



Dr. Keith Scott-Mumby
The Alternative Doctor

THE FIRE IN THE BELLY COMPANION

**THE HEALING POWER
OF MUSHROOMS
AND FUNGI**

DR. KEITH SCOTT-MUMBY & ERIC CERECEDES
FOUNDER OF MYCOFORMULAS

The Healing Power of Mushrooms and Fungi

with Keith Scott-Mumby, MD, PhD and Eric Cerecedes, Founder of MycoFormulas

Prof. Keith

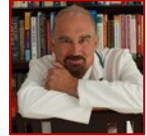
Hello there everybody.

My name's Keith Scott Mumby. I am a British MD, but I live now in Nevada and enjoy the life here, and I'm very pleased to share some time now with a very good friend of mine, Eric.

Eric is a fine young boy who knows a lot about mushrooms, so much so that he is the kind of go-to guy for me. I know quite a bit about fungal and mushroom properties and so on but nowhere near as much as Eric.

He's really very interesting to talk to, and we're going to have a little chat this morning, about a whole spectrum of things, but basically about the way we share our lives on this planet with fungi and molds, and how they can be really, really interesting and exciting, and also very therapeutic. This is a very underexplored part of alternative medicine. As I said, Eric's our go-to guy.

Are you there Eric?



Eric

I sure am.

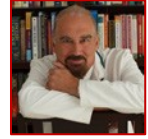


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Prof. Keith

Okay. That's great.



Thanks for having me aboard. Okay, well, listen why don't we do, a good perspective to start with, just you tell us a little bit about yourself and your history and background on mushrooms and fungal therapies and then we'll take it from there.

Eric

Well, I started out in the field of mycology by dedicating some of my time to exploring the uses of mushroom for Alzheimer's therapies.



I had a close family that had nothing short of a miraculous recovery using mushroom therapy and I decided to start an educational outreach program based in Southern Oregon about eight years ago.

The educational outreach program went to various universities, botanical societies, mycological societies, and teaching these communities about the nutritional and therapeutic values of mushrooms.

Over some time that evolved into the development of a product line and this year we launched MycoFormulas, which is a premier medicinal mushroom product line made up of an immune formula, a memory formula, and an endurance formula.

The historical uses of mushrooms predate written history. Virtually every civilization in the history of mankind has used mushrooms for food, and for medicine, and even in spiritual ceremonies. The uses of mushrooms are so prolific, it's speculated because they are, and have been, a part of the evolution of mammals since the dinosaur days

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Well, you were telling me something interesting before, Eric Ötzi, the Iceman, he had mushroom therapies with him, didn't he. Just tell us a little bit about that. That's going back thousands of years. It's unbelievable.

Eric



Certainly, Ötzi the Iceman was a prehistoric iceman found in the Italian Alps. He was frozen in the ice, and had been frozen there for over 5,000 years. What was discovered was that Ötzi had a birch fungus medicinal mushroom in his intestinal tract that he was using to cleanse his intestines of a parasite. In addition, Ötzi used the mushroom in a form of fire technology where he would hollow out a woody mushroom conk, re-stuff it with punk, and some animal fat, and then light that up. When he lit that up by a fireside, a coal would begin burning inside of this mushroom conk that he can then carry with him through the freezing Alps for up to five days.

For those of you who have ever started a campfire or a wood fire outside, you could definitely appreciate the amazing advancement in technology that it was to be able to carry around a burning coal, and it was fast-forwarding that process with you in the snowy Alps.

The uses of mushrooms go back even further than that. Sixty-five million years ago, there was a large impact. A meteorite struck the Earth. It was about six miles wide and when it hit the Earth, it impacted with such velocity that it created a crater over a hundred miles wide. The Earth was then covered in dust and over 85% of all the life on the planet went extinct. This was the extinction of the dinosaurs and many of the plants and animals that were living with them at the time.

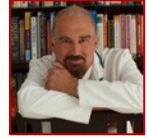
While the Earth was dark, our small mammalian ancestors were burrowing underground and they were able to eat the mushrooms which did not depend on the light of day to survive, and this is also the time period that the adaptive immune system was developed. It's speculated by many mycologists and biologists that the development of the adaptive immune system and our uses of mushrooms actually go hand-in-hand.

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Right, because there is this big interconnectivity with our immune systems that we're going to be talking about. That's amazing that it goes back so far. I didn't know that.



Eric

Yes, absolutely. We've identified over two hundred unique compounds that support immune system function in the world of fungi, and these compounds fit like a lock and key with our immune cells. We have

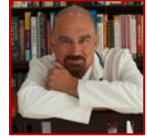


a group of immune-effector cells that are circulating our body at all times searching for diseases and scavenging for parasites, and the compounds in mushrooms that we use are able to again, either activate or stimulate the production of these various immune cells to support an intelligent response against these diseases. So when we take medicinal mushrooms or we incorporate them into our diet, we're not just helping our bodies to stave off one disease or one infection but entire families of diseases and infections.

