QUEST

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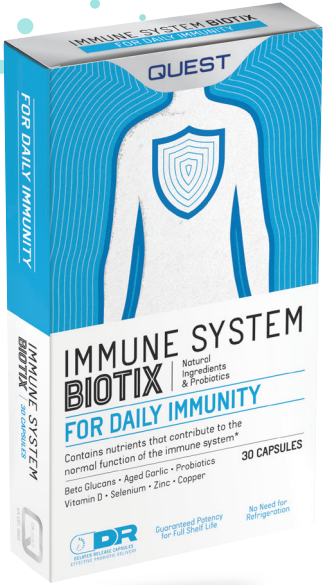
Biotix

IMMUNE SYSTEM BIOTIX

Supports immune function to increase resistance to disease and infection.



Nutritional Information

One capsule provides:

		*%NRV
Beta 1-3, 1-6 Glucans	200 mg	
Aged Garlic extract	200 mg	
Vitamin D3 (1000i.u.)	25 µg	500
Zinc	5 mg	50
Selenium	100 µg	182
Copper	250 µg	25
Lactobacilli Culture Providing 2 billion ($2x10^9$) L.plantarum, L.bulgaricus, L.rhamnosus, L.casei, L.paraplantarum	40 mg	

*NRV = Nutrient Reference Values

One to two capsules daily, with or after a meal. Swallow with water.

SUMMARY

- Supports and enhances immune function.
- Protects against disease and infections.
- Helps reduce the severity and duration of infections.
- Unique combination of 7 immune-supporting nutrients.
- Unique and stable formulation.

DESCRIPTION

A unique potent immune supporting complex of beta glucans (beta 1-3, 1-6 glucan), aged garlic extract, lactobacilli bacteria, vitamin D, selenium, zinc and copper. Designed to support immune system function for everyday wellbeing and increase the body's resistance to stress, disease and infections. Each ingredient has been carefully chosen for its positive action on immune cells. Beta glucans enhance immune function and reduces susceptibility to pathogenic organisms. Aged garlic enhances various immune factors and vitamin D, selenium, zinc and copper have immune modulatory properties. Lastly probiotic bacteria stimulate and regulate normal immune response.

HOW DOES IMMUNESYSTEMBIOTIX SUPPORT THE IMMUNE SYSTEM?

Beta glucans

Beta glucans are potent biologically active molecules found in the cell walls of fungi such as yeast or mushrooms. Beta glucans are known to activate and stimulate immune cells in the body.[1]

Reducing susceptibility to infection: Beta glucans may be effective in enhancing immune function and reducing susceptibly to infection by bacteria, viruses and pathogenic microorganisms.[2,3,4,5] A recent placebo controlled, double blind, randomised trial demonstrated a significant reduction in symptoms of the common flu in participants taking beta glucans.[6] Another double blind placebo controlled trial with older patients infected with upper respiratory tract infections (URTI) found a significant reduction in the duration of the symptoms of URTI in the group taking 250mg of beta glucans daily.[16] Beta glucans increase host immune defence by activating complement immune system proteins and enhancing macrophage and natural killer cell function by interacting with several cell surface receptors.[17]

Beta glucan structure: The activity and the effectiveness of beta glucan molecules in the body depend on their structure, and the most active form of beta glucans contain beta (1-3)(1-6) linkages.

Aged garlic extract

Antiviral and anti-allergy: Aged garlic extract has been shown to enhance various immune factors such as the phagocytic (cell killing) activity of macrophages, T-lymphocyte activity, natural killer cell activity and antibody generation.[7,8,9] Aged garlic extract also has demonstrated antiviral activity and may reduce symptoms of allergic-type reactions.[10] The active ingredients in aged garlic are S-allylmercaptocysteine (SAMC) and S-allylcysteine (SAC). These stimulate appropriate immunological action.[18]

Anti-inflammatory and antioxidant: Aged garlic decreases the expression of (NF)-kB, an inflammatory signal within the body[19]. Chronic inflammation is the over reaction of the body's immune proteins such as cytokines. This overreaction can eventually decrease our resistance to infection. The potent antioxidants in aged garlic stimulate appropriate immunological action[19], by enhancing the number of Natural Killer cells[20]. Aged garlic is also an immune modulator[21], an important factor in immune system health.

Supporting studies: One study observed a much lower frequency of catching colds and a quicker recovery if they did appear[22]. Another study has found that aged garlic prevents the decrease in immune system activity imposed my psychological stress. Psychological stress decreases the number of Natural Killer cells in the body. Aged garlic may be a therapeutic agent to prevent this from happening.[23]

Healing gut mucosa: Aged garlic extract has been shown to heal mucosal tissue in the gut and provide anti-microbial protection and regulate the microbiome[23]. Good gut health and microbiome is the first step in ensuring effective immune functioning. Many T and B helper cells are stored in the gut associated lymphoid tissue (GALT) where they interact directly with the gut microbiome.

