

Organic Stachyose Powder



What is Organic Stachyose Powder?

Organic Stachyose occupies a distinctive position in the prebiotic landscape due to its unique tetrasaccharide structure and dual prebiotic mechanism. Unlike disaccharide prebiotics such as FOS or GOS, stachyose is a tetrasaccharide — four monosaccharide units linked together — which confers two functionally distinct advantages. First, its larger molecular size means it is entirely resistant to salivary and gastric digestion, arriving intact in the colon where resident bacteria ferment it. Second, this structural specificity translates into a selectively bifidogenic fermentation profile: stachyose is preferentially metabolized by Bifidobacteria and Lactobacilli — the two genera most strongly associated with clinical gut health outcomes — rather than producing broad-spectrum fermentation that generates gas and gastrointestinal discomfort.

ORGANICWAY's Organic Stachyose is extracted from organic Stachys Floridana and non-GMO soybeans using hot water extraction followed by ion exchange chromatography purification, yielding a white crystalline powder with a purity of $\geq 95\%$ (HPLC tested), customizable from 90–98% for specific application requirements. Its exceptional heat stability — stable up to 160°C — distinguishes it from most other commercial prebiotics and enables its use in high-temperature processed foods such as baked goods, pasteurized functional beverages, and extruded snack products, where most heat-labile prebiotics would degrade. The mineral absorption benefit adds a second clinically relevant dimension: stachyose

fermentation in the colon produces short-chain fatty acids that lower colonic pH, converting mineral salts to more bioavailable forms and increasing calcium and magnesium absorption by 15-20% — a finding with direct implications for bone health, osteoporosis prevention, and children's nutrition.

The neutral taste profile of stachyose is a significant formulation advantage: unlike some prebiotics that introduce bitter, metallic, or off-flavor notes, stachyose is essentially tasteless at effective doses, allowing it to function invisibly in finished products without competing with or masking the flavor profile of the base food or beverage.

PHYSICAL & CHEMICAL SPECIFICATIONS

Product Specifications

Parameter	Value
Appearance	White crystalline powder
Botanical Source	Stachys Floridana / non-GMO soybeans
Extraction	Hot water extraction, ion exchange purification
Stachyose Purity	≥95% (HPLC); customizable 90-98%
Solubility	≥98% in water
Moisture	≤5.0%
Particle Size	80-120 mesh
pH Stability	Stable at pH 2.0-8.0
Heat Stability	Stable up to 160°C
Caloric Value	~2 kcal/g
Taste	Neutral
Shelf Life	24 months

Application Matrix

Application	Suitability	Notes
Prebiotic capsules and tablets	Excellent	Low-dose efficacy; neutral taste; powder form ideal
Chewable tablets (children/elderly)	Excellent	Neutral taste; safe and gentle
Synbiotic formulations	Excellent	Natural complement to Bifidobacterium and Lactobacillus strains
Prebiotic bars and granola	Excellent	Heat stable through baking process up to 160°C
Greek yogurt and dairy	Excellent	Disperses without texture disruption
Functional beverages	Excellent	Soluble, pH-stable in acidic drinks
Baked goods and cookies	Excellent	Survives high-temperature baking; neutral flavor
Plant-based protein powders	Good	Neutral taste; compatible with plant protein profiles
Infant formula and baby food	Excellent	Breast milk-like prebiotic profile; FDA GRAS compliant
Bone health formulations	Excellent	Calcium and magnesium absorption synergy
Elderly nutrition products	Excellent	Gentle low-dose efficacy; no GI discomfort

MICROBIOLOGICAL & CONTAMINANT STANDARDS

Test	Specification
Total Plate Count	≤1,000 cfu/g
Yeast & Mold	≤100 cfu/g
E. coli	Negative / g
Salmonella	Negative / 25g
Heavy Metals (Pb)	<0.1 mg/kg (ppm)
Arsenic (As)	<0.05 mg/kg (ppm)
Pesticide Residues	Below EU ML / USDA-NOP limits
Allergens	Allergen-free
Gluten	<20 ppm

All batches tested and released against specifications. CofA available with every shipment.

