Which Polysaccharides are in Your Mushroom Supplement?

Nutrients or Triggers?

The primary active compounds common to all medicinal fungi are the long-chain non-linear polysaccharides extracted from the indigestible cell walls of the mushroom fruit bodies and mushroom mycelium.

These are the active compounds that give the mushrooms their "tonic" properties as described in Traditional Chinese Medicine, what we refer to as "immuno-modulating" properties in the West.

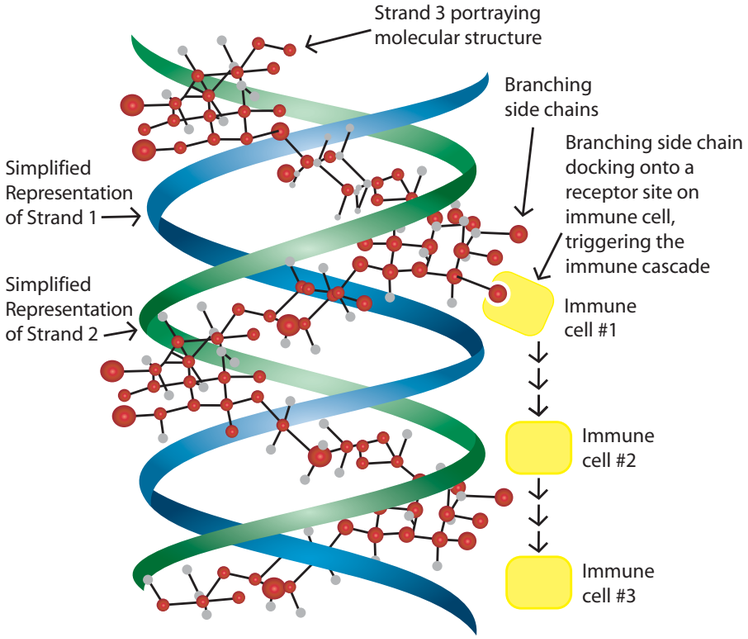
A commonly held perception is that this immuno-modulating activity is a function of the polysaccharides providing nutritional value to the body or the immune system. However, these polysaccharides are not providing nutrients to the immune system in the same way that protein from the diet provides calories for energy or the nutrients needed to build muscle mass.

A more accurate description of the role played by these non-linear polysaccharides would be that of a "trigger". The immune response attributable to these polysaccharides is triggered when their branching side chains dock on to a receptor site on the surface of an immune cell. Receptors for β-glucan have been found on a number of immune cells including macrophage, natural killer cells and T and B lymphocytes.

Why Should You Care?

Although there are 1,000's of naturally occurring polysaccharides in nature, only one kind of polysaccharide is capable of supporting the immune system and there is only one clinically validated method for their extraction from medicinal mushrooms and mushroom mycelium.

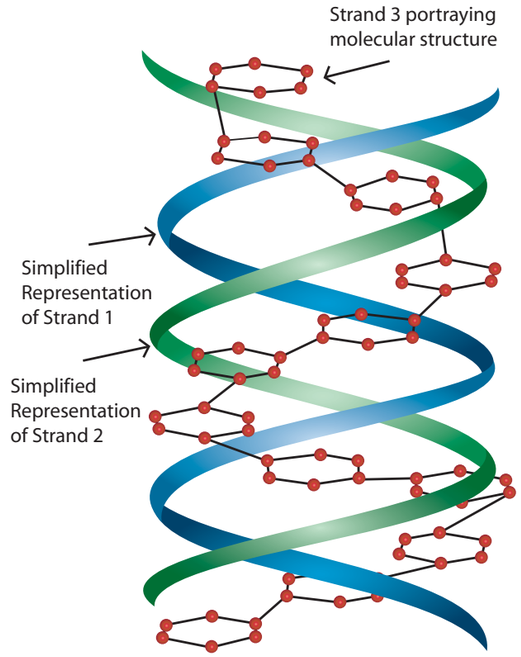
These structurally unique polysaccharides are called "non-linear polysaccharides" (a reference to their branching side chains), and the only clinically validated method for their extraction is hot water extraction.



Non-Linear Polysaccharide

Representation of the triple helical structure of (1→3)-β-glucan with branching side chains, the type of immune stimulating polysaccharides found inside the indigestible cell walls of medicinal mushrooms and mushroom mycelium.

Like a "lock and key", the branching side chains interact with receptors on the surface of immune cells such as macrophage and natural killer cells.



Linear Polysaccharide

Representation of a polysaccharide without branching side chains. For example, the starch in the undigested rice that mushroom mycelium is grown on to produce mycelium biomass supplements is a linear polysaccharide.

Without branching side chains linear polysaccharides, such as starch, have no way to interact with the receptors on the immune cells and, therefore, can not stimulate an immune response.

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How Do You Know You Have Non-Linear Polysaccharides?

A simple rule when buying mushroom supplements is to look for the *percentage of polysaccharides* to be listed in the Supplement Facts panel on the label. The recently published book "The Health Benefits of Medicinal Mushrooms" lists the minimum levels of polysaccharides to look for on the label of each different type of mushroom supplement. Contact our office for a free copy of the book.

Supplement Facts
Serving Size 2 capsules

Amount Per Serving	%DV
Reishi (*Ganoderma lucidum, Gano 161®*) fruit body extract, **12% Beta Glucan (polysaccharide)**, 6% Triterpenes (ganoderic acids) 800 mg	*

*Daily Value not established

Supplement Facts
Serving Size 2 capsules

Amount Per Serving	%DV
Maitake (*Grifola frondosa*) mushroom extract **30% beta 1-3, 1-6 glucan (polysaccharide)** 600 mg	*

*Daily Value not established

Supplement Facts
Serving Size 2 capsules

Amount Per Serving	%DV
Coriolus versicolor PSP extract **28% Beta Glucan (polysaccharide peptide)** 800 mg	*

*Daily Value not established