



INTRODUCTION TO MYSHROOM® PRODUCTS

Q & A on page 3

Myshroom® organic blends are made from hybrid strains of medicinal mushroom species cultivated at university research laboratories and grown in sterile clean rooms on organic sterile substrates (fruits, vegetables and herbs).

We have attached a few documents for your information on the medicinal mushroom products. The medicinal mushrooms are foods; that is all, but foods that have a unique and superior chemistry provided by nature. Each university that produced their hybrid strain of medicinal mushrooms continues to do the research. The elaborate chemistry they found has been proven to benefit human chemistry in many ways. Further analysis such as is required for a drug company to make claims is just not necessary. Mushrooms are considered a food and safe to consume by the Food and Drug Administration.

We have connected the dots between the research reports, our research and peer reviewed articles on the proven chemistry of these hybrid medicinal mushroom strains that came from these universities. Not all mushrooms are created equally because each strain is unique, and the food is unique that we feed the mushrooms. These strains are not available by any other producers. We discovered these hybrid strains through joint research and collaboration with each research team. We have commercialized the production of these proprietary hybrid medicinal mushroom strains and developed proprietary formula blends from them. When incorporated in the diet, these foods have proven to support the immune and nervous systems.

The dosage observations which are available upon request are compiled from thousands of users. When the product is consumed with a green vegetable, sweet potatoes or rice it increases the benefits.

SCIENCE BEHIND MYSHROOMS®: www.quanthealth.org www.mycoldiscovery.com

NEWS INFORMATION: www.foodabout.org and at www.mycoldiscovery.com (includes an article on fungi - medicinal mushrooms) (all news letters are on this site) SEE the January 2016 newsletter for the smoothie formula for the Immune system using the Immune Health Blend of medicinal mushrooms. In are next articles and newsletters we will inform you of other news on health, nutrition and other products and protocols being used by other medical teams that have positive outcomes.

MYSHROOM® PRODUCTS (www.Myshroom.com) We have assembled collaborators: with expertise in Oncology, Pathology, Neurology, Infectious disease, Endocrinology, Genetics,



Cancer research, and in Nutrition, Agriculture, Chinese medicine, Dietetics, Herbology and Immunology from over fifteen universities. (See the reference documentation for the listed researchers from the referenced articles published by each team) We cannot make claims or representations that products cure, diagnose or treat disease.

All researchers and medical professionals cannot make claims regardless of the outcome when using any food or natural product. All they can do is document the outcomes of the research or recommend consuming them as foods. It is impossible to find all the mechanisms and pathways of the chemistry going on from moment to moment in our cells.

Comments - There are over 4,000 chemicals in the medicinal mushrooms. This is the same for all the foods that we consume. The new science of nutritional genomics and epigenetics research shows diet can affect health.

The organisms in kingdom fungi include mushrooms, yeasts, molds, rusts, smuts, puffballs, truffles, morels, and molds. More than 70,000 species of fungi have been identified. The fungi constitute an independent group to that of plants and animals. They live everywhere in air, in water, on land, in soil, and on or in plants and animals. Some fungi are microscopic and other extends for more than a thousand acres. Mycology is a discipline of biology which deals with the study of fungi. Fungi appear like plants but are closely related to animals. Fungi are not capable of producing their own food, so they get their nourishment from other sources. Fungi are in a wide variety of sizes and forms and have great economic importance.

Nutritional genomics, while centered on the biology of individuals, distinguishes itself from other “omics” fields by its unique focus on disease prevention and healthy aging through the manipulation of gene–diet interactions. Nutritional genomics promises to revolutionize both clinical and public health nutrition practice and facilitate the establishment of (a) genome-informed nutrient and food-based dietary guidelines for disease prevention and healthful aging, (b) individualized medical nutrition therapy for disease management, and (c) better targeted public health nutrition interventions, including micronutrient fortification and supplementation, that maximize benefit and minimize adverse outcomes within genetically diverse human populations.