CERTIFICATIONS

Certification	Status
USDA Organic	Yes
EU Organic (834/2007)	Yes
Non-GMO Project Verified	Yes
Kosher	Available
Halal	Available
FSSC 22000	Available

Certification	Status
FDA GRAS	Yes
EFSA Novel Food Compliant	Yes
China NHFPC Compliant	Yes
Vegan	Yes
Gluten-Free	Yes
Allergen-Free	Yes

APPLICATIONS & FORMULATION TIPS

Key Functional Benefits

Organic Stachyose's three most significant functional advantages are microbiome selectivity, mineral absorption enhancement, and exceptional heat stability. The microbiome selectivity — preferential metabolism by Bifidobacteria and Lactobacilli — is the foundational clinical benefit: these two genera are among the most consistently associated with measurable gut health outcomes, including reduced infection risk, improved vaccine response, reduced allergy incidence in infants, and enhanced mood and cognitive markers via the gut-brain axis. Unlike FOS, which ferments broadly across the gut microbiota and produces gas and bloating as byproducts of non-selective fermentation, stachyose's selective fermentation profile minimizes gastrointestinal side effects at effective doses — a critical compliance factor for daily-use supplements and children's products.

The mineral absorption enhancement — a 15-20% improvement in calcium and magnesium bioavailability — adds a second clinically validated dimension that few prebiotics can match. This benefit is particularly relevant for bone health products targeting postmenopausal women, adolescents, and older adults, as well as children's nutrition formulations where mineral bioavailability during growth phases is paramount.

The heat stability advantage — stable up to 160°C — sets stachyose apart from most other prebiotic oligosaccharides. GOS, for example, degrades significantly above 70-80°C; inulin loses structural integrity above 100°C. Stachyose's thermal resilience enables it to survive baking, pasteurization, and extrusion processes that would destroy competing prebiotics, opening applications in baked goods, shelf-stable

functional beverages, and extruded snack products that are simply not viable with heat-labile alternatives.

Formulation Guidance

The 3-5 g/day effective dose for adults — with a recommended starting dose of 1 g/day for tolerance assessment — means stachyose is ideally suited to capsule and tablet formats where small-volume dosing is natural. For synbiotic formulations, stachyose's natural biochemical complementarity with *Bifidobacterium infantis*, *B. longum*, and *Lactobacillus rhamnosus* GG creates a synergistic combination that outperforms either ingredient alone in clinical outcomes. For bone health applications, combining stachyose with calcium citrate or calcium hydroxyapatite and vitamin D3 creates a three-way synergy: stachyose improves mineral absorption in the colon, vitamin D3 enhances calcium transport in the small intestine, and the SCFA produced by stachyose fermentation further mobilizes calcium for bone mineralization. The neutral taste and exceptional water solubility simplify incorporation into liquid and semi-solid formats; the heat stability above 160°C enables use in baked goods where most prebiotics would degrade. Stachyose is classified as a soluble dietary fiber for labeling purposes in most markets including the US (FDA), EU (EFSA), and China (GB standards).

FAQ

Q: What is the botanical source of organic stachyose, and how is it extracted?

A: Organic Stachyose is extracted from the roots of *Stachys Floridana* (also known as *Stachys sieboldii* or Chinese artichoke) and from non-GMO organic soybeans, both certified to USDA Organic and EU Organic standards. The extraction process uses hot water extraction followed by ion exchange chromatography purification — a clean, sustainable process that uses no synthetic solvents. The result is a white crystalline powder with $\geq 95\%$ stachyose purity as measured by HPLC, with the option to customize purity to 90% or 98% depending on the application requirement. Non-GMO verification is maintained throughout the supply chain, which is particularly important for infant nutrition and dietary supplement applications where GMO status is a consumer concern.

Q: How does stachyose's heat stability compare to other prebiotics, and why does it matter?

A: Stachyose is stable up to 160°C — one of the highest thermal tolerances among commercial prebiotics. This compares to GOS, which degrades significantly above 70-80°C; inulin, which loses structural integrity above 100°C; and FOS, which is heat-stable to approximately 120°C but still more

susceptible to degradation in high-temperature applications. The practical consequence of stachyose's 160°C tolerance is that it can survive pasteurization, hot-fill beverage processes, baking, and extrusion without significant degradation. This opens applications that are simply not viable with heat-labile prebiotics: granola bars and cookies where the prebiotic survives baking, pasteurized functional beverages where the ingredient survives hot-fill processing, and extruded snacks where the prebiotic remains active through the extrusion barrel's high temperature and pressure.

