



BioNeutra™

Pioneer in Multifunctional Oligosaccharides

Prebiotic Fiber Sweetener
VitaFiber™

VitaFiber™-IMO - A product with “Three-in-One” Health Functionality

VitaFiber™-IMO is a soluble Dietary Fiber, a Prebiotic and a Low-Calorie Sweetener.

It is naturally rich in fiber (>90%), sweet and pleasant taste profile and has minimal caloric impact (2kcal/g).

Health Benefits of VitaFiber™-IMO

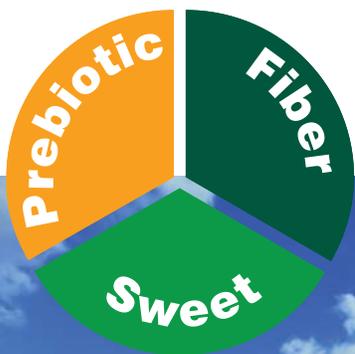
- Source of soluble dietary fiber
- Helps bolster the intestinal beneficial bacteria (Probiotic)
- Low caloric value
- Reduced glycemc response
- Satiety and bulking effects
- Helps maintain healthy Cholesterol level
- Helps improve mineral absorption
- Helps prevent constipation
- Improves overall digestive health



VitaFiber™-IMO is a mixture of short-chain carbohydrates made of glucose molecules which are linked with each other through a digestion resistant bonding. VitaFiber™-IMO is a high quality, high-purity isomalto-oligosaccharide (IMO), made from enzymatic conversion of starch. It functions as a dietary fiber, prebiotic and low-calorie sweetener.

Physical Attributes

- Moisture retaining
- Synergy with high-intensity sweeteners
- Heat stable; good for baking
- Stable at acidic pH, excellent for beverages
- Shear-resistant
- Excellent binding source – good for energy bars
- Highly soluble, clear in water
- Good mouth-feel, pleasant sweet taste
- Sugar replacement
- Available in high-density syrup or white powder



Technical and Regulatory Features

- FDA (GRAS); GRN-000246
- EFSA Approved
- Health Canada Approved
- Dietary Fiber Designation by Health Canada
- Most tolerated (36-45g/day)
- Total dietary fiber content is >90% (dry-basis)
- Low caloric impact – only 2kcal/g
- Mild sweet taste (60% sweet of sucrose)
- Sugar free; <0.5% simple sugars
- No after-taste and good mouth-feel
- Kosher and Halal certified
- Allergen free
- Non-GMO

Physical & Chemical Properties

Total Carbohydrate:	75% (syrup); 96% (powder)
Total Fiber:	71% (syrup); 91% (powder)
Energy:	1.9kcal/g (syrup); 2.4kcal/g (powder)
Tolerability:	36-45g/day
Solubility:	100% soluble in water/beverages
pH:	Stable at pH 2-9
Temperature:	Stable at baking temperature
Brix° Value:	77%
Viscosity (at 20°C):	7,000-8,000 cps
Water Activity (a_w):	~ 0.75
Appearance:	High density syrup or white powder
Flavor Profile:	Pleasant mouth-feel, no after-taste
Sweetness Intensity:	About 60% sweetness of Sucrose
Color:	Light yellow to colorless





VitaFiber™

Prebiotic Fiber Sweetener

VitaFiber™-IMO Nutritional Information: (Typical per 100g Powder) (US)

	Powder	Syrup
Carbohydrates ¹	96g	75g
Dietary Fiber ² (TDF)	91g	70g
<i>Non-digestible oligos</i>	55g	42g
<i>Digestion-resistant oligos</i>	15g	12g
<i>Digestible oligos</i>	21g	16g
Glucose	<5g	<5g
Protein	0g	0g
Total Fat	0g	0g
Saturated Fats	0g	0g
Trans Fats	0g	0g
Sodium	25mg	19mg
Caloric Value ³	244cal	192cal

¹ Including total dietary fibers.

² Total dietary fiber contents measured for powder is 91% based upon validated HPLC-RI method. When using standard AOAC-2009.01 method, the TDF content of powder is ~ 50%.

³ Based upon general caloric value of 2.0 cal/g for resistant-oligosaccharides and 4.0cal/g for digestible carbohydrates.

