caffeine amount goes.

Katie: Cool. And what about kids, because I also get that question and I know my kids love to drink out of my cup every time I have anything of yours that I'm drinking but is that safe for kids or are there ones that shouldn't be consumed until a child is a certain age?

Tero: So I think I have three angels to this, again, starting before...starting with the disclaimer that different kids have different situations. But I think the one thing, like I have not been sick for over 10 years one day and I fly about 40 to 60 times a year and travel around the world and build a business and I just don't get sick. While I love to contribute mushrooms to a lot of that success and I think they did, also it's partly growing up in a farm in Finland, you know, touching, being exposed to animals and a lot of bacteria, building my immune system I think I'm a really huge proponent of that. Let kids get sick and be exposed to them in different elements so their natural immune system will grow and then later use their body for...use mushroom to support their body's own ability to have a strong immune system. That being said if the kid gets sick a lot that might be helpful.

Small amounts of polysaccharides is definitely good for kids and a small amount of mushrooms, yes, I think the Reishi, the cocoa is the most popular that I've seen with children because it tastes good and there's a little bit smaller amount of Reishi and so that seems to be the go-to for kids with Reishi mushroom. But I would let kids be sick and help them first build their immune system in the first like one to three, one to four, five years old and then start incorporating more mushrooms into their life. But I definitely ate mushrooms in small amounts as a kid. So I would go on the dosage and not to use too much mushrooms when they're super, super small and also kind of scaling back the dosage so if you take two, three packets a day of our products maybe the kid will take a half a packet. In that way it will be more beneficial for kids.

Katie: I love that you said that about bacteria too because the research on that is really astounding. The kids who grew up on farms and especially amish children have much better health outcomes throughout their entire life than kids who grew up in a very sanitized environment. And I think that's something else that we've kind of forgotten largely in society is that we're actually meant to interact with the environment and its bacterial sense, like there is more bacteria in our body than human cells. That's super important and especially like you said kids are developing their lifelong immune system at that time and they need those bacterial inputs to be able to work with to do that, so I love, love, love that you brought that up as well.

Tero: Yeah. I definitely dropped a lot of my food on the ground and it had sand and I still ate it, I'm not gonna lie and especially when I was working at the farm as a little kid with my father, we didn't always wash our hands like we could be working in the forest cutting trees and then we sat down for lunch and I didn't wash my hands, I just...so up to obviously to a certain extent but I will not be scared of bacteria and especially touching animals is particularly, I think, a great way to improve gut biome and the skin.

Katie: Absolutely. If I'm remembering the study right I think children who had like a pet in the home like a dog or a cat they had a decreased likelihood of allergies and asthma because of that bacterial input and then children who interacted with farm animals the effect was even more profound, so one of those ancient pieces of wisdom that I think we've largely forgotten but that we need to get back to. And I don't want to finish this interview without talking a little bit more about Finland because first of all now like having heard you talk a little bit of it I kind of want to move there. But also from what I read I've never been but there are so many cool things that the Finnish culture does that we don't do and one of those is sauna use. At least from what I've read that's a very large part of the culture there. Is that true and can you speak to that at all?

Tero: Yes. Sauna is the only word in the Oxford dictionary out of the Finnish language. So it's technically originally a Finnish word, while the concept of a hot room is widely found around the world, sauna as we know it is from Finland and it's a big thing. I mean just there's over 2 million saunas in Finland and 5 million people. So my parents, for example, we have I believe six saunas at our farm and currently, there are two people living there for six saunas. So we take it seriously.

One of my favorite jokes is that Finland launched its first Burger King which took a long time and we definitely never done that but they built a sauna in the Burger King so you can be in a sauna and order a Burger King when you're out of the sauna which is all messed up but just tells how big of a deal saunas are in the country. So very much from Finland, I think it's partly also kind of our longevity plays going to the sauna and to the frozen lake, going to the sauna and a cold lake, and that back and forth is a big part of our culture and I think partly also our health system.

Katie: So that's for pretty much everybody that's not just like a French thing like here, there are those weird ones of us who will get into ice baths but that's actually built into the culture, they're even like for kids that you guys would get an ice water or ice and then in the sauna?

Tero: Yeah, or roll in the snow in the winter time. So you can stand outside when it's -20 Fahrenheit after the sauna or you can roll in the snow or you can jump in a frozen lake. So I love Wim Hof and I think he's doing amazing work and teaching a lot of good to the world but I remember the first time somebody came hyping, he's like "Have you heard of this 'Wim Hof' and going to the icy lake?" And I'm like, "Yes." Since I can remember my grandma like we all got the whole family got naked into the lake and it was not a big deal like as a kid. You think the way you live is the only way how you can live. And for me, sauna and frozen lake or sauna

and a cold lake is so normal that I really can't even think life without it. So it's funny that now it's finally catching on here in the U.S. as well. I'm so happy for it.

Katie: That's hilarious to me because I was introduced to like really high heat saunas and to ice baths from friends who are like would be considered hardcore biohackers and like they do this and get all like tough and like testosterone and they'd get in the ice water and see who can do it longer and you're like, "Yeah, my grandma taught me when I was five." That's amazing. I love that.

And you guys don't have just like in the U.S. we have kind of like I feel like, compared to you guys, pretty tamed saunas because our saunas they get up to like a 150 or so and what I've read you guys have like the old school saunas that can get really, really hot too, right?