Research dietitians are among the leading scientists pioneering this field, and food and nutrition professionals will be primarily responsible for its implementation. In 2006, the Institute of Medicine convened a workshop to review the state of the various domains of nutritional genomics research and policy and to provide guidance for further development and translation of this knowledge into nutrition practice and policy (2). Three scientific domains of nutritional genomics were discussed: (a) *nutritional genetics* or *nutrigenetics*, which involves the identification, classification, and characterization of human genetic



variation that modifies nutrient metabolism/utilization and food tolerances (Figure 1); (b) *nutritional epigenetics*, which refers to the effect of nutrients on deoxyribonucleic acid

(DNA)/chromatin (and hence gene expression), which programs or reprograms biological networks with multigenerational consequences; and (c) *systems biology and nutritional engineering*, which is the application of nutrigenomics information to manipulate biological pathways and networks for benefit through nutrition, including the use of food-based diets, dietary restriction, or nutritional supplements to affect genome expression, stability, and/or direct dietary compensation for metabolic deficiencies (2). This Institute of Medicine report provides background for this review, which is restricted in scope to highlighting the interactions of the B vitamin folate with the human genome and the current gaps in knowledge that must be overcome to achieve genomically driven nutrition practice and policies.

J Am Diet Assoc. 2008; 108:1480-1487.

1. Garza C, Stover PJ. The role of science in identifying common ground in the GMO debate. *Trend Food Tech.* 2003; 14:182-190.

2. IOM. *Nutrigenomics and beyond: Informing the future.* Washington, DC: The National Academies Press; 2007

I. QUESTIONS & ANSWERS

1) **What are the formula blends of medicinal mushrooms made from?**
(www.Myshroom.com)

A. Myshroom® Immune Health Blend

1. One hybrid strain each from the:
 - Agaricus subrufescent specie
 - Cordyceps militaris specie
 - Coriolus versicolor specie
 - Hericium erinaceus specie
 - Ophiocordyceps sinensis specie
2. Three hybrid strains from the Ganoderma lucidum specie

Description

- Supports white blood cell production
- Supports the immune system
- Provides an antioxidant transport system
- Boosts the use of antioxidants to protect your body
- Less cellular destruction increases the length and quality of life

Hybrid strains come from these species in our products:

- 1) Agaricus subrufescent
- 2) Antrodia camphorates
- 3) Cordyceps militaris
- 4) Coriolus versicolor
- 5) Ganoderma lucidum
- 6) Grifola frondosa
- 7) Hericium erinaceus
- 8) Ophiocordyceps sinensis



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- Supports the production of the body's energy molecule ATP in heart and muscles
- Support energy utilization to all bodily functions and organs
- Supports the uptake of oxygen to cells
- Gives you an endurance edge over your competition
- Supports modulation and regulation of nervous, hormonal and immune systems
- Has all of the essential amino acids and supports enzyme activity to support the cell's supply of glutathione.
- Supports oxygen utilization and cellular protein synthesis. This blend of mushrooms supports the essential enzyme transport system shuttling antioxidants to points of oxidative stress. By supporting the body's antioxidant cycle, fewer of the body's cells are destroyed through oxidation. Then the body's innate immune system spends less energy cleaning up dead cell debris and is ready to defend against future invaders.

There is protein bound polysaccharides, CO-N, SN-C, and CO-1 in this product. The polysaccharide Kureha (PSK) and polysaccharide peptide (PSP) are also found in this product. Contains all of the essential amino acids, nucleotides, transition metals, vitamins, including B12, C, niacin, D, L-ergothioneine and a large contingent of enzymes.

This whole food product is unadulterated, organically grown, whole medicinal mushroom dried powder blends that came from hybrid strains of mushroom species. You get all of the beneficial chemistry from the whole mushroom. Most mushroom products on the market are different in that they are extracts or grown in an environment with unclean air or food. This blend has been precisely formulated for the immune functions. The hybrid strains come from the *Agaricus subrufescent*, *Coriolus versicolor*, *Ganoderma lucidum*, *Herichium erinaceus*, *Cordyceps militaris*, and *Ophiocordyceps sinensis* species. This product is grown in a sterile environment on proprietary organic substrates. All the strains of mushroom species are grown, processed and packaged in sterile clean rooms in the USA.