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Right. When you were at my home a few years ago, I recur (you saying), listen, everybody is concerned about the rainforest and quite (rightly), but you're concerned, also equally aren't you, about the natural wood forests, which we've lost so much of here in the US, precisely because of the mycology that they contain and the immense, you know, the amount of valuable resources. Tell us what's gone wrong there.

Eric



Well, the big thing to recognize is that though the tropical rainforest is filled with diversity and life, the temperate rainforest that we have in the Pacific Northwest of the United States contains more biological activity than any other rainforest on the planet. These forests' contain old growth species found nowhere else that harbour mushrooms that support the race for finding antiviral and anti microbial drugs in the most significant way possible.

The National Institute of Health, the National Institute of Allergies and Infectious Disease in conjunction with the Department of Defense, did a smallpox study, and they were running various pharmaceutical drugs against the pox viruses.

A mycologist from Washington named Paul Stamets submitted an extract of the *Phanerochaete chrysosporium* mushroom found only in the Pacific Northwest of the United States against the pox viruses, and what they found is that the mushroom extract had a higher antiviral quality against the pox viruses than any of the pharmaceuticals. Over 2,000 pharmaceuticals tested. And even with its extremely high antiviral qualities, still offers no toxicity or side effects when ingested by the human body. This is an amazing breakthrough and what Paul Stamets, and I agree with wholeheartedly, it's a great reason to look at the protection of our old-growth forests as a matter of national security.

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Because you're only down to only a few percent aren't you, they original forests. It's rather tragic.



Eric

Right. Arguably, only one to four percent of the original forests are standing today and we are losing some of the most amazing medicines known to man without ever discovering them.



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Yes, now you mentioned Paul Stamets, and we're going to come back to him when we talk about therapeutic mushrooms, but you told me a great story when we first met about Paul and his work on the giant mycelium and also the idea of the mushroom, or fungi I should say, that they actually invented the internet of the web. Tell us that story because it's very colorful.

Eric



Well certainly, the basics are we look at mushroom or fungi as the original World Wide Web. Under the forest floor there is a web of very fine filaments that we call the mushroom's mycelium. The mycelium is the actual body of the mushrooms where the energy exchange happens, where they accumulate their food and create their defense mechanisms, and when we see an actual mushroom, what we're looking at the fruit of the tree or the sexual reproductive organ. It's what carries the spore or the seed that will continue the life cycle of the fungus; however the mycelium is incredibly intelligent and interconnected with all of the terrestrial life on the planet. If you would, it's actually the backbone of terrestrial life on the Earth.

The mycelium is connecting all of the trees in a very intelligent way that I like to share with people in this example. If you have a pine tree on one side of a field and an oak tree on another, the mushrooms' mycelium intelligently knows to transfer the nutrient to the pine that's necessary for its survival, and for it to survive, it to thrive, and likewise if there are nutrients over by the pine that the oak needs that same network of mycelium will move those nutrients over to the needs of the oak. It is extremely intelligent and because it enhances the health of the trees, it's also enhancing its own health and ability to absorb and transfer nutrients at the greatest rate possible.

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It's amazing. It's almost like they are kind of spiritual things as well as actual organisms. They're so much part of our Gaia, aren't they?



Eric

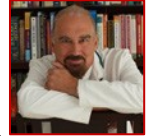
It is pretty amazing and one of the things that gave me a little bit of a chuckle, since the last time that we've spoken Keith, there was a movie released called "Avatar", and "Avatar" is a cartoon movie that describes a very intelligent network that connects all of the life on the land across the planet, and offers people their connection to each other in a spiritual way as well as in a very physical way, it is the life support system of the forest, and what the movie was really demonstrating is the intrinsic intelligence that mushrooms' mycelium has in how it connects all of the life forms on the planet to support a healthier landscape.



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Yes. Wow. Isn't that awesome? These are such great organisms. Okay, listen, we're going to talk about, I want to talk about therapy. That's going to be very interesting to people, but I would like you to explain a couple of details about your lines of production Eric, because I know there are certain, that lots of people are studying mushroom stuff but most of it is not as valuable as the manufacturers claim, and for very specific reasons. Tell us what we should be doing and why yours are superior in that sense.

Eric



Certainly. Mushrooms have been used as food and medicine, as I said, for thousands of years, and in the last 30 years mushroom research has given us the capacity to actually identify which compounds in mushrooms are actually beneficial for our health, and in hand, developing cultivation and extraction techniques that allow us to produce the highest concentration of those compounds still in an organic setting.

The vast majority of those settings are wonderful for mushroom for food are wonderful to incorporate into our diet on a daily basis, but if we're looking for something to be therapeutic, or supportive of a specific need, it's wonderful to look at the laboratory techniques that make it possible to concentrate those specific compounds that we are targeting.

One of the big ones for cancer for example is beta glucans. Beta glucans have been studied extensively over the last decades for their uses against various forms of cancer—breast cancer, prostate cancer, even brain cancer. And we've been able to find cultivation techniques to grow these mushrooms with the highest concentration of these beta glucans possible while maintaining the integrity of the entire life cycle of the mushroom. That means that we don't isolate one specific chemical that we find in the mushroom and concentrate it. When we do those types of things, we end up missing the bigger picture, all of the variety of benefits that the mushroom offers to us through its life cycle.

