

HOW TO ACT ON DIGESTIVE DISORDERS WITH FIBREGUM™?

FODMAPs and digestive disorders.

MARKET INSIGHTS

Every day, 70 million people are suffering from some digestive discomforts¹. A low-FODMAP diet is scientifically proven to be the most effective dietary therapy for people with symptoms of Irritable Bowel Syndrome (IBS) that affects 10 % to 15 % of the population across the world². To prevent those digestive troubles, people have to avoid foods containing high level of FODMAPs.

The FODMAP-friendly products is a growing category on the market. Up to 86 % people having IBS find a significant improvement in their conditions with the implementation of the low-FODMAP diet³. Therefore, consumers with digestive troubles are looking for low in, or FODMAP-free products. The FODMAP diet is a new Food & Beverage market opportunity, often associated with gluten free and free from all trends. According to Innova Market Insights, the launches of FODMAP friendly products have risen by 35 % in the US from 2015 to 2016 YTD. And the main category claiming FODMAP-free is the bakery with 30 % of the new product launches.

In Brazil, according to Innova, 1,150 new products were launched on the bakery category during the last 12 months. In terms of positioning, the most common claims concern the convenience and the free-from and allergen-free. Therefore, we could hypothesize that the next trend would be the low-FODMAP bakery products.

WHAT ARE THE HIGH IN FODMAP FOOD?

The word FODMAP is an acronym that stands for: Fermentable, Oligosaccharides, Disaccharides, Monosaccharides, And, Polyols. The food ingredients high in FODMAPs are listed in this table:

FERMENTABLE	Sugar referred	Where we can find them (non-exhaustive list)
OLIGOSACCHARIDES	FOS (fructo-oligosaccharides) GOS (galacto-oligosaccharides) Inulin	Wheat, barley, rye, onions, leeks, garlic, shallot, artichoke, chicory, fennel, peas, beetroot, pistachio, cashew nut, legumes, lentils, chickpeas
DISACCHARIDES	Lactose	Cow's/goat's/sheep's milk, certain cheeses
MONOSACCHARIDES	Fructose (when fructose/ glucose>1)	Apple, pear, mango, cherry, watermelon, asparagus, white sugar, honey, glucose-fructose syrup, agave syrup
AND POLYOLS	Sorbitol, mannitol, maltitol & xylitol	Apple, pear, apricot, cherry, nectarine, peach, plum, watermelon, mushrooms, cauliflower, chewing-gums and diverse confectioneries, snow pea, pumpkin

FODMAPs are short-chain carbohydrates, poorly absorbed in the gastrointestinal tract. FODMAPs are easily and quickly fermented by gut bacteria causing IBS manifestations (gas, bloating, discomfort, etc.).

Fibregum™

WHAT IS FIBREGUM™?

Nexira is the world leader in acacia gum with more than 120 years of experience in this ingredient. Fibregum™ is the branded acacia fiber range. It is an **all-natural, GMO-free** source of soluble dietary fiber. Fibregum™ is available in **organic** grade. Obtained from carefully selected acacia gum sap exuded from the stems and branches of acacia

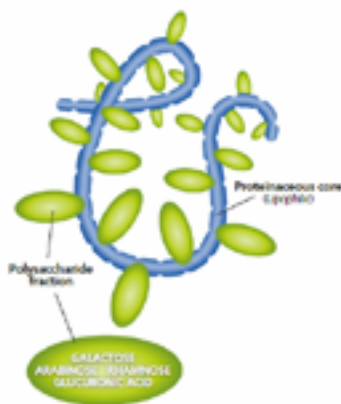


trees, Fibregum™ is 100 % vegetable origin. All these characteristics make Fibregum™ an ingredient of choice for clean label products.

Fibregum™ offers a guaranteed minimum of 90 % soluble fiber on a dry weight basis, using the traditional testing method AOAC 985.29. It is a non-digestible, high molecular weight polysaccharide.

It is composed of a proteinaceous core and associated polysaccharidic fractions. It is made up of neutral sugars and uronic acids (95 % of the dry matter), protein (1% to 2% (depending on the species), polyphenols (catechins, epicatechins, etc.), and minerals (magnesium, potassium, calcium, sodium). It has a very complex structure with an average molecular weight varying from 300 to 800 kDa.

Fibregum™ molecule:
a highly branched polysaccharide
without fructose



FIBREGUM™ THE HIGHLY TOLERATED ACACIA FIBER

Thanks to its very complex structure, Fibregum™ is gradually fermented from transverse colon to descending colon without generating discomforts. Its **high digestive tolerance** makes it the ideal fiber for people avoiding FODMAPs.

Fibregum™ is the **natural solution** to improve your bakery products in terms of nutritional and well-being benefits. Several studies conducted on Fibregum™ highlighted its digestive and gut health properties such as a **prebiotic effect** at the dose of 5-10g/day, a **great digestive tolerance** up to 50g/day and

a unique and specific fermentation pattern producing preferably the **beneficial Short Chain Fatty Acids** (SCFAs) propionate and butyrate.

FIBREGUM™ THE INGREDIENT OF CHOICE FOR BAKERY

Adding fibers to food products means that industrialists will face new formulation challenges in terms of taste, texture, stability, shelf-life and digestive comfort.

Fibregum™ developed by Nexira offers great technical and functional benefits: odorless, colorless and flavorless. This all-natural source of soluble dietary fiber has low viscosity and low hygroscopicity. Plus, Fibregum™ allows high fiber claims without digestive discomfort.



ture stability (1 to 4%) for whole grain products.

- Reduces oil pick up in fried products.

To summarize, Fibregum™ improves shelf life and preserves sensory quality thanks to moisture regulation. For gluten-free & whole grain dough, with a 1-4 % dosage, Fibregum™ acts as a texturizer and moisture stabilizer.



ABOUT NEXIRA

Nexira is a global supplier of natural innovative ingredients for the food, nutrition and health industries. With more than 120 years of experience, Nexira built its reputation as the world leader in acacia gum. Now, Nexira manufactures in France a wide range of natural and organic ingredients with recognized health benefits and scientific support, perfectly suitable for the formulation of clean label products. Its portfolio includes highly functional and nutritional ingredients, antioxidants and active botanicals for weight management, anti-stress, sports nutrition, digestive health and cardiovascular health.

APPLICATIONS

Pizza, pie crust
Tortillas, wraps, tortilla chips, pita chips
Crackers, wafers
Breads, flat breads, bagels, brioches, rolls
Crisp breads, toasts
Muffins, cookies, cakes, sweet baked goods
Whole grain dough

With its high solubility and a great stability to extreme process, Fibregum™ has already been successfully formulated in a wide selection of foods and beverages applications, such as doughs, flour mixes, snacks & cereals and so on.

At the recommended dosage of 0.5 to 2%, Fibregum™ has the following technological benefits in bakery applications:

- Improves shelf life (moisture regulation).
- Enhances pliability and flexibility.
- Enhances freeze/thaw stability (moisture retention).
- Decreases dough stickiness in the package.
- Improves the homogeneity of the structure.
- Improves crumb smoothness and freshness in soft products.
- Improve crunch and reduce breakage/crumbliness in crunchy products.
- Improves texture, binder and mois-

REFERENCES

- [1] "Digestive Issues | American Nutrition Association."
- [2] W. S. Nanayakkara et al., 2016.
- [3] C. Canavan et al., 2014.

*Artigo publicado em inglês por solicitação da empresa.

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Innovation Inspired by Nature

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