B. Myshroom® Neural & Cognitive Health Blend

1. One hybrid strain each from the:
 - *Cordyceps militaris* specie
 - *Herichium erinaceus* specie
 - *Ophiocordyceps sinensis* specie
2. Three hybrid strains from the *Ganoderma lucidum* specie



Description

- Supports nerve cell growth
- Less cellular destruction increases the length and quality of life
- Supports the production of the body's energy molecule ATP in heart and muscle
- Support energy utilization to all bodily functions and organs
- Supports the uptake of oxygen to cells
- Gives you alertness and mental endurance
- Supports modulation and regulation of nervous system
- Has all of the essential amino acids and supports enzyme activity to support the cell's supply of glutathione.
- Supports oxygen utilization and cellular protein synthesis. This blend of mushrooms supports the essential enzyme transport system shuttling antioxidants to points of oxidative stress. By supporting the body's antioxidant cycle, fewer of the body's cells are destroyed through oxidation. Then the body's innate immune system spends less energy cleaning up dead cell debris and is ready to defend against future invaders.

There is protein bound polysaccharides, CO-N, SN-C, and CO-1 in this product. The polysaccharide Kureha (PSK) and polysaccharide peptide (PSP) are also found in this product. Contains all of the essential amino acids, nucleotides, transition metals, vitamins, including B12, C, niacin, D, L-ergothioneine and a large contingent of enzymes.

This whole food product is unadulterated, organically grown, whole medicinal mushroom dried powder blends that came from hybrid strains of mushroom species. You get all of the beneficial chemistry from the whole mushroom. Most mushroom products on the market are different in that they are extracts or grown in an environment with unclean air or food. This blend has been precisely formulated to support nerve cell growth. The hybrid strains come from the *Hericium erinaceus*, *Cordyceps militaris*, *Ophiocordyceps sinensis* and *Ganoderma lucidum* species. This product is organic and grown in a sterile environment on a proprietary substrate. This is a whole food and mushrooms are listed as safe food by the FDA. All Strains of mushroom species are grown and packaged in the USA.

C. Myshroom® Blood Sugar Health Blend

1. One hybrid strain each from the:
 - *Grifola frondosa* specie
 - *Cordyceps militaris* specie



- Ophiocordyceps sinensis specie
- 2. Three hybrid strains from the Ganoderma lucidum specie

Description

- Supports white blood cell production
- Supports blood sugar balancing of blood pressure, HDL and LDL levels
- Provides an antioxidant transport system
- Boosts the use of antioxidants to protect your body
- Less cellular destruction increases the length and quality of life
- Supports the production of the body's energy molecule ATP in heart and muscles
- Supports energy utilization to all bodily functions and organs
- Supports the uptake of oxygen to cells
- Gives you an endurance edge over your competition
- Supports modulation and regulation of the hormonal and immune systems. Has all of the essential amino acids and supports enzyme activity to support the cell's supply of glutathione.
- Supports oxygen utilization and cellular protein synthesis. This blend of mushrooms supports the essential enzyme transport system shuttling antioxidants to points of oxidative stress. By supporting the body's antioxidant cycle, fewer of the body's cells are destroyed through oxidation. Then the body's innate immune system spends less energy cleaning up dead cell debris and is ready to defend against future invaders.

There is protein bound polysaccharides, CO-N, SN-C, and CO-1 in this product. The polysaccharide Kureha (PSK) and polysaccharide peptide (PSP) are also found in this product. Contains all of the essential amino acids, nucleotides, transition metals, vitamins, including B12, C, niacin, D, L-ergothioneine and a large contingent of enzymes. This whole food product is unadulterated, organically grown, whole medicinal mushroom dried powder blends that came from hybrid strains of mushroom species. You get all of the beneficial chemistry from the whole mushroom. Most mushroom products on the market are different in that they are extracts or grown in an environment with unclean air or food. This blend has been precisely formulated to support blood sugar balancing. The hybrid strains come from the Grifola frondosa, Ganoderma lucidum, Cordyceps militaris and Ophiocordyceps sinensis species. This product is organic and grown in a sterile environment on a proprietary substrate. This is a whole food and mushrooms are listed as a safe food by the FDA. All strains of mushroom species are grown and packaged in the USA.