Tero: Yeah, you're not gonna stay there that long. It's like I almost say that you can be in a sauna more than five minutes at a time that's almost like not hot enough sauna. And then we hit ourselves with birch leaves and birch leaves have a lot of good essential oils as well and there's a lot of traditions that are around the sauna that can also be contributed for good health. But definitely the fact that it's really hot and then you go really cold that back and forth is where the magic happens. Because if you just do sauna by itself, often you'll get a little pooped out. But if you go sauna and cold it's really amazing as well. And just doing cold, it's quite hardcore but I think as a combination they're definitely a winner.

Katie: I would agree. I didn't ever think I could do the ice bath thing but when I can go back and forth between sauna and ice I can typically handle them both pretty well and it's super invigorating like if you think coffee turns your brain on like that turns your brains on times a hundred. It's amazing, it's so cool. And, okay, so like I mentioned Finland has us beat... in pretty much every category like education, longevity, health outcomes, everything. Are there any other factors you think that contribute to that or that you've taken from growing up in Finland and are still part of your life?

Tero: Yeah. I guess now as of late Nordic food culture has become really trending, when I was a kid it was considered the worst food in Europe. But now with a lot of the farm to table, seasonal eating, foraging, a lot of the top restaurants in the world are actually Nordic and the Nordic cuisine had become more popular. So fermentation and seasonal eating and foraging obviously are big parts of it. Eating smaller fish, fattier fishes like salmon, that's kind of a big thing, eating the whole fish those are pretty big parts of...and a lot of berries actually, huge on berries, which I think come from the Nordic culture that I've taken with me.

But there's also a lot of cultural things like very egalitarian society. It's really when I was...we've had female president, female prime minister, it's very... for example, in the Finnish language we don't have he or she. We just call like human beings basically and so I constantly in English language make a mistake with he and she because I grew up not knowing like language-wise knowing the difference between men and women. We we're just all human beings. I think that's also a part especially right now with a lot of the conversation around female rights around the world and for a good reason, it's just something that was pretty part of the Finnish culture from the get-go and so maybe those are some of the things that I brought with me when I moved to different countries and now the U.S.

Katie: That's really cool and probably also largely why you guys rank so well in happiness because it seems like there's a lot of balance and like lots of important things in moderation and things having their time and their place and I feel like even just letting children have childhood more to play is such an important developmental

thing that so many countries don't do and I love that that's just built in. That's something that's built into our family culture but definitely not built into our society's culture right now at least where we live. So I love that you're raising awareness about that and that you've like brought that with you. It's such a cool idea.

Tero: Yeah. And I mean especially when you grow up in a small country you understand that you're not the center of the universe and that's why you have to kind of get really grounded and I think some of the things that I really enjoy out of the Finnish culture is, for example, that Finland is the world's least corrupt country and really like trusting other human being like sometimes it burns you but at the same time I'd rather be on the side where I want to believe the good in people and that honesty will kind of be the thing. And also the other thing that we're doing right now is connecting through technology. I also appreciate that even though from this space and a lot like ancient traditional values we're progressive. So Linux was invented in Finland or Nokia cell phones or Angry Birds or things like or even Finland gave... it was the first country in the world to give internet access as a legal right for citizens. So everybody can educate themselves as well is kind of a big thing. So I think a lot of those things are good. Obviously, Finland has also things where they're much behind in countries like the United States but at the same time for I think there are some lessons that's been drawn from the unique Nordic culture.

Katie: Absolutely, and like I said it's on my bucket list now to visit. It sounds incredible. For people who are listening, I would love if we could wrap up with kind of getting started advice for someone who definitely now understands from your explanation the benefits of these different types of medicinal mushrooms but having never tried them they're a little bit like skeptical of how to get started. What would you offer for just like first-timer advice or how to jump in and start integrating these substances into your life?

Tero: Yeah. I mean there are so many mushrooms and like I said some of the names are even difficult, it can get overwhelming, but if you listen until now, I think you probably already know a lot but when in doubt I would say to start with the Reishi mushroom or Chaga mushroom. So Chaga is the king of mushrooms, and reishi is the queen of mushrooms. So those are probably ones if you're in doubt to where to start. I really recommend using mushroom coffee or mushroom cacao because the mushrooms that we talked about don't take like the mushrooms that most people think about but they are very earthy and bitter and so using them in coffee or cacao can make the flavor much more palatable as you're kind of getting used to the earthiness of these mushrooms so start with Chaga or Reishi and start with a cacao or coffee are probably my two main tips on...and then obviously try to buy good quality organic and like I said grown on trees or wildcrafted. I think those are the great places to start when you want to get introduced more mushrooms into your life or then go to a grocery store and cook Shiitake mushrooms with butter or something like that.

Katie: Great advice. And all the links to all the products we talked about will be in the show notes at wellnessmama.fm along with a special discount for listeners so make sure you guys check that out and I will also link it to your book, "Healing Mushrooms" which is a fascinating read as well, so all those links will be in the show notes, if you guys want to check them out. But, Tero, thank you so much for being here. I know you don't do many interviews and I'm honored that you took the time to be here and to share with us today.

Tero: Yeah. That was my pleasure. Thanks for having me on and thanks for supporting the mushroom mission and sharing your own experiences, how you've used them and your family has used them. So I appreciate the support for on behalf of all of the mushrooms and thanks for having me on in this podcast.

Katie: Of course, thank you and thanks to all of you for listening and I hope to see you next time on The Healthy Moms Podcast.

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