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So instead, we take that mushroom in its whole form, once it's been produced in a standardized way, and we're able to develop biopharmaceuticals, nutraceuticals, dietary supplements, if you will, that are able to support the body's vital functions while being offered in their natural form. So there are no side effects or toxicities involved with the production of our products.

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Right, it's very important isn't it, that we include the mycelium otherwise there's much less therapeutic effect.



Eric

Right. Standard medicinal mushroom products, particularly the ones here in the United States are grown on an assortment of grains, people call it ricelium, and in the production of these products, because most companies are trying to produce this stuff fast and cheap, we end up with a very high concentration of residual substrate or rice in each capsule. The industry average is somewhere between 60 and 80%, so when you're buying most medicinal mushroom products, there is a fair chance that somewhere between 60 and 80% of every capsule is rice and not mushroom medicine.

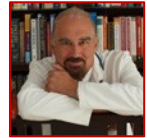


With MycoFormula's products, we are able to ensure that we have less than 2% residual substrate, so you're getting at least 98% percent mushroom medicine, and because of this complete conversion, we're able to offer a product that's organic, kosher, vegan, and gluten-free, meeting the needs of all of our customers and their sensibilities.

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Right. That's great, and that's very important of course. Right, let's go up to therapies, Eric, and let's start with something that you told me that was very interesting, you mentioned it at the top of the talk actually, a friend who used mushrooms to literally eat his way out of Alzheimer's. Just tell us about this particular mushroom Hericeum and why it's, why it's so important for our nervous system.

Eric



Certainly. You know about 10 years ago I had a close family friend that was stricken with Alzheimer's. His name is Dick, and Dick degenerated very quickly. Within a couple of years of his diagnosis, he was not able to carry on a conversation or form memories. He could not dress himself or take himself to the bathroom anymore. He was depending on his wife to meet most of his basic needs.

My brother who is a tissue culture specialist and fungal researcher had done some research on a mushroom called Lion's Mane. The Latin is *Hericum erinaceus*, and there was some studies in Japan that demonstrated that this mushroom was very effective against Alzheimer's, and helped to even reverse some of the symptoms. So we got Dick on an Alzheimer's regime, making sure that he was on a healthy diet, as well as taking the extract of the Lion's Mane mushroom daily, and somewhere between month four and five, Dick got up, he got himself dressed, and he took himself to the bathroom for the first time in over a year, and day by day, Dick's slowly but surely, had a full recovery from Alzheimer's.

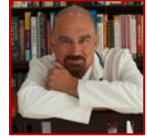
He was forming memories again, having coherent conversations, driving, and by the end of his life he was taking care of his wife instead of her taking care of him. Dick did die a couple of years ago, but the beautiful ending in that story is that he died with all of his senses and that's more than any of us could have hoped for him. In seeing that, I quit my job in business in Los Angeles and I moved to Southern Oregon to start a medicinal mushroom educational outreach program.

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Right, yes, and I guess Oregon is the place to be if you're into medicinal fungi and mushrooms.



Eric

It certainly is.



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Ok now obviously one of, you know, one of my big interests in this field is the way mushrooms and fungi have fantastic anti-cancer properties. Let's talk through some of those, can we Eric? Now taken in any order you like, but we want to look at Shiitake and Maitake and Turkey Tail, and so on. There is a great science out there. If you take the Turkey Tail, there are hundreds of papers out there studying its efficaciousness. It's kind of cytotoxic as well as just supporting the immune system isn't it? Just talk us through some of these. Maybe start with Turkey Tail?

Eric



Certainly. Turkey Tail is a very prolific wood-rotting mushroom that can be found in every forest type on the planet, and it is often seen rotting dead or dying logs on the ground. It has a beautiful multi-colored mushroom cap and has been determined to be one of the most effective therapies against cancer ever discovered.

The Turkey tail mushroom in its crude form, that is, making a tea essentially, as in traditional Chinese medicine was found ever since the 1950s to be effective in healthy people to curb the growth of tumors, and also to stop the replication of cancer in the body.

The Turkey Tail mushroom was, "discovered" by the pharmaceutical world in the 1960s. A clinical researcher that worked for a pharmaceutical company, he's actually a chemical engineer, witnessed a neighbor of his using the Turkey Tail mushroom to cure himself of cancer very effectively. So the scientist took the mushroom into the laboratory and started breaking it down into its basic parts to determine which compound was the efficaciousness against the cancers.

The scientist found a polysaccharide that he named Polysaccharide krestin. Krestin was the name of the pharmaceutical company he worked for.

And PSK over the next 30 years became the most widely-used anti-cancer drug on the planet, and unfortunately, here in the United States, we never had the opportunity to

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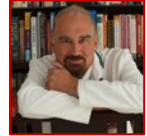
use PSK as a viable therapy against cancer because the United States Food and Drug Administration prevents us from using naturally derived compounds as pharmaceutical applications here in the country.

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Yes, great.