D. Myshroom® Liver Health Blend (NEW)

1. One hybrid strain each from the:
 - Agaricus subrufescent specie
 - Antrodia camphoratas specie
 - Cordyceps militaris specie
 - Coriolus versicolor specie
 - Hericium erinaceus specie
 - Ophiocordyceps sinensis specie
2. Three hybrid strains from the Ganoderma lucidum specie

Description

Immune Health Medicinal Mushroom Blend description

- Supports white blood cell production
- Supports the immune system
- Provides an antioxidant transport system
- Boosts the use of antioxidants to protect your body
- Less cellular destruction increases the length and quality of life
- Supports the production of the body's energy molecule ATP in heart and muscles
- Support energy utilization to all bodily functions and organs
- Supports the uptake of oxygen to cells
- Gives you an endurance edge over your competition
- Supports modulation and regulation of nervous, hormonal and immune systems
- Has all of the essential amino acids and supports enzyme activity to support the cell's supply of glutathione.
- Supports oxygen utilization and cellular protein synthesis. This blend of mushrooms supports the essential enzyme transport system shuttling antioxidants to points of oxidative stress. By supporting the body's antioxidant cycle, fewer of the body's cells are destroyed through oxidation. Then the body's innate immune system spends less energy cleaning up dead cell debris and is ready to defend against future invaders.

There is protein bound polysaccharides, CO-N, SN-C, and CO-1 in this product. The polysaccharide Kureha (PSK) and polysaccharide peptide (PSP) are also found in this product. Contains all of the essential amino acids, nucleotides, transition metals,



vitamins, including B12, C, niacin, D, L-ergothioneine and a large contingent of enzymes.

This whole food product is unadulterated, organically grown, whole medicinal mushroom dried powder blends that came from hybrid strains of mushroom species. You get all of the beneficial chemistry from the whole mushroom. Most mushroom products on the market are different in that they are extracts or grown in an environment with unclean air or food. This blend has been precisely formulated for the immune functions. The hybrid strains come from the *Agaricus subrufescent*, *Coriolus versicolor*, *Ganoderma lucidum*, *Hericium erinaceus*, *Cordyceps militaris*, and *Ophiocordyceps sinensis* species. This product is grown in a sterile environment on proprietary organic substrates. All the strains of mushroom species are grown, processed and packaged in sterile clean rooms in the USA.

2) What is the dosage to consume?

It varies for each person and depends on the severity of the health challenge. When the product has been consumed anecdotal observations showed that it supports the immune and nervous systems when people consumed between 8 to 13 level teaspoons (16 to 32 grams) or more a day. Cut the dosage in half for children under 12. Consuming a large amount of product will not cause any harm. A health care professional should advise on this.

3) How do we consume the products?

It is a powder that can be added to a food or beverage. The best way to consume this whole food mushroom blend is with a food or beverage. Servings of 5 grams a day which is equal to two teaspoons. To support a weak immune system, you can take greater amount or as your health care professional recommends. It is suggested that you take a third cup of hot water, stir in the powder and then add honey, agave, lo han or stevia to taste. Tea or cocoa may be added to taste. It is also great when added to a smoothie or juice beverage. See the Q & A and recipe link for suggestions. You may also sprinkle the mushroom powder on your food or snack, or add it to a salad dressing, poultry, steak, salsa or fish sauce, soup or baking mix. It can be added to a bread recipe, pancake mix or an omelet. Standard cooking temperatures do not negatively impact the product. These statements have not been evaluated by the FDA. These products are not intended to diagnose, treat, cure or prevent disease. There are recipes posted at www.Myshroom.com

4) Will cooking the products negatively affect the benefits?

Very little unless you burn them. Do not freeze products.



5) Can this product be used topically?

Yes, it can, add to hand cream or aloe, mix together and then apply to the skin and rub it in.

6) Does any of the mushrooms have toxicity?

No there is no level of toxicity found, it is safe for pregnant women and for children.

7) What is the shelf life of the products?

