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The Immune Benefits of Beta Glucans

Beta glucans, found in baker's yeast, mushrooms, and cereal grains, help the body fight cancer and disease. Find out how this natural compound helps maintain optimal health.

Scientifically reviewed by: Dr. Gary Gonzalez, MD, on February 2020.

When it comes to *naturally boosting the immune system* by optimizing its response to diseases and infections, **beta glucans** are crucial weapons in the fight to stay healthy. But because the body doesn't produce beta glucans naturally, the only way to get the compound is through outside sources—namely, baker's yeast, shiitake mushrooms, and cereal grains, like barley, oats, rye, and wheat.

After a century and a half of research,[1] studies have shown that beta glucans act as immunomodulator agents, meaning

they trigger a cascade of events that help regulate the immune system, making it more efficient. Specifically, beta glucans stimulate the activity of *macrophages,* which are versatile immune cells that ingest and demolish invading *pathogens* and stimulate other immune cells to attack.[2] Macrophages also release *cytokines,* chemicals that when secreted enable the immune cells to communicate with one another. In addition, beta glucans stimulate lethal white blood cells *(lymphocytes)* that bind to tumors or viruses, and release chemicals to destroy it.

WHAT YOU NEED TO KNOW

Beta glucans have been used for immune system support since 1980, mostly in Japan. In addition, beta glucans have been shown to reduce total and LDL cholesterol. They are not produced naturally, therefore beta glucans must be obtained through diet or supplementation.

Beta Glucans and Heart Health

No doubt you've heard about the *heart health benefits* associated with a diet that includes consuming oats. That's partly because oats are good sources of the soluble fiber beta glucan. In a study conducted by the US Department of Agriculture's Beltsville Human Nutrition Research Center in Maryland, beta glucan was concentrated into an oat fiber extract so it could be easily incorporated into a typical diet. Male and female study participants with mildly high cholesterol were put on a maintenance diet for one week and then were given an oat fiber extract containing either 1% or 10% beta glucan. After five weeks of receiving the beta glucan extract, both groups showed a *significant reduction* of total cholesterol and low density lipoprotein (LDL).What's more, total cholesterol levels were significantly lower in the

group who received the higher beta glucan extract diet than in those on the low beta glucan diet.[3]

Mounting Support to Fight Cancer

With about 560,000 deaths from cancer each year,[4] researchers have spent decades searching for substances with cancer-fighting properties. *Lentinan,* a type of beta glucan found in shiitake mushrooms, is believed to reduce tumor activity and lessen the side effects of cancer treatment.[5] Researchers at Teikyo University's Biotechnology Research Center in Kawasaki, Japan, showed that lentinan has anti-tumor properties, suppressing the formation and development of tumors.

"Results of the clinical application of lentinan have proven prolongation of life span of the patients with advanced and recurrent stomach, colorectal, and breast cancer with only little toxic side effect," wrote the study's authors. It also appears that lentinan restores or boosts the responsiveness of cytokines, which interact with immune cells and regulate the response to the disease.[6]

In an earlier Japanese study, mice with tumors that received beta glucans, including lentinan, experienced a *rapid decrease* in the number of tumor cells as well as a notable increase in *neutrophils* in solid tumors.[7] Neutrophils are a type of white blood cell that destroys invaders—in this case, cancerous cells—by ingesting them and using chemicals to break them down. In fact, beta glucans have been used as an immunoadjuvant *therapy* (an immune system stimulant) for cancer since 1980, mostly in Japan.[1]

Helping the Body Conquer Infections

In addition to beta glucan's assistance in the fight against

cancer, studies show they also help the body do battle with bacteria *resistant to antibiotic treatment* and *viruses* that cause upper respiratory infections. At Brigham and Women's Hospital in Boston, Massachusetts, researchers found that the compound enhances antibiotic efficacy in rats infected with antibiotic-resistant bacteria. Rats with intra-abdominal sepsis due to antibiotic-resistant bacteria—namely, *Escherichia coli* or *Staphylococcus aureus* —were given a type of beta glucan (PGG glucan) that enhances the function of macrophages and neutrophils. Researchers looked at beta glucan's ability to work in partnership with antibiotics to decrease mortality of the rats. "Results of these studies demonstrated that prophylaxis with PGG glucan in combination with antibiotics provided enhanced protection against lethal challenge with *Escherichia coli* or *Staphylococcus aureus* as compared with the use of antibiotics alone," wrote the researchers.[8]

Further animal research highlights beta glucan's impact on a form of *Escherichia coli* (ETEC), the culprit behind traveler's diarrhea. Belgian scientists orally administered three different beta-glucans in pigs with an ETEC infection that had just been weaned. The study found that pigs fed for two weeks after weaning with the glucans were less susceptible to the infection (evidenced by a lower incidence of diarrhea) compared to the control group.

