UNIVERSITY, PRIVATE AND GOVERNMENT TEST RESULTS

Review selected results of one of the most scientifically studied Dietary Supplements of the 20\textsuperscript{TH} and 21\textsuperscript{ST} Century
Beta glucan is unknown to a majority of the general public. Many health researchers consider it to be one of the most effective immune enhancing substances ever discovered.

Beta glucan, properly extracted, has been shown to be completely safe and non-toxic. This substance is extracted from the cell walls of bakers yeast (Saccharomyces cerevisiae), a food source. Bakers yeast, and their extracts, have been given a GRAS rating. This is one of the highest, if not the highest safety rating a substance can achieve. The specifications for this rating can be found in 21CFR184.1983 -- Sec. 184.1983.

Beta glucan has over 1,600 general research papers ranging across 40 years. A majority of this health related research has been completed at some of the most prestigious institutions in the world. These studies have been performed on literally every health condition/disease known to humanity, and time and time again it has proven itself to be second to none. It has also been shown to provide beneficial effects in the sports/athletic health fitness field.

Beta glucan is not a vitamin or mineral. It is considered an external immunomodulator. External immunomodulators are substances that have been shown to modify the immune systems response to a threat upon it. It can be derived from many sources. Bakers yeast, oats and mushrooms are the most popular choices. Beta Glucan modulates and potentates the workhorse of the immune system, the macrophage (white blood cells), keeping them in a highly prepared state for any threat your immune system may encounter.

Much controversy surrounds Beta glucan products these days. This controversy centers around the quality issue(s) of purity level and molecule linkage. In order to be effective the material must contain the proper glucan purity level and 1,3-D/1,6 molecule linkage. The serious researcher will discover that many manufactures hide or do not apply these generally accepted standards to their manufacturing process. Further, proof of quality/content by independent verification is seldom made available to consumers or researchers, if available at all, except upon specific request or demand. This report covers some of the latest test results on the only Beta Glucan product that meets or exceeds the standards set and found in peer review medical and scientific literature.

The results presented herein are tests results conducted on Whole Glucan Particulate Beta 1, 3-D Glucan. While there are many Beta Glucan products available on the open market only one meets or exceeds the standards set and found in peer review medical literature.

Whole Glucan Particulate Beta 1, 3-D Glucan is being considered by the US Government
Research and Development Strategic Relationships
Testing by these entities does not necessarily mean said entities endorse products.

UNIVERSITÉS AND MEDICAL RESEARCH CENTERS

- Auburn University
- Brown University
- Cornell University
- Memorial Sloan Kettering Cancer Center
- North Carolina A&T State University
- The Mayo Clinic
- University of Minnesota
- University of Louisville
- University of Massachusetts

GOVERNMENT AGENCIES

- US Armed Forces Radiobiology Research Institute - Myelosuppression
- Defence Research Establishment Suffield, Canada

Atherosclerosis

Atherosclerosis, sometimes called “hardening of the arteries,” occurs when fat (cholesterol) and calcium build up in the inner lining of the arteries, forming a substance called plaque. Over time, the fat and calcium buildup narrows the artery and blocks blood flow through it.

The cholesterol lowering properties of oats is well documented in more than 50 human clinical studies and has led to a FDA health claim (21 CFR 101.81) supporting the cardiovascular protective effects of beta glucan. Preclinical and clinical research supports that oral Beta 1, 3-D Glucan can also provide this protection, demonstrating its potential for lowering total and LDL cholesterol and raising HDL cholesterol, and more importantly reducing atherosclerotic plaque formation in arteries.
Definition - Atherosclerosis, sometimes called “hardening of the arteries,” occurs when fat (cholesterol) and calcium build up in the inner lining of the arteries, forming a substance called plaque. Over time, the fat and calcium buildup narrows the artery and blocks blood flow through it.

When atherosclerosis affects the arteries that supply blood to the heart, it can restrict blood flow to the heart muscle, causing heart pain (angina), irregular heartbeats (arrhythmia), and other problems. Plaque may damage the artery lining, causing blood clots that can block blood flow, which in turn may cause a heart attack and cause damage to the heart muscle. Atherosclerosis in the heart (coronary) arteries is called coronary artery disease.

**New Research Supports Ability of Beta 1,3-D Glucan to Safely Enhance Human Immune Function**

Our Beta 1,3-D whole glucan particulate is the only yeast Beta 1,3/1,6 glucan supported by a Human Phase I Clinical Study.

An apple a day may keep the doctor away, but results of a recent human clinical study suggest far better results may be obtained with a dietary supplement and functional food ingredient called Beta Glucan.