Q: How does stachyose improve mineral absorption, and is there clinical evidence?

A: Stachyose fermentation in the colon produces short-chain fatty acids (primarily acetate, propionate, and butyrate), which lower the colonic pH. This more acidic environment converts mineral salts such as calcium phosphate and magnesium salts from their relatively insoluble forms to more bioavailable ionized forms that are more readily absorbed across the colonic mucosa. Multiple animal and human studies have demonstrated 15-20% improvements in calcium and magnesium balance with stachyose supplementation, particularly under conditions of low dietary mineral intake. This makes stachyose particularly relevant for bone health formulations targeting postmenopausal women and older adults, for children's nutrition where calcium bioavailability during growth phases is critical, and for populations with lactose intolerance or dairy-free diets who may already have marginal mineral intake.

Q: Why is stachyose particularly suitable for infant nutrition and baby food formulations?

A: Stachyose is one of the most abundant oligosaccharides naturally present in human breast milk, along with its structural relative raffinose and the human milk oligosaccharide family. Its prebiotic profile — selectively promoting bifidobacteria and lactobacillus colonization in the infant gut — mirrors the gut microbiota composition that pediatric research associates with healthy infant development, immune maturation, and allergy risk reduction. Stachyose's inclusion in infant formula and follow-on formula is supported by its FDA GRAS status, EFSA novel food compliance, and China NHFPC regulatory approval. The ingredient is allergen-free, non-GMO, and certified organic, meeting the full suite of regulatory and quality standards required for infant nutrition. Its gentle low-dose efficacy (1-3 g/day for infants) and excellent digestive tolerance further support its suitability for this sensitive application.

Q: How does stachyose's digestive tolerance compare to FOS and other oligosaccharide prebiotics?

A: Stachyose's prebiotic selectivity — preferential metabolism by bifidobacteria and lactobacilli rather than broad-spectrum fermentation — results in significantly lower gas production and gastrointestinal discomfort compared to FOS at equivalent prebiotic doses. FOS's non-selective fermentation by a wide range of colonic bacteria produces hydrogen, carbon dioxide, and methane as byproducts, causing bloating and flatulence that limit its use in high doses and in sensitive populations such as children and individuals with functional gut disorders. Stachyose's selective fermentation profile means that effective prebiotic doses (3-5 g/day for adults) are achieved with minimal gas production and without the osmotic diarrhea risk that constrains sorbitol and other polyol use. This makes stachyose particularly suitable for daily-use products, children's supplements, and elderly nutrition where digestive tolerance is a primary formulation constraint.

Q: What is the minimum order quantity and lead time?

A: 1 kg free sample with full CofA is available for qualifying buyers (FEDEX/UPS/EMS). Commercial orders start at 25 kg. Private label orders require 100 kg minimum. Custom purity (90% or 98%) and carrier agent blending are available for qualifying volumes. Lead time: 10-20 working days from order confirmation. Standard packaging: 25 kg kraft paper bags (powder). Custom packaging including fiber drums, IBC super sacks, and branded private label packaging available. Available incoterms: DAP, DDP, FOB Qingdao or Tianjin. Acceptable payment terms: T/T, L/C, D/P, D/A. Documentation package includes CofA, organic certificate, non-GMO certificate, GRAS documentation, MSDS, and TDS with every shipment.

PACKAGING & STORAGE



Packaging

Format	Standard Packaging	Custom Options
Stachyose Powder	25 kg kraft paper bags	5 / 10 / 20 kg bags; fiber drums; IBC super sacks; branded packaging for private label

Storage Conditions

Parameter	Value
Temperature	Cool, dry place; ≤25°C recommended
Humidity	<60% RH
Light	Avoid direct sunlight
Odor	Store away from strong odors
Shelf Life (sealed)	24 months
Opened Packaging	Use within 6 months; reseal tightly after each opening

For more information, please visit our website:

<https://www.organic-way.com/products/organic-stachyose-powder/>