

FIBER-FORWARD NUTRITION **BACKED BY DECADES OF EXTENSIVE RESEARCH**

In search of health-forward nutrition to fuel a better-for-you lifestyle, today's consumers want foods that contain dietary fiber. Fibersol® delivers well-tolerated dietary fiber as well as functional benefits, all backed by high-quality clinical studies conducted on actual Fibersol® products.

Fibersol° is documented to be a well-tolerated dietary fiber that can enable claims in a range of categories:



Health



Prebiotic



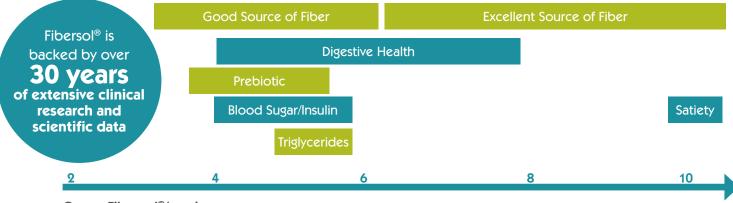
Blood Sugar and Insulin Levels



Triglycerides Levels



Satiety



FIBERSOL® IN THE BODY

A HIGH-QUALITY, WELL-TOLERATED FIBER

Fibersol® can help deliver the desired benefits of fiber with no or minimal digestive intolerance or gastric discomfort of other types of dietary fiber.



Fiber	Limit	Reference
Fibersol®	68 grams per day	Y. Kishimoto et al., 2013
Inulin	10 to 15 grams per day	A. Bonnema et al., 2010
Oligofructose	5-10 grams per day	A. Bonnema et al., 2010
Polydextrose	15 grams per day	As codified by FDA

Fibersol® is low in simple sugars, making it a great ingredient for products formulated for reduced sugar and lower calories. 10g of Fibersol® adds just 0.02g of sugar (less than 0.1 calories from sugar!).

Glucose Response

Fibersol®-9

Digestible Maltodextrin
Glucose

TIME AFTER 50G DOSE (minutes)

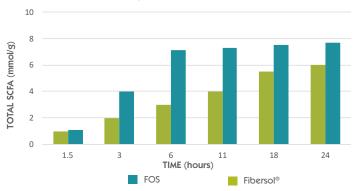
120

Virtually **no serum glucose response** speaks to Fibersol®'s status as a low-calorie ingredient.

Reference: Okuma, K. (2002). J Appl. Glycosi. 49: 479-485 Study on the chemical make up and indicates that the structure of resistant maltodextrin will not be digestible because of the alpha 1-2 and 1-3 linkages present.

Fermentation of Fibersol® in the gut yields SCFAs and enhances mineral absorption which support health, including an increase of beneficial gut microbes.

Total SCFA Produced by Fermentation by Human Colon Flora



Measurements of SCFA after consumption speak to Fibersol®'s status as a **slow fermenting fiber.**

Reference: Fahey, GC. J. Nutr., 130, 1267-1273 In vitro fermentation experiments on human colon microflora showing an increase in SCFA and a slower reduction in pH compared to other fibers, e.g. FOS, which indicates less digestive discomfort from off-gas.

*SCFA: short chain fatty acids







DIGESTIVE HEALTH

Fibersol® is a prebiotic fiber that addresses consumers' interest in digestive health. Not all fiber is equal! Only fiber that results in growth of beneficial bacteria within the gut and provides a health benefit can be called prebiotic.

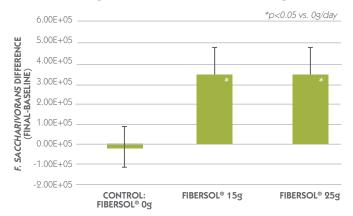
Reference: Gibson, et al. (2017) Nat Rev Gastroenterol Hepatol; 14(8):491-502.



Clinical studies show that 3.75g* of Fibersol® per serving may help nourish the intestinal flora and maintain a healthy intestinal tract environment.

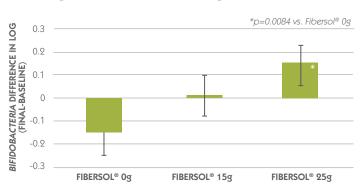
*For a total of 15g per day over 3 weeks

F. saccharivorans counts increased significantly with Fibersol® usage



Reference: Mai, V. (2022). Nutrients 2022, 14, 2192 Double Blind, placebo controlled study of 49 participants, Fibersol® resulted in an approximately two-fold increase in fecal *Fusicatenibacter saccharivorans* (p = 0.024 for 15 g/day Fibersol® and p = 0.017 for 25 g/day Fibersol®).

Bifidobacteria counts increased significantly with increasing intake of Fibersol®



Reference: Burns A. (2018). Nutrition Research, 60, 33-42 25g/day Fibersol® Double blind study (49 subjects) showed significant increase in fecal *bifidobacteria* counts.