Eric

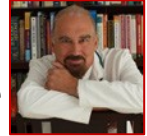
However, one of the wonderful things about the cultivation techniques that have been developed in the mycotech community is that we can now produce Turkey Tail in its whole food form. I don't have to do a pharmaceutical extraction, and we can produce a very high concentration of these targeted active compounds to support the immune system and the body's natural ability to fight back these diseases, and through that, we are able to offer the Turkey Tail extracts at a very, very reasonable price, and make them available to everybody in the country for the first time.



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Great, obviously, you can't make claims, but I can, and I can say Turkey Tail are great for cancer. If you guys happen to produce Turkey Tail that people can put in their foods or take as a tea, that is great. I mean this farmer obsession with what you call getting the active ingredient as you rightly said isn't necessarily the wisest cause. Taking everything in one go is much more closer to nature. Makes more sense doesn't it really? How are people going to take your Turkey Tail? Does it come as what? Flakes, a powder, or capsules? (Inaudible)

Eric

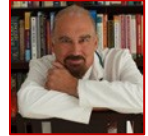


Yes, we offer it in a convenient vegetarian capsule, and the product is typically able to support someone's immune system needs, and a healthy immune response for up to ninety days.

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Yes, Turkey Tail is one of the few mushrooms you can't mistake, isn't it? I think people are a bit worried about wondering through the forest and trying to find these useful mushrooms, but Turkey Tail, you cannot get wrong. I wanted to say that I was parking in a car park in the UK, about ten months ago, and I was walking out from the car park and down a wooden fence, and this was an old long dead wooden fence, but there was this beautiful Turkey Tail mushroom. I whipped out my cell phone and took a picture of it. It's gorgeous and unmistakable isn't it? Which is not so true of all the others.

Eric



Yes, it is a very distinct mushroom that has a beautiful, multi-colored cap and a white porous underside that really cannot be mistaken for any other. There's mushrooms that look similar that are gilled; however the difference between a white polypore and a gilled mushroom is very apparent when you simply have a look-see.

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Yes, okay. Alright, take us onto another (topic) Eric. What should we do next? You choose.



Eric

Well, I can talk specifically about Reishi which is one of the most well-known medicinal mushrooms on the planet. It's been used for over 3,000 years by traditional Chinese medicine and has an amazing effect as what we would describe as a panacea in traditional Chinese medicine.



Reishi is a potent antibacterial, anti-Candida, it's an anti-inflammatory, antioxidant, antitumor, antiviral, it moderates blood pressure and blood sugar, enhances cardiovascular function, lowers LDL cholesterol, supports immune system function, kidney function, liver function, respiratory function and so on. The reason for this is that the Reishi mushroom contains over a hundred unique compounds that support these vital functions of the body. This is something that is really not a well-explored in western medicine, however has been widely accepted in the Eastern healing modalities for thousands of years.

The idea that a food can provide so many different benefits is something that is very much worth exploring. In my direct experience has been extremely helpful for being a bit of a catch-all for people that want to support their overall health and vitality, and their longevity. There are some great studies that demonstrate that the Reishi mushroom can inhibit the replication of HIV by 50%, that it's able help to support oxygenation of the blood, thus having wonderful antioxidant effects as well as antitumor effects, and the Reishi mushroom is probably the most widely researched mushroom in the medicinal mushroom industry because of all of its various benefits.

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Right, there is one thing you didn't mention, which could be rather meant for a cancer patient too. If they were meant to be opting for radiation therapy but trying to use holistic support, Reishi is also known to protect from radiation isn't it? So it can really help the person survive the most unpleasant side effects of radiation therapy. They're a fantastic substance isn't it? It's also called Lingzhi. It's a name people will see and it's the spirit mushroom. It's got a very high place in traditional Chinese medicine and rightly so. Sounds like we should all be taking this stuff Eric.

Eric



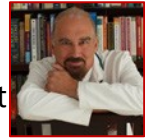
Absolutely. You know, I describe mushrooms as the forgotten food group and really, all of us should consider mushrooms in the same vein that we do fruits or vegetable. I have had several clients tell me that they were allergic to mushrooms and you know, I laugh a little bit under my breath because telling me that you are allergic to mushroom is very much like saying you're allergic to fruits or vegetables. Perhaps you are allergic to one or two of them, but saying you're allergic to all mushrooms is highly unlikely and the uses of mushrooms and the benefits of mushrooms in nutritionally as well as therapeutically are very wide ranging, just as wide ranging as fruits and vegetables.

And in regard to what you were saying about Reishi and its uses in chemo and radiation therapy, many mushrooms, and virtually all the mushrooms that I work with most closely are very wonderful adjuncts for chemo and radiation therapies. These mushrooms are able to ameliorate the side effects of chemo-radiation therapies in nearly every case, and the wonderful thing about this is that we're also in a time where other types of radiation and their mal-effects are highly concerning the American public, highly concerning the public of the world, and having a radio- protective compounds within these mushrooms is extremely important for us if we want to consider the long term implications of what it is to be in a radioactive environment.

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Right yes, especially with the Japanese problem we are now having. So it's (not just a question) of taking Iodine, take mushrooms then, say Eric Cerecedes.