Functional Attributes and Product Applications

VitaFiber™ Attributes	VitaFiber™ Functionality	VitaFiber™ Product Applications
Prebiotic/FiberNon-cariogenic	Regularity, stool softener, constipation relief, healthy gut; works well with probiotics (symbiotic)	Gut-health products/supplements; fiber-added cereals; constipation relief (at high IMO levels); dairy; snack foods; baked goods and baking mixes; infant nutrition
Non-cariogenic	Does not promote dental cavities	Children's multi-vitamins (chewable/gummy) and foods; candies; baked goods; snack food; chocolates, sweets, etc.
Increases minerals absorption	Fermentation of IMO results in the lowering of intestinal pH which favours calcium and magnesium absorption in the intestine	Women's and children's supplements and foods; dairy foods/beverages; beverages; cereals, etc.
Increased satiety	Fiber content will increase feelings of fullness and keep consumer feeling full for longer time	Meal-replacement drinks/bars, cereals, beverages; sports bars/beverages; weight management; snack goods
Viscosity	Maintain or increase thickness of a product	Beverages; ice cream; sauces; jams/jellies
Temperature stability	Molecules are stable up to 350°F therefore useful for baking	Baked goods and baking mixes; snack foods; crackers
Browning effect	Millard reaction results in desirable browning of a product during baking or as pH increases	Baked goods and baking mixes; fried goods; beer; snack foods
pH stability	Stable at acidic pH as low as pH=2.0, and won't degrade for extended period of time	Dairy; soft drinks; sports beverages; fruit/vegetable juices
Bulking agent	Reduction of flour and sugar in a formulation while retaining size of product	Baked goods and baking mixes
Fat replacer	Stabilizes water into a creamy structure resulting in the same mouth feel as fat	Baked goods and baking mixes; sauces; meats; crackers
Humectant	Moisture retaining properties in foods	Baked goods and baking mixes; gluten-free baked goods
Natural sweetness (~60% sucrose)	Naturally add to sweetness in sugar-reduced products	Baked goods and baking mixes; beverages; soft drinks; sauces; dairy; jams/jellies; condiments; dressings
Synergy with high intensity sweetener	Masks the astringent flavour of sweeteners	Beverages; soft drinks; baked goods and baking mixes; sauces; dairy; jams/jellies; condiments; dressings

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Summary of Key Benefits Compared to Competitors

- Natural sweetness (~60% as sweet as sucrose)
- Least flatulent (gas production); therefore better tolerated and higher levels of inclusion
- Increased acid stability; stable up to pH 2.0
- Not dependent on single raw material source; can be produced from various starch sources

	VitaFiber™	Orafiti-oligofructose	Oligo-Fiber	Nutraflora
Type:	IMO	FOS	Inulin	FOS
Company	BioNeutra North America	Beneo-Orafiti	Cargill	GTC Nutrition
Non-GMO	✓	✓	✓	✓
Kosher/Halal	✓	✓	✓	✓
Organic available	✓	✓	Unknown	✓
Raw material source	Starch	Inulin	Chicory root	Cane or beet sugar
Functional Attributes:				
Prebiotic	✓	✓	✓	✓
Fiber effect	✓	✓	✓	✓
Tolerability	45g/day	15g/day	10-15g/day	15g/day
Non-cariogenic	✓	✓	✓	✓
Low Glycemic Index	✓	✓	✓	✓
Calories	2.0cal/g	1.5cal/g	1.1-1.3cal/g	1.5cal/g
Assists with weight management	✓	✓	✓	✓
Increases calcium absorption	✓	✓	✓	✓
Increases satiety	✓	✓	✓	✓
Process Attributes:				
Form (Syrup:S / Powder:P)	S/P	S/P	P/S	P
Adds texture	✓	✓	✓	✓
Pleasant mouth feel	✓	✓	✓	✓
Viscosity	7,000-8,000 cps.	?	?	N/A
Temperature stability	~350°F	✓	✓	✓
Browning effect	✓	✓	?	✗
pH stability	pH 2-9	pH 4-13	pH 4-up	pH 4-13
Shelf life (days)	powder: 36 mo. syrup: 24 mo.	24 mo.	24 mo.	24 mo.
Bulking agent	✓	✓	✓	✓
Fat replacer	✓	✓	✓	✓
Humectant	✓	✓	?	✓
Natural sweetness	~60% of sucrose	30% of sucrose	0-10% of sucrose	30% of sucrose
Synergy with high intensity sweet	✓	✓	✓	✓
Flavor enhancement	✓	✓	✓	✓