Mannooligosaccharides

Our **mannooligosaccharides (MOS)** are short-chain oligosaccharides composed primarily of mannose units, produced through controlled enzymatic hydrolysis of **glucomannan** sourced from **konjac root (Amorphophallus konjac)** or **locust bean gum (carob)**. With ≥85% MOS content (dry basis), this soluble fiber acts as a **non-digestible prebiotic** that supports gut microbiota balance and exhibits unique **anti-adhesion properties** against harmful bacteria such as *Salmonella* and *E. coli*.

Unlike fermentable fibers like FOS or GOS, MOS works primarily in the upper GI tract by binding to lectin receptors on pathogenic microbes—preventing their colonization and promoting natural clearance. This dual mechanism makes MOS valuable in both human nutrition and premium animal feed applications.

What Is MOS?

Mannooligosaccharides are derived from mannans—natural polysaccharides found in plant cell walls. Our **MOS powder** is manufactured using food-grade endo-β-mannanase enzymes under mild conditions, followed by ultrafiltration and spray-drying—without acid, alkali, solvents, or synthetic additives.

We offer two botanical sources to meet formulation and labeling needs:

- **Konjac-based MOS**: High purity, neutral taste, ideal for human supplements
- **Locust Bean (Carob)-based MOS**: Traditional source, widely accepted in pet nutrition

Both are certified non-GMO, and free from common allergens.

Key Functional & Health Benefits

- **Pathogen exclusion**: Binds type-1 fimbriated bacteria via mannose-specific adhesion
- **Prebiotic support**: Indirectly promotes beneficial flora by reducing pathogen load
- **Immune modulation**: Enhances gut-associated lymphoid tissue (GALT) activity
- **High stability**: Resists heat, pH changes, and digestion—effective throughout GI tract
- **Low fermentation**: Minimal gas production vs. other prebiotics (reduced bloating risk)
- **Non-caloric & non-glycemic**: Suitable for diabetic, keto, and low-FODMAP diets

> Note: MOS is not significantly fermented by colonic bacteria, making it distinct from traditional prebiotics like inulin—but highly complementary in synbiotic formulations.

Technical Specifications

Parameter	MOS Powder
Source Options	Konjac glucomannan OR locust bean gum
Appearance	White to light beige free-flowing powder
Odor & Taste	Odorless; very mild, slightly earthy
Total Mannooligosaccharides (MOS)	≥85% (dry basis, HPLC/HPAEC-PAD)
Degree of Polymerization (DP)	DP2–DP10 (mainly DP2–DP6)
Moisture Content	≤6.0%
pH (5% solution)	5.0 – 7.0
Bulk Density	0.45 – 0.65 g/mL
Solubility	>90% in warm water (≥50°C); forms clear to slightly hazy solution

Parameter	MOS Powder
Ash Content	≤2.0%
Residual Protein	≤1.0%
Shelf Life	24 months (stored sealed in cool, dry place)
Heavy Metals (Maximum Limits)	
– Lead (Pb)	≤0.5 mg/kg
– Arsenic (As)	≤0.5 mg/kg
– Cadmium (Cd)	≤0.1 mg/kg
– Mercury (Hg)	≤0.03 mg/kg
Microbiological Criteria	
– Total Plate Count	≤10,000 CFU/g
– Yeast & Mold	≤100 CFU/g
– *Escherichia coli*	Absent in 1 g
– *Salmonella* spp.	Absent in 25 g
– *Listeria monocytogenes*	Absent in 25 g
Allergen Status	Gluten-Free (<5 ppm), Soy-Free, Dairy-Free, Nut-Free

Analytical methods: HPAEC-PAD or HPLC with RI/ELSD detection per ISO 22179. Complies with FDA GRAS principles, EU Feed Additive regulations (for animal use), and Codex guidelines for dietary fiber.

Applications

Human Nutrition

- **Dietary Supplements**: Standalone MOS or combined with probiotics (synbiotics) for gut-immune support
- **Functional Foods**: Added to bars, cereals, and beverages for “immune health” claims
- **Medical Nutrition**: Used in enteral formulas for patients with dysbiosis or infection risk
- **Low-FODMAP Products**: Well-tolerated alternative to high-fermentation fibers

Animal & Pet Nutrition

- **Pet Food (dogs/cats)**: Enhances stool quality, reduces pathogens, supports immunity
- **Livestock Feed**: Natural alternative to antibiotics in poultry, swine, and aquaculture
- **Equine & Ruminant Diets**: Improves hindgut health without disrupting fermentation

Why Choose Our MOS?

We partner with certified farms and GMP-compliant bioprocessing facilities to ensure traceability, purity, and efficacy. Our enzymatic process preserves the bioactive structure of MOS while eliminating residual polysaccharides that could affect solubility or functionality.

Available packaging:

- 10 kg or 25 kg multi-wall paper bags with food-grade PE liner
- 500 kg–1,000 kg FIBCs for industrial users
- Custom packaging available upon request

FAQs

Q: How does Mannooligosaccharides (MOS) differ from other prebiotics like FOS or GOS?

A: While FOS (Fructooligosaccharides) and GOS (Galactooligosaccharides) primarily act as fuel for beneficial bacteria, **MOS** has a unique dual mechanism. In addition to being a prebiotic, its specific molecular structure allows it to bind to certain harmful bacteria in the gut, aiding in their removal and contributing to a healthier gut environment. MOS also has a more direct impact on immune modulation.

Q: Is MOS heat stable for various food processing methods?

A: Yes, **MOS** is generally stable under typical food processing conditions, including heat. Its structure allows it to maintain its beneficial properties in a wide range of applications, from baking to beverage

pasteurization.

Q: What's the typical shelf life and recommended storage for bulk quantities?

A: Our **Mannooligosaccharides (MOS)** typically has a shelf life of **24 months** from the manufacturing date when stored in a cool, dry place (below 75°F / 24°C), away from direct sunlight and moisture, in its original sealed, airtight packaging.

Q: Is your MOS derived from a gluten-containing source?

A: No, our **MOS** is derived from the cell walls of *Saccharomyces cerevisiae* yeast, which is naturally **gluten-free**. This makes it an excellent choice for gluten-free product formulations.

Q: Can MOS be combined with probiotics in formulations?

A: Absolutely. **MOS** can be synergistically combined with probiotics to create **synbiotic products**. This combination provides both the beneficial bacteria (probiotics) and the selective fuel (prebiotic MOS) they need to thrive, leading to enhanced gut health benefits.

Packing

For more information, please visit our website:

https://www.bio-starch.com/products/mannooligosaccharides/