Indefinitely. We have used product which had been stored for seven years and it provided the same beneficial health benefits. We state that the products are best used within 3 years; however, if kept dry and stored at room temperature (not frozen) the product retains quality. You can refrigerate but do not freeze the products.

8) Are there any side effects?

There may be sensitivity to the touch to those parts of the body that had diseased cells or tumors for a few days or weeks. This is caused by the immune system attacking and consuming tumor or diseased cells. In some cases, if the person is very toxic, there can be diarrhea or night sweats for up to three days. This is a sign that you may be detoxing.

9) If the person is allergic to penicillin or antibiotics is it safe and will there be any side effect?

None at all.

10) How are the mushrooms grown and processed?

The products are grown in clean room sterile laboratories on autoclaved substrates, air dried in sterile clean room environments and then blended according to the formulas and packed for consumer use in sterile clean rooms.

11) Where are the mushrooms grown?

They are grown in laboratories in the USA.

12) What is the food for the mushrooms?

They grow on organic, sterile fruits, vegetables and herbs.



13) How long does it take to grow the mushrooms?

Each mushroom strain takes a different period of time to grow, the longest being 63 days.

14) Do you ship internationally?

Yes.

15) How long do I have to wait for my order?

In most cases we can ship the same day if the order is received by 2 pm Pacific Time. If we do run out, you may have a 2 to 3-week delay because of the growing cycles of the various strains of mushrooms.

16) Where do we find out more about the science on mushrooms strains?

Go to the web sites www.quanthealth.org, documents provided and www.foodabout.org

17) What are the mechanisms and pathways of the known beneficial chemistry in the mushroom strains used?

Go the www.quanthealth.org and www.mycoldiscoveryseminar.com

18) Are the products safe for pets?

Yes, they are totally safe for pets. We have had dogs, cats and horses use it with positive outcomes.

19) What does the company do?

The Company grows and sells medicinal mushroom blends composed of proprietary hybrid strains of medicinal mushroom species. The strains used are not commercially available from other growers for national and international distribution. The products are produced as foods for integrative health care as evidence-based, complementary support for human chemistry. The mushrooms are grown in sterile, clean room facilities with no soil and are grown on certified organic substrates. Once grown, the medicinal mushrooms are dried and processed into a powdered form in a sterile environment. The blending and packaged is also done in a sterile environment.

20) How are the products packaged?



Packaging is done in sterile clean rooms for each product and products come in three weights:

1.3

pounds/20.8 ounces (590 grams) container, .65 pound/10.4 ounces (295 grams) container, and .43 pound/6.9 ounces (196 grams) container.

21) What makes your product different or unique?

Currently, few manufacturers or distributors sell quality fungi extensively to health care professionals, hospitals and medical food services and: (1) none have our hybrid strains (2) none have our quality and safety standards (3) few use our organic substrates to grow mushroom strains on (4) none use sterile clean rooms for the growing, processing and the packaging (5) none have a shelf life of four years or more. The company's formulas and products therefore have no direct competition because of the proprietary strains, proprietary formulas, beneficial chemistry, substrates used, and the quality standards for the growing and harvesting of the hybrid mushroom strains. Most medicinal mushroom products are extracts made from mushrooms of unknown origins and grown on unknown soil or other substrates. Soil and nonsterile substrates used in some competitor's production increase the risk of contamination, the incorporation of heavy metals and toxins, and higher product variability.

22) What is the history of use of specific mushrooms in support of health?

Mushrooms are the fruiting body of heterotrophic macro fungi which have long been used for both food and medicine. Mushrooms have been studied extensively for improving and maintaining human health and show promise as a source of prebiotics. Mushrooms are rich in prebiotic compounds as they contain carbohydrates like chitin, hemicelluloses, beta and alpha glucans, mannans, xylans, lingocellulose, and galactans. Polysaccharides such as β -(1 $\rightarrow$ 3)-d-glucans are well-known prebiotics and the most potent mushroom derived substance. Such polysaccharides and their complexes with protein/peptides are known to be modifiers of biological responses. They contribute significantly to the body's defense systems by exhibiting immunomodulatory and antitumor activities through the action of immune effector cells such as dendritic cells (DCs), hematopoietic stem cells, lymphocytes, macrophages, natural killer (NK) cells and T cells. Additionally, other medicinal properties of mushrooms include antioxidant, anticancer, anti-inflammatory, cardiovascular, antimicrobial, and antidiabetic characteristics.

