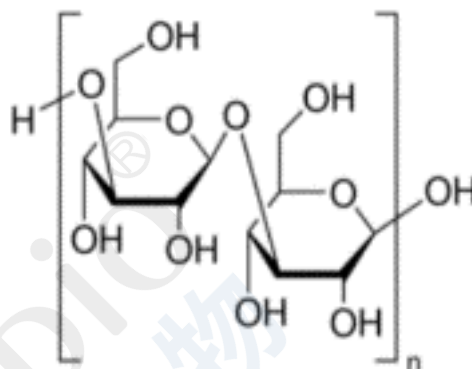


# beta-1,3-Glucan

## Product Information

Product Name: beta-1,3-Glucan  
Grade: Food grade/Cosmetic grade  
Purity(Beta D 1,3/1,6 Glucan, HPLC) :  $\geq 80\%$   
Source: Natural  
CAS No.: 9051-97-2  
Appearance: Off-white to light yellow powder  
Package: 100g, 1Kg, 5Kg, 25Kg  
Storage: Store in a cool & dry area. Keep away from the direct light and heat.



## Product Introduction

$\beta$ -Glucan has gained significant attention as a dietary fiber ingredient that enhances immune function. Aside from bolstering the immune system,  $\beta$ -glucan also enriches food with fiber, enabling a reduction in reliance on sugar and fat without compromising texture and taste ideal for health-conscious diets. Given the increasing focus on health and the demand for functional ingredients, the popularity of  $\beta$ -glucan is bound to surge in the upcoming years.

$\beta$ -Glucan is a natural dietary fiber composed of a polysaccharide chain formed by the polymerization of glucose monomers. It is widely distributed in various plants and microorganisms, including cereals, fungi, and algae. The structure and functions of beta-glucans vary depending on their source. This remarkable fiber exhibits a diverse range of biological activities, including immunomodulation, anti-tumor, antibacterial, antioxidant, anti-aging, anti-radiation, anti-inflammatory, hypoglycemic, and hypolipidemic effects. Its applications span across multiple industries, including medicine, functional food, food additives, cosmetics, and feed.

## Applications

### Food Industry Applications

$\beta$ -1,3-Glucan possesses a range of properties such as high viscosity, excellent water-holding capacity, and emulsion stability, making it a versatile ingredient in the food industry. It is commonly used as a thickener, water-holding agent, binder, and emulsion stabilizer in seasonings, desserts, and other foods. Due to its indigestibility in human digestive organs,  $\beta$ -1,3-glucan can serve as a non-caloric food additive, offering a fat-like texture. Studies have demonstrated that replacing fat with  $\beta$ -1,3-glucan in meat products not only provides a smooth and rich taste characteristic of low-fat meat products but also enhances the crispiness, hardness, stickiness, chewiness, and overall acceptability of these products.

$\beta$ -1,3-Glucan is also employed as a chemical stabilizer in mayonnaise, effectively maintaining emulsion stability and extending product shelf life. Furthermore, its non-caloric nature allows it to maintain the effects of cellulose in preventing lipid absorption, promoting cholesterol elimination, and enhancing intestinal peristalsis. As a dietary fiber,  $\beta$ -1,3-glucan plays a crucial role in food and is considered a premium health food additive.

### Cosmetics Industry Applications

Due to the unique biological functions and physicochemical properties of  $\beta$ -1,3-glucan, including anticoagulant, antioxidant, cell proliferation promotion, antibacterial, and water absorption capabilities, it exhibits a range of benefits such as moisturizing, anti-aging, promoting epithelial fiber cell proliferation, and enhancing skin tone. Studies have demonstrated that carboxymethylated  $\beta$ -1,3-glucan can reduce skin sensitivity to radiation in UVA-exposed areas. It also plays a crucial role in preventing the oxidation of squalene in sebum. With its film-forming properties, carboxymethylated  $\beta$ -1,3-glucan acts as a protective second skin, supporting various biochemical activities in skin cells. It enhances the skin's moisturizing properties, mitigates surfactant-induced damage, boosts the renewal rate of the stratum corneum, and improves skin firmness, hardness, stickiness, chewiness, and overall acceptability of these products.

### Animal Husbandry and Feed Industry Applications

Yeast  $\beta$ -1,3-glucan serves as an excellent natural immune enhancer, boosting both non-specific and specific immune responses in the body. The development and utilization of immune enhancers to amplify vaccine effects are crucial for enhancing animal health, and they are widely employed in animal breeding and the feed industry. Research has demonstrated that intraperitoneal injection of soluble yeast  $\beta$ -1,3-glucan in carp significantly enhances their specific and non-specific immune functions. When used as an antibiotic alternative in the dietary feeding of pigs, chickens, and other livestock and poultry,  $\beta$ -1,3-glucan notably improves humoral and cellular immunity, promoting animal growth and enhancing feed value, hardness, stickiness, chewiness, and overall acceptability of these products.

Various polysaccharide drugs, including  $\beta$ -1,3-glucan, have been increasingly used in clinical treatments for a range of conditions. These drugs primarily target anti-infection, anti-tumor, anti-rheumatism, anti-peptic ulcer, and immune function enhancement. Derived soluble  $\beta$ -1,3-glucan exhibits potent antiviral properties against avian influenza, making it a promising treatment or preventive measure against this disease.  $\beta$ -1,3-glucan induces macrophages to produce interleukin-2 and nitric oxide, thereby enhancing immunity. It also demonstrates strong inhibitory activity against cancer cell proliferation, making it a valuable tool in medicine for preventing and treating immunodeficiency, cancer, and other conditions.  $\beta$ -1,3-D-glucan has shown significant preventive or therapeutic effects on various gastric ulcer models, including water immersion stress, ethanol or aspirin-induced damage, pyloric ligation, and acetic acid-induced corrosion.

## Pharmaceutical Applications

$\beta$ -dextran holds vast potential in drug-related research, serving not only as a tumor immunotherapy agent and vaccine adjuvant for immune enhancement but also exhibiting diagnostic value in fungal infections.

In the realm of tumor immunotherapy,  $\beta$ -dextran recognizes iC3b on tumor surfaces, triggering cytotoxic reactions. It amplifies vaccine effects, reinvigorates tumor-suppressed immune cells, and regulates tumor-related gene expression, all contributing to its antitumor properties.

As a vaccine adjuvant,  $\beta$ -dextran is recognized by immune cells, igniting immune responses and elevating immune sensitivity and antibody production. This, in turn, elevates vaccine immunogenicity.  $\beta$ -dextran microparticles effectively encapsulate vaccine antigens, maintaining robust immunostimulatory activity.



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