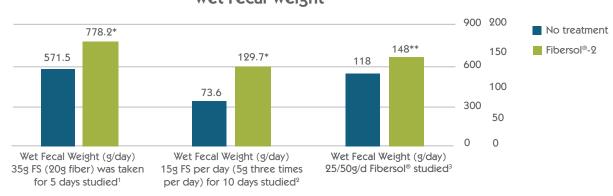








Wet Fecal Weight



Clinical studies show that 4-8g of Fibersol® per day **Dry Fecal Weight** support or maintain 180.5* No treatment 200 50 intestinal regularity. Fibersol®-2 137.9 32** 26.5 100 25 0 0 Dry Fecal Weight (g/day) Dry Fecal Weight (g/day) 35g FS (20g fiber) was taken 25/50g/d Fibersol® studied3 for 5 days studied1

Stool Frequency

Control

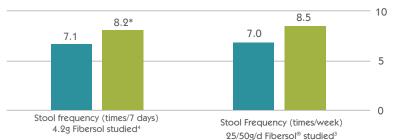
Fibersol®-2

*p. value < 0.05

compared to control

compared to control

**p. value=0.0001



References

- 1. Satouchi, M. et al (1993)
- 2. Kishimoto, Y. et al (2009)
- 3. Baer, DJ. et al (2014)
- 4. Furukawa, T. et al. (2004)

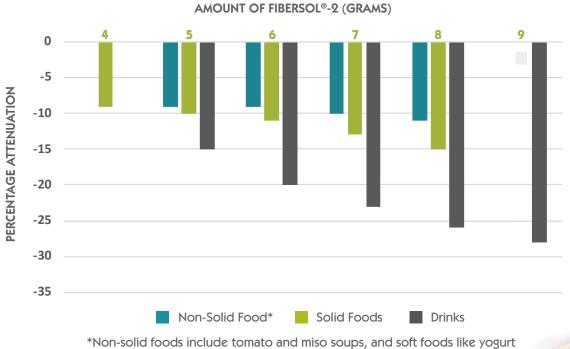






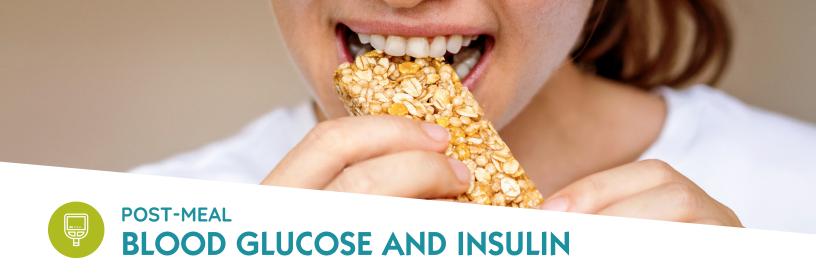
Fibersol® can support metabolic health as studies have shown that Fibersol® reduces blood glucose and insulin response following a meal in healthy adults. Consumers are making the connection between consuming certain foods and experiencing suboptimal feelings afterwards. Luckily, Fibersol® can help deliver the desired benefits of fiber with no or minimal discomfort.

Fibersol® attenuates glycemic response across product categories

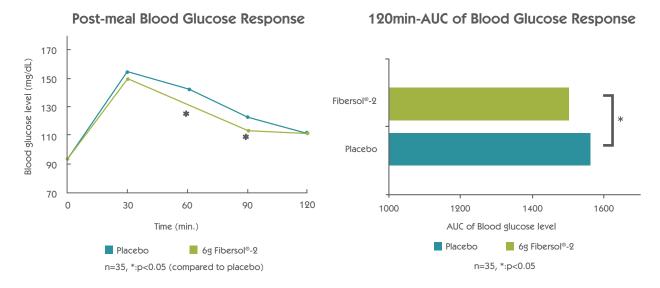


Reference: Tokunaga, K. (1999). J. Japan Diab. Soc., 42, 61-65

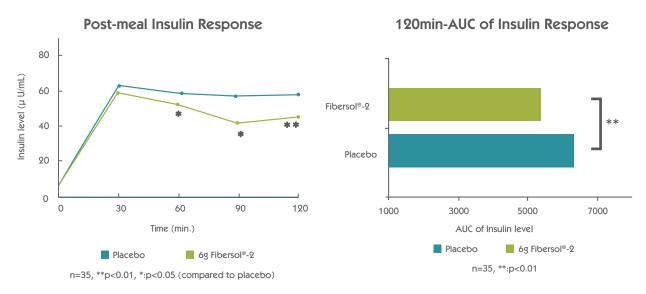




5-6g of Fibersol® taken with a meal shows a significant improvement in post-meal blood sugar levels and insulin response in healthy adults.



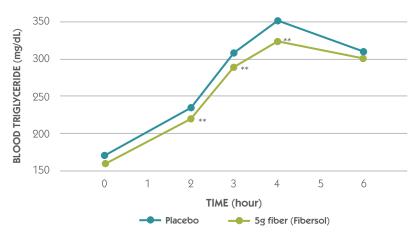
Clinical studies show that **4-6g of Fibersol®** with a meal helps **reduce blood sugar levels and minimize blood sugar spikes after a meal** that are within the normal range in healthy individuals.