Vasconcelos IM, Oliveira JT. *Antinutritional properties of plant lectins*. *Toxicon*. 2004 Sep 15;44(4):385-403.

<http://www.ncbi.nlm.nih.gov/pubmed/15302522>

Dr. Solomon P. Wasser, "Medicinal Mushroom Science: Current Perspectives, Advances, Evidences, and Challenges"

Institute of Evolution and Department of Evolutionary and Environmental Biology, Faculty of Natural Sciences, University of Haifa, Israel. Jul. 17, 2014: 346-356.



23) Are there Lectins in mushrooms?

Yes, there are but of different structures that are not harmful with the synergistic chemistry. The word “lectin” is often misused within the Paleo community. You’ll hear phrases like “grains are bad because they’re full of lectins”. While this is basically true, not all lectins are bad. Lectins are a large class of carbohydrate-binding proteins found in all forms of life, including the human body. Many types of receptors embedded in the cells in our bodies are lectins. A group of proteins essential to our innate immune systems, called complement proteins (because they “complement” the activities of inflammatory cells by providing a rudimentary targeting mechanism for this otherwise nonspecific part of the immune system), are lectins. This is why labeling a food as “full of lectins” is inaccurate and the type of phrase that opens up the Paleo diet to (valid) criticism.

Lectins are proteins that possess at least one noncatalytic domain that allows them to selectively recognize and reversibly bind specifically free sugars (monosaccharides) or **oligosaccharides**, present in the cell without altering the structure of **carbohydrate** which make possible their use as decoders of cellular carbohydrates. They have a largest distribution in nature in all kingdoms of life with a higher distribution in plants and also in animals and microorganisms. The **plant lectins** represent a unique group of proteins with potent biological activity, where legumes lectins represent the largest thoroughly studied family. Based on their mechanism of action, the plant lectins can exert action in diverse biological process as plant protection and in medicine as lectin-based delivery systems, biomedical research, as diagnostic and in disease treatment. In animal cells lectins can have action in various of biological process included the cellular adhesion, invasion, metastasis inhibition, action on **angiogenesis** and in cellular death by autophagy, necrose, and/or **apoptosis**. The best-known legume lectins are phytohemagglutinin from red kidney beans (*Phaseolus vulgaris* L.), soybean agglutinin from *Glycine max*, concanavalin A from jack bean (*Canavalia ensiformis*), peanut lectin from *Arachis hypogaea*, and pea lectin from *Pisum sativum*.

Others important plant lectins with recognized **antitumor activity** (where ConA is included) are *Ulex europaeus* agglutinin, *Viscum album coloratum* agglutinin, mistletoe lectin, and *Viscum album* agglutinin from *Viscum album* L. and *Galanthus nivalis* agglutinin, among others. This review aims to give the state of art of lectins as potential candidates for the development of more efficient anticancer or cancer preventive drugs. In plants, the roles of lectins are still being identified, although they appear to be part of the plants’ natural defense mechanisms and to be important for seed survival (why lectins tend to be concentrated in the seeds of plants).

Not all lectins are bad, but some are (or at least, can be). A subset of lectins that can be found in large concentrations in the seeds of grasses (i.e. grains) and the legume family do have some properties that can make them very problematic for human health, namely that:



- They are hard to digest (this has the effect that they can overfeed certain species of gut bacteria and lead to gut dysbiosis, which is now linked to a variety of health conditions),
- They can interact with the gut barrier and actually damage the cells that form the gut barrier or open up the junctions between those cells (genetic susceptibility plays a role in what extent this happens in your body), contributing to development of a leaky gut (now linked to a variety of health conditions), and
- They can stimulate the immune system (proportional to how much enter the body and type of lectin).