Beta 1,3-D Glucan is a patented carbohydrate extracted and highly purified from the cell walls of Baker’s yeast. Produced and manufactured totally right here is the good old USA, a whole glucan particulate Beta 1,3-D Glucan is the active ingredient in our 100 mg capsules, our 500 mg capsules, our BetaXanthin™ and our Formula III lotion. All of these products help to support immune function.
In an independent study conducted by a Canadian biopharmaceutical company, normal human volunteers were dosed for 10 consecutive days with one 250 milligram-capsule containing Beta 1,3-D Glucan whole glucan particles.

The subjects were monitored for 30 days. This human clinical showed that the Beta Glucan was safe and well tolerated, as evidenced by the lack of significant changes in key blood and liver enzymes.

It also significantly increased phagocytic capacity (see chart)—the ability of the innate immune cells to eat and destroy foreign intruders.

On day ten (10) of the study, our Beta Glucan increased the percentage of immune cells able to phagocytose one target particle from 63.8% to 83.2% (P< .05). The number of highly phagocytic cells—those consuming at least three particles—increased from 37.3% to more than 50% (P< .05). These results show that taking Beta Glucan enhanced the human immune system to defend the body against a challenge.

Whole Glucan Particulate Beta 1,3-D Glucan is the only yeast-based beta glucan that has been shown scientifically to enhance immune function in humans.

"The results are consistent with the biological activity of Whole Glucan Particulate Beta 1,3-D Glucan observed in numerous animal studies," said Rosemonde Mandeville, M.B. ChB. Ph.D., President and Chief Scientific Officer of Biophage Pharma.
In addition, researchers also found that Whole Glucan Particulate Beta 1,3-D Glucan increased plasma cytokines INF-γ and TNF-α, which play an important role in regulating the body’s immune response. There was no significant increase in cytokine IL-1 which can cause fever, chills and muscle aches associated with other immune-enhancing supplements.

These results are similar to those obtained from a 1999 study published in the American Journal of Clinical Nutrition in which men consumed 15 grams of Whole Glucan Particulate Beta 1,3-D Glucan-60 times the recommended daily dosage for 12 weeks without adverse effects.

_Anthrax_

PHASE 1 TESTING (mouse subjects)

**Definition - Anthrax** is an infectious disease caused by the spore-forming bacteria called Bacillus anthracis. Infection in humans most often involves the skin (cutaneous anthrax), the gastrointestinal tract, or the lungs (inhalation anthrax).

Causes and risks - Anthrax is caused by the bacterium Bacillus anthracis. While anthrax commonly affects hoofed animals such as sheep and goats, humans may acquire this disease as well. Humans can acquire anthrax through contact with animal hides or hair, bone products, and wool, as well as contact with infected animals.

Historically, the populations most at risk for anthrax include farm workers, veterinarians, and tannery and wool workers.
Anthrax is a potential agent for use as a biological weapon or bio-terrorism. While at least 17 nations are believed to have a biological weapons program, it is unknown how many nations or groups are working with anthrax. Most bio-terrorism experts have concluded that it is technologically difficult to use anthrax effectively as a weapon on a large scale.

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Abstract

Glucan Protects the Integrity of an Endothelial Monolayer in the Presence of Activated Neutrophils

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CR3 (CD11b/CD18) is unique among the leukocyte beta2 integrins because, apart from the ligand-binding I-domain, it contains a lectin-like domain. Glucans are beta (1-3)-linked glucose polymers, which can bind to the CR3 lectin-like domain. Co-occupancy of the lectin-like domain with beta-glucan and the I-domain with fibronectin promotes neutrophil (PMN) chemotaxis. The current study was undertaken to determine whether treatment of activated neutrophils with beta-glucan would alter PMN:endothelial cell interactions by a CR3-dependent mechanism. Electric Cell Substrate Impedance Sensing (ECIS) was used to evaluate the barrier function of an intact pulmonary capillary endothelial monolayer.
Human PMNs were activated, or not, with formyl-met-leu-phe (fMLP), added to a confluent endothelial monolayer and barrier function was measured over time. Although activated PMNs induced a 60±5% (SEM) decrease in normalized monolayer resistance, addition of beta-glucan maintained optimal barrier function. Therefore, beta-glucan may protect endothelial barrier function in the presence of activated PMNs.

MORE INFORMATION

- Whole Glucan Particulate Beta1,3-D Glucan Products. To review and download; http://www.beta-glucan-info.com/pdf/beta_glucan.pdf
- “The Great Immunomodulator Scam” Discover the new class of Dietary Supplements called immunomodulators and how the market is saturated with products claiming to be effective immunomodulators yet offer no proof of effectiveness. Studies have shown that Immunomodulators help support immune system function. To review and download: http://www.beta-glucan-info.com/pdf/immunomodulators.pdf

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