Fibersol® helps maintain healthy triglyceride levels, offering consumers potential wellness benefits. Today, consumer awareness around cardiovascular and overall health and the impact of triglyceride levels is growing.

Fibersol®-2 Attenuation of Post-Meal Triglycerides



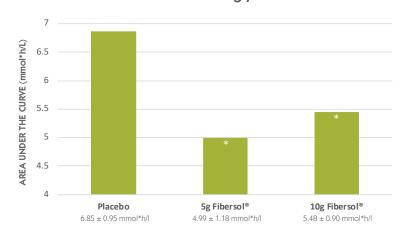
**p<0.01 compared to placebo

Participants consumed a carbonated beverage with a high-fat meal. The participants whose beverage included 5g of Fibersol® showed significantly lower postprandial serum triglycerides compared to a placebo.

Reference: Tanaka, T. et al. (2011), Jpn. Pharmocol Ther., 339: 813-821 Randomized double-blind crossover study (73 subjects) on carbonated beverage with 5g resistant maltodextrin taken with high fat meal (42g fat) showed significantly lower postprandial serum triglycerides compared to placebo.

Clinical studies show that 5-6g of Fibersol® with a meal helps attenuate the rise in blood triglycerides after a meal that are within the normal range in healthy individuals and helps retain healthy blood triglyceride levels.

Post-Meal Serum Triglyceride Levels



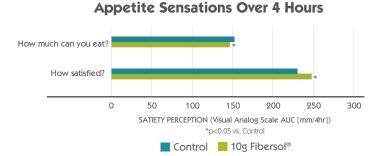
*p<0.05 compared to placebo

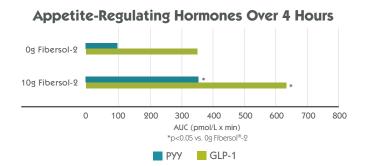
Participants consumer a carbonated beverage with or without Fibersol® with a high-fat meal. At 5g and 10g served with a meal, Fibersol® helped retain healthy triglyceride levels.

Reference: Kishmoto, Y. et al. (2007), Eur. J. Nutr., 46:133-138 Single blind study (13 subjects) using high fat meal (50g fat) and placebo, 5g Fibersol® and 10g Fibersol®. Both Fibersol® doses resulted in significantly lower triglyceride levels compared to placebo.



Fibersol® may provide products with satiety benefits that may help consumers feel fuller, longer. Prompted by everything from weight management efforts to holistic health support, consumers are looking for positive nutrition and satisfying eating experiences.





In a study with both qualitative (reported perception of hunger and satisfaction) and quantitative (levels of satiety hormone peptide YY and GLP-1) measures, results showed statistically significant lower levels of hunger and greater satisfaction up to 4 hours after consuming Fibersol®. This was accompanied by greater levels of PYY and GLP-1.

Reference: Ye, Z. (2015). Nutritional Research, 35, 393-400

A clinical study shows that 10g of Fibersol® with a meal may delay hunger and may stimulate appetite-regulating hormones.



CLAIMS YOU CAN TRUST



Digestive Health

At 4-8g per day (for 2 weeks), Fibersol®:

- Helps support/maintain intestinal regularity
- Helps relieve occasional constipation
- May support gut health
- Improves stool consistency

GI Discomfort: Minimal, mild, transient*

Note: The reviewers of the studies were not comfortable that any claims could be made that no gastric discomfort results from consuming Fibersol®. Many of the studies did report that users experienced some GI symptoms and these symptoms occurred at a variety of dose ranges. Although the symptoms may be mild and/or transient, they were reported to occur in many cases.



Prebiotic Benefits

At 3.25g per serving, Fibersol®:

 Enables "Prebiotic Fiber" claim on products (2.8g fiber from Fibersol®, corresponding to 10% DV for fiber)

At 3.75g per serving (4x per day), Fibersol®:

- May help nourish the intestinal flora and maintain a healthy intestinal tract environment (for a total of 15g per day over 3 weeks)
- Is a clinically studied, well-tolerated prebiotic



Satiety

At 10g with a meal, Fibersol®:

- May delay hunger
- May stimulate appetite-regulating hormones
- May increase GLP-1 as a part of a normal physiological response in healthy individuals



Blood Glucose & Insulin

At 4-6g with a meal, Fibersol®:

- Helps reduce blood sugar levels/minimize blood sugar spikes after a meal that are within the normal range in healthy individuals
- Helps reduce blood insulin response/the rise in blood insulin after a meal that are within the normal range in healthy individuals



Blood Triglycerides

At 5-6g with a meal, Fibersol®:

- Helps attenuate the rise in blood triglycerides after a meal that are within the normal range in healthy individuals
- Helps retain healthy blood triglyceride levels

READY TO SOLVE YOUR CHALLENGES? **LET'S GET STARTED! CONTACT US TODAY.**

Fibersol® is supported by the joint venture between Archer Daniels Midland Company, Matsutani Chemical Industry Co., Ltd., and Matsutani America, Inc., a global selling and marketing partnership combining strong technical and scientific expertise with a vast global production and transportation network, for a high-quality food ingredient backed by attentive, reliable service and supply.

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