"This study showed that beta-glucans can protect against an ETEC infection," concluded the researchers. "To our knowledge, this is the first in vivo study, in which the use of beta-glucans as feed ingredient for just-weaned piglets was tested for their protective effects against ETEC infection."[9]

Beta glucans also appear to mitigate the symptoms of the common cold—or at least reduce the number of days people call in sick to work. The Montana Center

for Work Physiology and Exercise Metabolism examined beta glucans' ability to mitigate upper respiratory infections in a single blind, randomized trial in 2008.

The scientists chose firefighters as their subjects since they are regularly bombarded with smoke and fumes as they battle blazes and are more susceptible to respiratory troubles as a result.

Researchers provided the group of firefighters with either a beta-glucan-containing supplement or a placebo and asked participants to write down any cold symptoms (runny or stuffy nose, sore throat, coughing, sneezing, colored discharge) or flu symptoms (fever, headache, general aches and pains, fatigue and weakness, chest discomfort, cough). Firefighters who recorded having these symptoms for two consecutive days were classified as having an upper respiratory tract infection.

Participants who consumed the supplement had fewer (23%) upper respiratory tract infections, compared to the group of firefighters taking a placebo. "The results are consistent with previous clinical research involving marathoners, individuals with high stress lifestyles and the general population," wrote Brent C. Rudy, the director of the Montana Center for Work Physiology and Exercise Metabolism.[10]

Summary

Although there isn't a single magic bullet when it comes to eliminating disease, scores of research shows that adding beta glucans to your daily diet—either in the form of supplements or foods that contain the compound—can play a significant role in helping your body fend off not only the

common cold and respiratory infections but also more serious diseases, including cancer.

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If you have any questions on the scientific content of this article, please call a Life Extension® Wellness Specialist at 1-866-864-3027.

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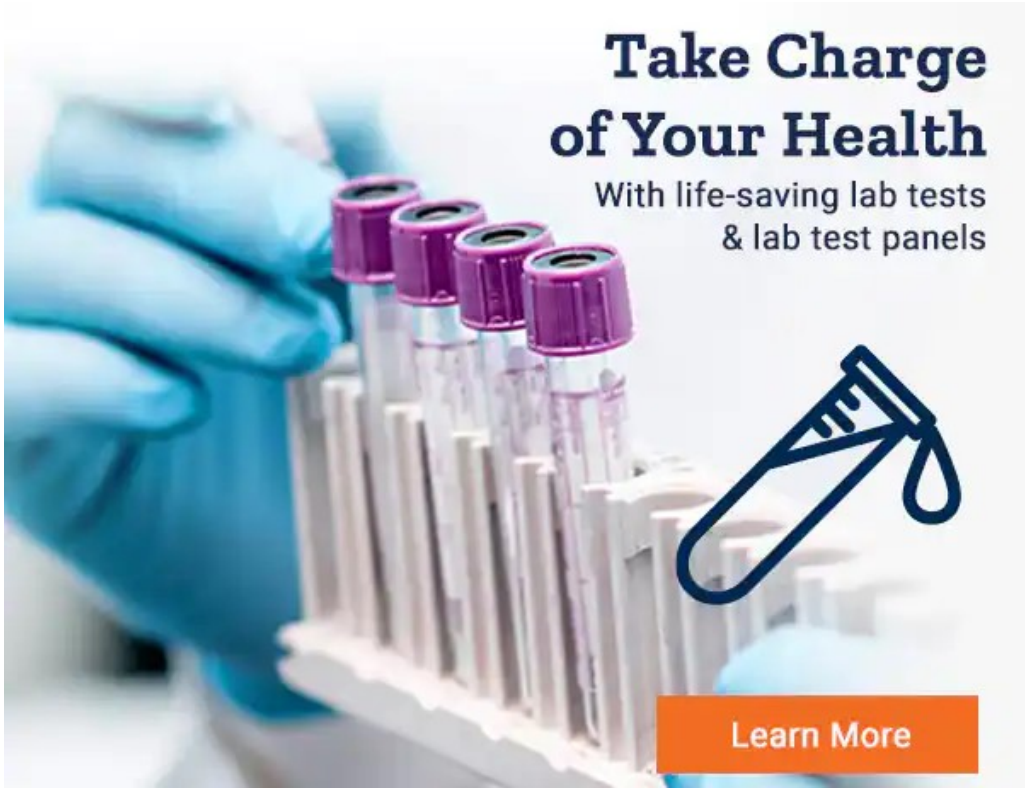

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