There are really just two classes of lectins that are known to be problematic for human health and have the above properties. The first are called prolamins (gluten is an example of a prolamins), so called because of their rich proline (an amino acid) content. The second are called agglutinins (wheat germs agglutinin, kidney bean lectin, and soy lectin are examples of agglutinins), so called because of their strong ability to agglutinate (or make clump together) red blood cells (they also happen to be rich in proline). Phytohemagglutinin, also known as kidney bean lectin, both prolamins and agglutinins (there are many proteins within each class) affect the type of bacteria that like to grow in your gut (in a negative way, typically preferentially overfeeding certain strains like *E. coli*).

They are also very good at crossing the gut barrier and there are actually four known mechanisms through which prolamins can enter the body (one of which is dependent on genetic susceptibility and it remains unknown if the other three occur in everyone or vary from person to person) and three known mechanisms through which agglutinins can enter the body (which appear to be independent of genetics, although more studies are required).

Not all of these entry pathways damage the gut barrier, but some can (again, genetic susceptibility may play a role, but more research is needed). By the way, I should mention that the exact mechanisms of how these proteins enter the body and potentially damage the gut barrier are discussed in detail in *The Paleo Approach* (in a way that anyone can understand with illustrations, so don't let that intimidate you either!). Once these proteins enter the body, they interact strongly with the immune system (typically stimulating inflammation, but the adaptive immune system can also be affected).

The distinction between prolamins, agglutinins and lectins in general is why you'll see more and more people within the Paleo community using the term "toxic lectin" or being even more specific and using the terms prolamins and agglutinins. However, even within these two classes, some prolamins and agglutinins are more damaging than others.

For example, the agglutinins in many types of legumes can be reduced by soaking, sprouting and fermenting and largely deactivated by heat, especially during prolonged cooking. And the



concentration of agglutinins in different types of legumes varies dramatically. In fact, legumes with edible pods like green beans, sugar snap peas and snow peas are generally endorsed on a Paleo diet because the concentration of agglutinins is low and the instability of the agglutinins in these legumes means they are typically rendered inactive by cooking. In other types of legumes (soy and peanuts being the biggest culprits, but also some types of dried beans like kidney beans), the agglutinins are very resistant to deactivation and degradation. Wheat germ agglutinin is so resistant to deactivation through even traditional food preparation methods that even consumed as part of your food, it qualifies as a biologically active compound in our digestive tracts (that would not be a normal classification for a protein in food!).

There are no comprehensive studies that measure the amount or the different types of prolamins and agglutinins in different grains and legumes or their stability with different food preparation methods. Until these details are better understood, the Paleo diet omits all grains and all legumes (with the exception of those with edible pods as already mentioned) due to the potentially detrimental effects of prolamins and agglutinins on human health. It also doesn't help that these are high glycemic load foods, with incomplete protein that is harder to digest than animal protein, and with lower vitamin, mineral and antioxidant density than fruit and vegetables (which is what a Paleo diet endorses consuming instead of grains and legumes).

Vasconcelos IM, Oliveira JT. *Antinutritional properties of plant lectins*. Toxicon. 2004 Sep 15;44(4):385-403.

<http://www.ncbi.nlm.nih.gov/pubmed/15302522>

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“Plant Lectins: Bioactivities and Bioapplications”

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24) Issues Relevant to Commercial Production

Cultivating medicinal mushroom strains at large scales requires methods to provide consistent, safe, effective and reliable products. The current production methods and standards in the market need upgrading before they can achieve these results. We have the systems, controls and processes to assure the products are safe and are of the best quality and standards in the world. Product quality can also be impacted by the fact that many manufacturers and resellers rely on several sources of mushrooms, and some are of dubious origins. These different sources often show considerable variation with respect to substrates used and manufacturing practices.

Unfortunately, the perceived future growth of this sector has also resulted in an ever-increasing number of less reputable companies, and their questionable practices will inevitably lead to more intensive scrutiny of the sector as a whole. There is urgency for the



medicinal mushroom manufacturing industries to develop and adopt acceptable and reproducible protocols for growing the raw product and for the processing of the final products.

Enforcing these standards will ensure high-quality, standardized, and safe products. Such practices are essential for earning and maintaining the public trust, which is vital for securing expanding markets in the future.