Vitamin D3

Self tolerance: Vitamin D3 is an immune regulator, enhances both innate and adaptive immune responses and aids with self-tolerance. Vitamin D is found in large quantities in the GALT where it aids with the regulation of T and B lymphocytes and immune regularity cells known as T reg cells. Immune cells express vitamin D metabolising enzymes called VDR enzymes. Vitamin D increases the clearance of bacteria by stimulating the appropriate immunological actions.[24]

Zinc

Decreased function of T and B cells: Zinc is required for the proper function of Natural Killer cells. Zinc deficiency rapidly diminishes antibody responses. Inadequate zinc intakes can lead to 30–80% loss in immune defence capacity. Thymic atrophy and high losses of precursor T and B cells in the bone marrow are early signs are zinc deficiency.[25] Zinc is also required for many enzymatic reactions in the body including methylation which produces antioxidants required for immune system function.

Selenium

IgM, IgG and IgA: Selenium is essential for optimal immune responses, both innate and adaptive responses. A selenium deficiency results in lymphocytes less able to proliferate when necessary. The immune proteins IgM, IgG and IgA are decreased in selenium deficiency states.

Antioxidant: Neutrophils produce free radicals as part of their killing method of microbes. This system requires a delicate balance between producing free radicals and having the antioxidants to protect the neutrophils themselves. Selenium deficient neutrophils are less able to kill pathogens, and an increase regulates that function .[26]

Copper

Superoxide dismutase: Copper is an essential metal and a core component of the resistance against infection. It works in balance with zinc to create some important antioxidants and enzymes. One of which is called superoxide dismutase which is important for the activation of the immune cells.

Selenium is a powerful antioxidant and aids with the regeneration of used vitamin C within the body. Selenium helps to control inflammation in the body which is essential in chronic immune conditions.

There are numerous studies demonstrating increases in immune function and activity through supplementation with not only to infections but also to other immune-based conditions.

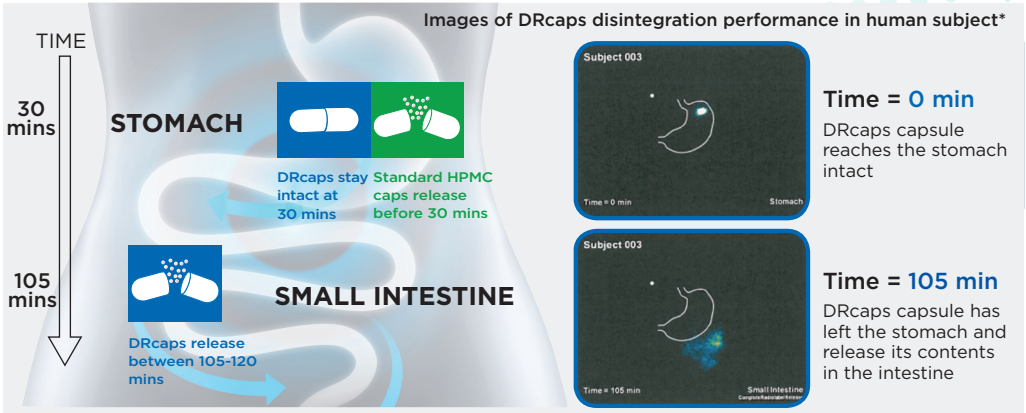
Lactobacilli Bacteria

Lactobacilli make up a significant part of the microbiome which covers every surface in the body and provides our initial defence and immune signalling. Lactobacilli take up epithelial binding sites which reduces the opportunity for pathogens to adhere and colonise. Emerging research has revealed that probiotic bacteria can stimulate and regulate the immune response in the body and may contribute in reducing the risk or duration of certain infections and alleviate symptoms of immune-based conditions such as allergies and eczema.[11,12,13] In one recent study, probiotics were found to reduce the duration of respiratory infections in both adults and children.[14] A meta analysis review of 12 clinical trials concluded that probiotics were better than placebo in reducing the incidence and duration of upper respiratory infections, as well as cold-related school absences.[15]

Other research has shown that probiotic supplementation reduces the need for medication and sick days off work, reducing the cost of the common cold[27].

THE ADVANTAGE OF DRCAPS™

DRcaps are designed to delay the release of probiotic bacteria, protecting the probiotics from stomach acidity and allowing the probiotics to be most effective where they need to be - **directly in the intestine**.



*Subject consumed light breakfast 30 minutes prior to dosing DRcaps containing 300mg of lactose, 10mg of which was radiolabelled to allow anterior and posterior images taken every 5 minutes after dosing.

FEATURES

• Combines seven immune supporting nutrients • With DRcaps, a unique delayed release capsule shell that protects sensitive bacteria from stomach acid • Lyophilised, encapsulated and individually sealed to enhance stability • Refrigeration is optional.

HEALTH NEEDS

EVERYDAY HEALTH AND WELLBEING

IMMUNITY

STRESS AND HECTIC LIFESTYLE

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