

## Immunomodulating Properties of Agaricus blazei Murill (AbM) and Fucoidan (a Potent and Beneficial Brown Seaweed Extract)

Fucoidan and Agaricus blazei Murill can complement each other in a synergistic manner to enhance the immune system.

NEW YORK, NY, UNITED STATES, October 4, 2018 /EINPresswire.com/ --Fucoidan and Agaricus blazei Murill can complement each other in a synergistic manner to enhance the immune system. Brown seaweeds (Fucoidan) and mushrooms (Agaricus blazei Murill) contain molecules that modulate immune cell activities, but the factors that determine whether a brown seaweed or mushroom may activate the immune cells relies on the polysaccharides they both contain. Polysaccharide immunomodulators were first discovered over 40 years ago. Although very few have been rigorously studied, recent reports have revealed the mechanism of action of some of these molecules. Certain polysaccharide immunomodulators, for example Fucoidan and β-glucans, have been identified and its synergy has profound effects in the regulation of immune responses during the progression of infectious diseases, and studies have begun to define the basic aspects of these molecules that rule their function and interaction with cells of the host immune system. These polysaccharides like Fucoidan and βglucans can influence innate and cellmediated immunity through interactions with T cells, monocytes, macrophages, and lymphocytes. The ability to modulate the immune response in an appropriate way can



Fucoidan 3-Plus with Agaricus blazei Murill (beta glucans)



Best Fucoidan with Agaricus blazei Murill

enhance the host's immune response to certain infections. In addition, this synergy between Fucoidan and  $\beta$ -glucans can be utilized to enhance the immune system when people are weak after rigorous treatments.

Medicinal mushrooms like Agaricus blazei Murill have been used as alternative therapies that may improve cancer treatment and the patients' survival. Mushrooms have been used medicinally since at least 3000 bce. Mushrooms like Agaricus blazei Murill have been studied to have antimicrobial, anti-inflammatory, cardiovascular-protective, antidiabetic, hepatoprotective, and anticancer properties. It is well-established that mushrooms can improve the immune system and affect hematopoietic stem cells, lymphocytes, macrophages, T cells, dendritic cells (DCs), and natural killer (NK) cells. Extensive research over the last 40 years has demonstrated that mushrooms have potent antineoplastic properties that slow growth of tumors, regulate tumor genes, decrease tumoral angiogenesis, and increase malignant-cell phagocytosis. The most common medicinally active ingredient in Agaricus blazei Murill is βglucan. Additionally, evidence suggests that medicinal mushrooms (e.g. Agaricus blazei Murill) may safely boost chemotherapeutic efficacy and simultaneously protect against bone marrow suppression which is a complement to Fucoidan's activity.



One of the numerous synergistic effects of the active ingredients of brown seaweeds and mushrooms, Fucoidan (Mozuku, Mekabu and Fucus) and  $\beta$ -glucans, occurs through their ability to stimulate cytokine production. Cytokines are small, soluble proteins that act as intracellular mediators in an immune response. In the effort to understand cytokine responses and the interrelationships between cytokines, one approach has been to characterize a certain set of cytokines for responses to different situations. The cytokines involved in different types of responses are TH1, TH2, TH3/T regulatory (Treg) cells, and the proinflammatory pathways. TH1 stimulates the immune response to cancer, TH2 decreases TH1, TH3/Treg modulates TH1 and proinflammatory IL-1, IL-6, IL-8, TNF- $\alpha$  cause inflammation.

Fucoidan (Mozuku, Mekabu and Fucus) combined with Agaricus blazei Murill ( $\beta$ -glucans) enhance the immune system and they stimulate both innate and adaptive immunity. Fucoidan and Agaricus blazei Murill can increase both, the first line of defense and the more specific immune response. At the same time, T cells are impacted by Fucoidan and  $\beta$ -glucans. T cells have numerous forms, but two significant ones are: TH1 cells, which attack intracellular bugs such as bacteria and viruses, and Th2 cells, which fight helminths and other extracellular pathogens. Fucoidan and  $\beta$ -glucans can modulate both TH1 and TH2 helper cells. Animal studies demonstrate that by stimulating TH1 cells, Fucoidan and  $\beta$ -glucans can help eliminate infections. In addition, they also downregulate excessive TH2 responses, which can lead to allergies and inflammation. In addition, oral consumption of Fucoidan (Mozuku, Mekabu and Fucus) combined with Agaricus blazie Murill ( $\beta$ -glucans) has been shown to improve the immune system.

Targeting inflammation in cancer patients is a promising approach not only for alleviating cancer-related symptoms as supportive care but also for enhancing clinical efficacy. Inflammatory responses are mediated by multiple factors, such as proinflammatory cytokines IL-1 $\beta$ , IL-6, and TNF- $\alpha$ .1-7 These cytokines play a pivotal role in establishing a suitable microenvironment for tumor development and metastasis and in diminishing therapeutic efficacy. Fucoidan and  $\beta$ -glucans have shown to have beneficial effects on a range of diseases including cancer, infections, allergy/asthma, and inflammatory disorders and they have shown to

lower the side effects of the chemotherapy and radiation therapy. In addition, there may be a general anti-inflammatory effect of Fucoidan and Agaricus blazei Murill ( $\beta$ -glucans), which can increase their antitumor and antiallergy/antiasthma properties.

In conclusion, when the considering immunomodulatory effects of Agaricus blazei Murill and Fucoidan, their ability to stimulate TH1 responses may be beneficial in cancer treatment, as are those that decrease TH2 and Treg responses. Agaricus blazei Murill and Fucoidan decrease inflammation and it may benefit cancer patients by decreasing fatigue, anxiety, and other symptoms associated to inflammatory cytokines.

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