Good stuff, Eric. Okay, now where should we go from here?

What, Shiitake, or what?

Eric



Yes, we can talk about Shiitake. The Shiitake mushroom is one of the most widely known mushrooms both because it's a medicinal as well as a gourmet edible. The Shiitake mushroom originally was popularized in Japan, however Brazil has actually taken the world's lead in the production of Shiitakes, both as a food and as a medicine.

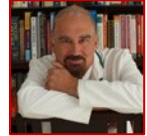
The Shiitake contains a wide variety of active constituents, including the beta glucans that we talked about, and one in specific, lentinan, is of particular interest. Lentinan is also extremely protective against chemo and radiation therapies and can be used safely as an adjunct. Very often, our physicians will tell us that we shouldn't take immune supplements, specifically those that will stimulate our immune system while we're undergoing chemo and radiation therapy. Medicinal mushrooms offer a unique form of adaptive immune response that we call immunomodulation.

Immunomodulation helps to support the immune system's intelligent response to the environmental challenges that it's facing. Lentinan is a great example of this, in that it both supports the healthy response of our immune system, as well as contains antitumor values and can be used as a very valuable adjunct therapy to chemo and radiation. Besides that, the Shiitake mushroom is also very valuable in its uses as an antibacterial and an anti-Candida, helps to moderate blood pressure and helps to reduce LDL cholesterol. If there is a super food out there, I'd say Shiitake is certainly close to the top of the list.

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Right, it's funny, you mentioned Candida there, it just prompted me to mention this because from time to time it occurs to me that the reason mushrooms are maybe not as popular as they should be, even in the alternate community, it's because people are scared of, you know, Candida and yeasts and fungi and things like that. They're seen as the big bugaboos. But they're actually slightly different kingdoms anyway aren't they? But, you know, whether or not, as you say, some are good and some are bad.

Because Candida and yeast is bad doesn't mean mushrooms are, but people tend to avoid mushrooms on an anti-Candida diet, so maybe that's kind of reverse-propaganda that's got going on, what do you think?

Eric



That's absolutely correct. The idea that, and you're right about the fact that even physicians will recommend to their Candida patients, people that have high concentrations of Candida albicans in their body, to avoid eating mushrooms as if the mushrooms are somehow going to feed the Candida.

These are very, very uninformed guesses as to what is feeding the Candida and what the mushrooms mechanism of action is inside of the human body.

The fact is that mushrooms can be used as potent antifungal therapies, and the reason for this is fairly simple. In nature, mushrooms are fighting off many of the same viruses and pathogens, many of the same bacterial and yeast infections that human beings would suffer. Most people don't know that because when we think about plants and plant diseases, they're very often different diseases than those that afflict human beings.

However, mushrooms, like plants, breath in oxygen, breath out carbon dioxide, and have many of the same afflictions and diseases that human beings suffer from, and a result, in the natural environment, mushrooms are producing very high concentrations of these

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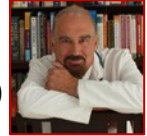
antiviral, antimicrobial, anti-yeast compounds that help support their life cycle in the forest, right, so that they don't get eaten or broken down by bacteria and yeast.

When we eat mushrooms we offer our bodies the same protections that the mushrooms gave themselves in nature. Thus, Shiitake is actually beneficial against Candida, and many mushrooms that we work with are in fact very potent antifungal therapies.

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Prof. Keith



Right. So it's kind of a little bit counter intuitive, and I used to say that story 30 years ago, but you know, I long since realized that mushrooms can be highly effective against Candida. Listen though; we don't want to forget there's a bigger hero here. Now Maitake mushrooms, one of my favorites.

Do you want to bring that into the picture, Eric?

Eric



Certainly. Maitake is not as well-known as Shiitake, but is also extremely delicious. I would actually argue that it's even more delicious than the Shiitake mushroom, and contains a group of immune supportive compounds that have been explored for their uses in breast cancer and prostate cancer quite extensively.

The Maitake mushroom, like the Shiitake, like the Reishi, can be used in conjunction with chemo and radiation therapies. It is also very high in vitamins, minerals, essential amino acids, and other nutritive values that we look for in super foods.

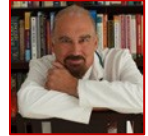
So both as a food and as a therapy, the Maitake is very, very rich and contains high concentrations of both. A lot of people look to Maitake as a meat substitute when we are trying to support healthy vegetarian diets. My mom and my stepdad, for example, just switched over to an all organic vegetarian diet.

My stepdad had a Hepatitis C diagnosis and is now doing what he can to support his immune system's natural defenses against the disease, and the Maitake has been, just kind of that gold, you know, that gold mine of meat substitution for their, for their palate which is very, very much conditioned to look for that meaty texture and taste.

The Healing Power of Mushrooms and Fungi

with Keith Scott-Mumby, MD, PhD and Eric Cerecedes, Founder of MycoFormulas

Prof. Keith



It's also very generous, isn't it? I mean like in size. In Europe, we call it Hen of the Woods because it's big. It's like a chicken, like eating a roast chicken.

