

TYPES OF PREBIOTICS

GPA defines a prebiotic as ‘**a compound or ingredient that is utilized by the microbiota, producing a health or performance benefit.**’

And prebiotic effect, which is dose-dependent, is defined as ‘**a health or performance benefit that arises from alteration of the composition and/or activity of the microbiota, as a direct or indirect result of the utilization of a specific and well-defined compound or ingredient by microorganisms.**’

Prebiotic types refer to the scientific classification of prebiotics and prebiotic candidates based on the level of evidence supporting their prebiotic activity and health effects.

Recognized Examples*:

Established Prebiotics

Inulin/FOS GOS Acacia fiber HMOs PHGG Resistant starch (RS2, RS3) Resistant dextrin Xylans

Novel Prebiotics

Polyphenols**

Omega-3 fatty acids

Other monosaccharides (e.g., tagatose) & polysaccharides (e.g., lactulose, beta-glucan, pectin)

Emerging Candidates***

Amino acids, yeast hydrolysates, and specific bioactives in herbal and botanical extracts

Established Prebiotics

Prebiotic Type	Dosing Reference	Source
Inulin	Dose range: 5–20 g/day Effective dose: 5–10 g/day Timeframe: 4–12 weeks	Inulins are a group of naturally occurring polysaccharides produced by many types of plants, industrially most often extracted from chicory. The inulins belong to a class of dietary fibers known as fructans. Inulin is used by some plants as a means of storing energy and is typically found in roots or rhizomes.
FOS (Fructooligosaccharides)	Dose range: 2.5–15 g/day Effective dose: 5–10 g/day Timeframe: 2–4 weeks	Perennial plants such as artichokes, chicory, onions, leeks, garlic, asparagus, and yacon, as well as cereals and honey. Industrial production using enzymatic synthesis.
GOS (Galactooligosaccharides)	Dose range: 1.3–30 g/day Effective dose: 5–15 g/day for bifidogenic effects Timeframe: 3–12 weeks	Dairy products, legumes, and root vegetables. Manufacturing methods include natural extraction, polysaccharide hydrolysis, chemical synthesis, and enzymatic synthesis.
Acacia Fiber	Dose range: 10–30 g/day Effective dose: 10 g/day Timeframe: 4 weeks	Obtained naturally as a dried gummy exudate from incising the stems and stem branches of the <i>A. senegal</i> and <i>A. seyal</i> trees commonly found in Sudan, Chad, and Nigeria.
HMOs (Human Milk Oligosaccharides)	Dose range: 5–20 g/day Effective dose: 5–10 g/day Timeframe: 4–12 weeks	Natural component in human milk. Commercial production using chemical and enzymatic synthesis along with fermentation.
PHGG (Partially Hydrolyzed Guar Gum)	Dose range: 3–15 g/day Effective dose: 5–10 g/day Timeframe: 4–12 weeks	They are commonly found in gluten-free products, but previously have not typically been purchased on their own in supplemental form. They are now more commonly available alongside gluten-free baking flours to be utilized in at-home food preparation.
Resistant Starch	RS2 (Type 2: e.g., raw potato starch, high-amylose maize, green banana) Dose range: 2–22 g/day Effective dose: ~20 g/day Timeframe: 4–12 weeks	Found in natural and processed starchy foods in variable quantities, including whole grains and raw starches like green bananas, raw potatoes, legumes, and cooked and cooled starchy foods.
Resistant Dextrin	Dose range: 5–20 g/day Effective dose: 10–14 g/day Timeframe: 2–8 weeks	Derived from corn.
Xylans (Arabinoxylans / AX)	Dose range: 3–15 g/day Effective dose: 7.5–15 g/day Timeframe: 7 days–12 weeks	Arabinoxylans are naturally concentrated in the bran layers of cereal grains, with wheat bran as the richest source, followed by rye, barley, and oat. The prebiotic-active form found in supplements is produced through enzymatic hydrolysis of wheat bran.

Novel Prebiotics

Prebiotic Type	Polyphenol Type	Dosing Reference	Source
Polyphenols	Pomegranate extract	Dose range: ~320 mg phenolics/day Timeframe: 4 weeks	Fruits, vegetables, cereals, olives, legumes, cocoa, tea, coffee, wine, beer, and grape pomace.
	Camu-camu extract	Dose range: 1.5 g/day Timeframe: 12 weeks	
	Mixed phenolics (meta-analysis)	Dose range: ~452 mg/day avg Timeframe: ~5 weeks avg	
	Elderberry anthocyanins	Dose range: 720 mg/day Timeframe: NR	
	Tannins (hydrolysable)	Dose range: 480 mg/day Timeframe: 8 weeks	

Prebiotic Type		Dosing Reference	Source
Omega-3 Fatty Acids		Dose range: 500 mg–4 g/day EPA+DHA Effective dose: 500 mg–4 g/day Timeframe: 6–12 weeks	From fish sources and algae.
Other Monosaccharides and Polysaccharides	Tagatose	Dose range: 7.5–15 g/day Effective dose: 7.5–12.5 g/day Timeframe: 2–4 weeks	Tagatose is naturally found in fruit, grain, sterilized milk products and cheese. It can also be industrially produced using enzymatic synthesis.
	Lactulose	Dose range: 2–20 g/day Effective dose: 2–10 g/day Timeframe: 3 days–6 weeks	Commercially,lactulose is produced through a process involving the alkaline isomerization of glucose into fructose. Lactulose can also be formed in mammalian milk during ultra-high temperature processing.
	Beta-Glucan	Dose range: 3–12 g/day Effective dose: ≥3 g/day for cholesterol and glycemic effects; immune endpoint evidence at much lower doses (~100-500 mg/day) Timeframe: 4–12 weeks	Beta-glucans are found in baker's yeast, oat bran, barley, and some mushrooms such as shiitake.
	Pectin	Dose range: 0.1–50 g/day; A specific pectin fraction, cRG-I, has demonstrated an effect at substantially lower doses (0.3–1.5 g/day) over 8 weeks in healthy adults. This data is not generalizable to standard commercial pectin. Timeframe: 4 weeks	Pectin is naturally found in some fruits and vegetables in small amounts. Apples are a fruit that is particularly rich in pectin.