

Prebiotics Comparison

Ingredients	Inulin	Fructo-Oligosaccharides (FOS)	Galacto-Oligosaccharides (GOS)	Xylo-Oligosaccharides (XOS)	Isomaltooligosaccharide (IMO)	Gluco-oligosaccharide (GLS)
Source	Inulin is present in roots, rhizomes, vegetables, fruits, and cereals, including leek, onion, garlic, wheat, chicory (Miremadi & Shah, 2012).	Fructo-oligosaccharides (FOS) are derived from chicory root and are of vegetable origin.	Synthesized from lactose by enzymatic transgalactosylation using β -galactosidases (Parmjit & Satwinder, 2013).	XOS are sugar oligomers made up of xylose units and are present naturally in bamboo shoots, fruits, vegetables, milk and honey (Brar et al., 2013).	Isomaltooligosaccharides which are known as prebiotic branched oligosaccharides have been synthesized from starch (Premsuda et al., 2012).	Glucooligosaccharides are synthesized by the action of enzyme dextran sucrose in the presence of maltose (Gibson & Roberfroid, 2008).
Taste	Only about 10% sweetness of sucrose.	Sweetness is about 30 to 50% of sucrose (Miremadi & Shah, 2012). Synergy with intense sweeteners.	40% sweetness than that of sucrose (Parmjit & Satwinder, 2013).	The sweetness of xyloboise is equivalent to 30% that of sucrose. (Brar et al., 2013).	IMOs are about 60-70% sweetness of sucrose (FDA, 2005).	The β -glucooligosaccharide also has an appropriate bitter taste. The reduced product thereof loses the bitter taste to render a good and mild sweet taste (Okada et al., 1993).

Technological Properties	<ul style="list-style-type: none"> • Fat replacer contributing body and mouthfeel • Gelling capacity (at high concentration) • Foam and emulsion stabilization (Gibson & Roberfroid, 2013). 	<ul style="list-style-type: none"> • Sugar replacement • Moisture retention/humectant (Gibson & Roberfroid, 2013). 	<ul style="list-style-type: none"> • Sugar replacement Moisture retention/humectant (Gibson & Roberfroid, 2013).	<ul style="list-style-type: none"> • Reinforcement agent (GRAS, 2013). 	<ul style="list-style-type: none"> • Sugar replacement (FDA, 2005). 	-
Recommended Consumption Level	Studies have suggested that up to 70 grams of inulin per day (FDA, 2003).	Ingestion of 20 g oligofructose/day did not affect the cytolytic activity of fecal water and had no significant effect on intestinal permeability (FDA, 2011).	Studies showed GOS is safely consumed by adults up to 10g/day without showing gastrointestinal intolerance (FDA, 2013).	Human clinical trials reported that intakes of XOS up to 12 g per day were well tolerated without adverse events (GRAS, 2013).	It has been reported in clinical trials that IMO do not cause any GI upset when consumed up to 10-20 g/day. Generally, IMO has been reported to be safe up to 30g/day per adult individual (FDA, 2005).	-

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