That's funny stuff there. It's like to the tuna is the chicken of the sea, and I think Maitake is the chicken of the forest really.

Eric



Yes, it is. It's a wonderful meat substitute and again both very nutritious and delicious.

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Prof. Keith

Okay, there's one more on my list, a really special mushroom. Before I turn it over to you to pick and choose, but tell me a little about *Cordyceps sinensis*, that's an amazing one too, isn't it?



Eric

Absolutely, *Cordyceps sinensis* has been a great focus of research and a great focus for education for our outreach program in the last year. The United Nations is conducting a very large human clinical study using a medicinal mushroom extract. The main ingredient is *Cordyceps sinensis* for a group of HIV patients in Swaziland, Africa.



The clinical study is still underway now, however the progress to this point has been nothing less than phenomenal. The *Cordyceps sinensis* is a very rare mushroom found only in Tibet and it's found above the tree line in the plateaus. It only fruits ten days a year, and up until recently, it was not very widely researched because of its scarcity.

Laboratories like the one that produces our products, spearheaded the development of cultivating *Cordyceps* on organic grain substrates, and throughout the last 25 years has focused on developing cultivation parameters that would support the production of the highest concentration of these targeted active compounds that we're looking for in regard to retroviruses, in regard to immune support.

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Actually, Eric I didn't know that, because I thought that one of the reasons that Cordyceps is so rare was that they had to grow on silk worm bodies, so we've passed on beyond that, have we?



Eric

We certainly have. In the evolution of the industry what happened is that people began cultivating Cordyceps, as I said about 20-25 years ago in and on farms, right? Initially, it was silkworms in China. As it moved over to Europe and the United States, people began experimenting with grain substrates.



The problem with that was that they were not able to produce nearly as high a concentration of the targeted active compounds as the natural Cordyceps. Natural Cordyceps found in Tibet sell for somewhere between \$350 and \$450 an ounce, and there's approximately 28-30 doses in an ounce of Cordyceps, so extremely expensive to be used as a daily therapy against a disease or pathogen, and the initial attempts to cultivate this mushroom were failures in most ways because the concentration of these medicinal compounds was not nearly enough to support a human host for example.

However through the development of mycotechnology, scientists including John Holiday has spearheaded efforts to create cultivation parameters that allow for Cordyceps to be produced in mass and with the highest concentrations of these bioactive compounds found, as a matter of fact, in most instances the concentrations of these active compounds are now higher in products like mine than they are in the naturally harvested Cordyceps, and the wonderful thing is it's now down to about \$30 an ounce instead of \$350. So we've dramatically reduced the price by making cultivation of these mushrooms available. We're able to produce them on all- organic grain substrate which further protects the Tibetan plateaus from being over- harvested and having their environment compromised for the sake of the Western world.

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Prof. Keith

Yes, well, this is a substance where, I can think of it as a brain-booster and energizer rather than a therapeutic. Have you been able to preserve all of those properties Eric?



Eric

Absolutely. The main use of Cordyceps in the United States is primarily by athletes.



People that are interested in increasing their endurance and their stamina, that is their long-term energy output. Not a short spurt like caffeine or something but actually to increase their overall vitality through the day. Cordyceps is extremely, extremely helpful and it's also been used extensively for people that suffer with respiratory issues. Cordyceps is found to oxygenate the blood and increase oxygen capacity in the lungs in significant ways.

One of the best study's that I have seen actually demonstrated that people taking a very small amount of Cordyceps on the daily are able to decrease the occurrence of asthma attacks by 60%. The use of Cordyceps for both respiratory health and for energy output have made it very widely popularized, however, what's been discovered is that there's a compound in Cordyceps called cordycepin that inhibits the replication of the HIV virus very effectively.

We have a group of compounds that have been used against HIV in the pharmaceutical applications that are called dideoxyadenosine, the brand names of these drugs are Videx and didanosine.

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Prof. Keith

You stopped with Videx and didanosine.



Eric

Videx and didanosine are able to effectively inhibit the replication of the HIV virus by stalking to our immune cells and stopping the virus from being able to bind to those cells and to infect them.



Further, if a cell is already infected by the HIV virus these drugs are effectively also able to stop the replication of the virus within these infected cells. cordycepin is a didanosine. It is the simply very, very similar compound, except, instead of missing one oxygen from the adenosine, or excuse me, instead of missing two oxygen's from the adenosine, it is only missing one.

The mechanism of action is identical. It stops the virus from infecting our immune cell. It stops the virus from replicating from within infected immune cells, and the third thing that cordycepin offers is an overall boost to our immune cell and our immunological functions to support the host, where those of you that know anything about HIV drugs, that the opposite is true.

People that take HIV medication because of the very high toxicity of the drugs, often suffer many side effects that are similar, are sometimes even worse, than the actual effects of the disease itself. By using Cordyceps in medicinal mushrooms in HIV therapy, we found that we can offer the body the same antiviral mechanism that the pharmaceutical is able to offer without the side effects and without those toxicities, and when United Nations was presented with this information, they launched one of the largest human clinical in the history of mankind using mushrooms against HIV.

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Prof. Keith

Eric, I know some mushrooms are great for reducing inflammation. It's one of our number one killers today. Can you tell us how mushrooms can help fight inflammation?



Eric

You're right, Keith. This is a little-known secret for reducing inflammation: mushrooms and fungi. This kingdom of living organisms helps in many ways and will intelligently modulate the immune system, helping boost it when needed and helping tone it down when the immune response (inflammation) is excessive.



We call this a biological response modifier (BRM) or adaptogen. Fungi contain hundreds of chemical compounds that are adaptogens. We are discovering more and more of them, all the time. There are around 100 such useful compounds in the Reishi mushroom alone.

Adaptogens engage the immune system in a smart way, instead of all-out suppression, as most anti-inflammatory drugs do (aspirin, Ibuprofen, NSAIDs etc.).

Technically, the adaptogens are terpenes. These substances are resins and found in trees and other plants, as well as fungi, which of course are not in the plant kingdom at all.

These terpenes have great powers to reduce swelling, redness and pain, improve breathing and reduce the first stages of heart disease.

King of the anti-inflammatory mushrooms is the amazing *Ganoderma lucidum* mushroom; Chinese name Reishi.

In one scientific test, comparing the effects of Reishi to that of hydrocortisone, a simple hot water extract of the fruiting body was every bit as good as the drug. But there were none of the notorious side effects of the corticosteroid drug (immune suppression, water retention, stomach ulcers, etc.)

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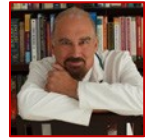
Here's a short list of useful anti-inflammatory mushrooms:

- *Hericium erinacous* (Lion's mane)
- *Inonotus obliquus* (Chaga mushroom)
- *Polyporus umbellatus* (The umbrella polypore; Chinese Zhuling) *Ganoderma lucidum* (Reishi, lingzhi)
- Note: There are many useful species in the *Ganoderma* family

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Prof. Keith



Wow. That's awesome. Listen, Eric, this is turning into a fantastic class on mycology and mushrooms. Do you want to mention, I mean, I want to step back in a minute and look at the general picture again, but do you want to mention any more specific, you know like Phellinus or Pleurotus or anything like that? Any special interest things that you want to share with us?

Eric



Yes, I can touch briefly on one more mushroom. I'd like to talk about Pleurotus, or the Oyster mushroom because it has a very wide amount of applications. Oyster mushrooms also are edible as well as medicinal. It's been greatly studied for its effects on cardiovascular function and cholesterol reduction. The Oyster mushroom contains a natural occurring form of lovastatin.

Those of you familiar with statin drugs, these are effective drugs that help to lower LDL cholesterol, however in the pharmaceutical applications, usually are accompanied with a large list of side effects.

The naturally occurring lovastatin in the Oyster mushroom offers the cholesterol reduction that those drugs do without the side effects and toxicity and again, it's also delicious. So if you like to look at a really rich form of vegetarian-based protein, as well as a food that helps to lower LDL cholesterol, Oyster mushroom is a wonderful place to look.

Besides that, Oyster mushroom has also been used as a wonderful form of remediation for soils and water. The Oyster mushroom is found to be able to break down the hydrocarbon bonds found in petrochemical products and by-products. What that means is that the soils that we have across the landscape that are contaminated with oil and diesel and fuels that we've considered unusable may not be as unusable as we thought or at least not for as long.

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By inoculating these soils with the Oyster mushroom's mycelium we're effectively able to breakdown the petrochemical hydrocarbon bonds that release harmful gasses. The mushrooms actually use the diesel and the gas and oil as a food for the fungus itself, and as it digests these foods it's able to render them harmless to the environment.

There's been some great applications done, again, Paul Stamets with the Department of Transportation in Washington demonstrated how he can clean soils using the Oyster mushroom and that sparked a wonderful non-profit group to begin doing these types of soil remediation projects in the South American Amazon rainforest.

Also a couple of years back some of you may recall a very large oil spill off the coast of San Francisco closed all of the beaches in Central and Northern California for some time, and what was done there is kind of funny and interesting at the same time.

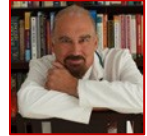
The barbers of America all donated the hair that they swept off their floor, and they made these very large hair mats, that were then put out into the ocean to soak up the oil that was floating on the surface of the water. Those oil-soaked mats were then brought onto the land and then fed to Oyster mushroom mycelium.

The Oyster mushroom mycelium then broke down the toxic oil and we're able to render it harmless and actually into landscape grade soil for future use to grow gardens and trees and things like that. So the application for Oyster mushrooms are extremely vast and again we're just scratching the surface as to what mushrooms roles in nature play, and what mushrooms roles for supporting human health and wellness can contain.

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Prof. Keith



I think that's the exciting part, isn't it? I mean, as you say we are just barely starting. These are just awesome organisms, and they seem to be just what we need now if we're going to pull this planet back from the cliff edge. It seems unlikely that humans are going to do it, but if we can make friends with this, you know, family of organisms and they help us, we can still pull it off. We can still get a clean planet that is viable and healthy in the long run which would be great.

Eric



I agree. It's an interesting thing that technology is kind of bringing us back to what we've always known. There has always been an intrinsic connection between all of the organisms on the planet, you know, a long chain of obligate symbiosis that connects all of us together in a way that maintains a healthy landscape and as human beings have kind of forgotten their place in that chain, and set things off balance, modern research of fungi is leading us back to our relationship, back to that connection, to help promote a sustainable and healthy future for all of us.

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Prof. Keith

Now you used a jargon word there, Eric. I'd like you to explain that for the listeners who are not so well-read as you, obligate symbiosis, tell us what that is.



Eric

Absolutely. The basics of that concept is that all the organisms on the planet are here to support and meet the needs of other organisms, and as we look at the relationship, for example, between a bird and a tree, and the bird takes the seed of the tree and it eats it and then it drops the droppings on a piece of fertile soil along with fertilizer, ie., it's waste, and helps to support the proliferation of that tree species.



Well, the more that we take a step back and another step back, the more that we see that all the organisms on the planet are connected to each other, and when the planet, our biosphere is healthy, what we see is a symbiotic relationship between all of these things. You know the idea of disease and parasitic infection is exactly that.

It's an idea that we've created over the last couple of hundred years, where in fact, for millions of years parasites, disease, existed alongside the healthiest of all of the species in order to support and drive the strength of the ecosystem forward.

Every healthy forest landscape has some level of disease and infection and those things help to support what we call the natural selection' process. It's taking out the weaker members of the species and helping the strongest to survive and proliferate, and our short-sighted management or mismanagement of the landscape has set us on a course that is very disturbing.

You know, when we go into a forest landscape in the last couple hundred years, we took the biggest and the best trees, and the biggest and the strongest animals, and even a simple farmer understands the principles that you keep your strongest of a specific species to survive and to proliferate and then select out the weaker members, and mushrooms are helping us to recognize that and to recognize our place in this system.

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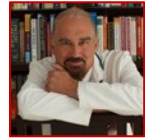
with Keith Scott-Mumby, MD, PhD and Eric Cerecedes, Founder of MycoFormulas

The long chain of obligate symbiosis is something that we are a part of whether we like it or not, and hopefully we find our place in that chain before it's too late. I believe we have.

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Prof. Keith



Okay, well said. Now there is one other topic we didn't, well we've mentioned many times, and I'd just like you to wrap this up for us because I know many of my subscribers will be interested in this aspect. You know, we're very worried about antibiotic-resistant organisms, I mean, I published a short piece recently saying the world is ablaze with resistant microorganisms now, and it's not just a metaphor, it's becoming true.

Tell us a little bit more about, or what you would recommend as antibiotic substitutes. Which are the best, and just talk us through that a little bit?

Eric



Absolutely, well there is a very wide range of antibiotic and antiviral, antimicrobial qualities found in mushrooms, and what my recommendation is to all of my friends, and all of my family, is looking at what it is to have a well-rounded diet, what it is to have a well-rounded sense of health and well being. There's no magic bullet, there's lots of great drugs, as well as foods out there that support human health in excellent ways.

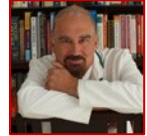
However, looking at how we can incorporate as many healthy vegetables into our diet, as many healthy fruits, as many mushrooms with antibiotic and antiviral qualities as possible is what's going to help us support our long-term health and vitality, and that's really the key in my mind, is not to look at any one thing as our magic bullet, but to look at the whole picture which is how we got here in the first place, you know, we spent thousands, you know arguable millions of years to get to the place where the environment was supporting us and we were supporting the environment and in a short 200 or 300 years we've destroyed most of that.

I think that we have an immense opportunity in understanding the science of food, to begin phasing out the overuse of antibiotics, the overuse of vaccinations, and in getting back to the basics that got us here in the first place.

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Prof. Keith



So true. Great. Well said, Eric. Okay, well, listen we've had a wonderful time here and learned an awful lot of stuff. Would you like to now finish up for us by telling us a little bit more about your personal mission, your company and your products, and how people can access these? Where do they get all this good stuff? What to do and how to get it from you.

Eric



Certainly. We've developed MycoFormulas along with a group of healthcare practitioners, microbiologists, and research scientists, three different formulas for immune system health, for energy, and for memory that are accessible mycoformulas.com. Myco or mycology is the study of mushrooms and of course the word formulas you are familiar with.

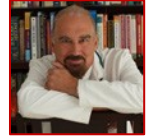
So mycoformulas.com has both a comprehensive body of research in our research blog, as well as some information about the products that you can look into, and also a contact page where if you have any questions that come up about mycology or mushroom science, you can send in and it will come directly to my desk and I'll do my best to get an answer for you as quickly as possible.

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Prof. Keith

That's great. Thank you, Eric.



Ladies and gentlemen that's Eric Cerecedes and it's been fascinating, Eric. Thank you very much for sharing all your knowledge and taking time with us to visit.

Eric

Thanks for having me on the show, Keith.



To discover more about Eric and his passion for therapeutic mushrooms [click here](#).