



NUTRIOSE® SOLUBLE FIBER FOR BLOOD GLUCOSE MANAGEMENT

NUTRIOSE® helps maintain blood glucose levels in healthy adults

The soluble, non-viscous fermentable fiber NUTRIOSE® is a healthy partner for blood glucose management. Its low digestibility in the small intestine associated to its beneficial activity in the gut tract helps to soften blood sugar impact when used to replace carbohydrates in foods. Using NUTRIOSE® may also help to positively counteract the glycemic impact of other carbohydrates.

Can a fiber ingredient easily substitute digestible carbohydrates into common consumer foods help to curb the sugar crash? Can a fiber ingredient soften blood sugar response when consuming carbs? NUTRIOSE® soluble fiber has been shown in multiple clinical trials to do just that.

THE BODY'S REGULATION OF GLUCOSE

Glucose is the simplest of simple sugars. It's converted from dietary carbohydrates and some other food sources during the digestive process. Glucose is then used as the most important source of energy to fuel every cell in our bodies.

The body's regulation of glucose is accomplished by what and how much we eat, output of the hormone insulin, and our physical activity level. Dysfunctional regulation of glucose can result in overweight and obesity, metabolic syndrome and type 2 diabetes.

Measurement of blood glucose, also known as blood sugar, is an indicator of how efficiently and effectively our bodies regulate its glucose supply. In response to a glucose load, insulin output increases to help shuttle the glucose to our cells. The goal is to have a controlled supply of this simple sugar without over-stimulating insulin production. High then low blood glucose concentrations are often associated with eating high-digestible carbohydrate foods. A more blunted blood sugar response curve that doesn't bottom out after a high peak is desirable and achievable.

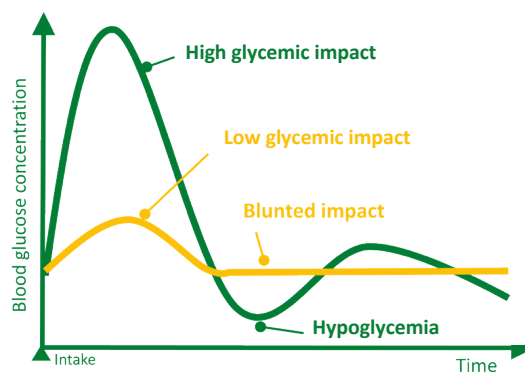


Fig. 1: Rise in blood glucose

Longer term impact on glucose regulation are also of high interest to avoid dysfunctional regulation of glucose metabolism.

A unique fiber ingredient, NUTRIOSE®, has demonstrated in multiple clinical studies that it helps soften blood glucose levels in healthy adults and contributes to the long term blood glucose control.

A FIBER WITH A LOW IMPACT ON BLOOD SUGAR

NUTRIOSE®, low in digestible carbohydrates, can be formulated as a substitute of other carbs in many common consumer tasty and healthy foods. Simple sugars and starches are easily and rather quickly digested in the small intestine and are rapidly available as glucose and shuttled to cells throughout the body. Because NUTRIOSE® is classified as a low glycemic fiber, the subsequent blood sugar response has been shown to be effectively blunted.

This response has been demonstrated in healthy adults across 5 countries with six different cross-over trials. Subjects fed NUTRIOSE® demonstrated both lower blood sugar (from 25 to 48%) and insulin responses (from 13 to 20%) over a 4-hour time period compared to those subjects fed the same amount of glucose ¹.

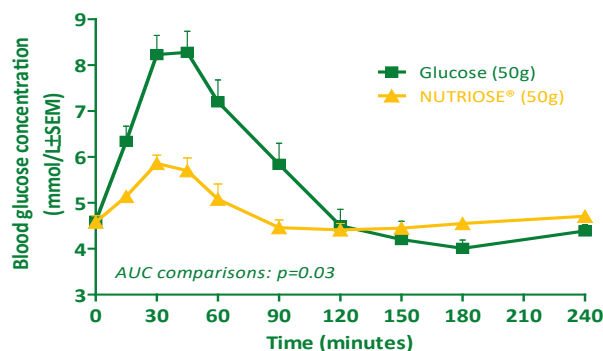


Fig. 2: Evolution of blood glucose after intake of 50 g

A FIBER THAT CAN REPLACE SOME OF THE SIMPLER CARBOHYDRATE IN FOODS TO HELP SOFTEN BLOOD SUGAR IMPACT

Studies have also been conducted substituting NUTRIOSE® for part of the more rapidly digestible carbohydrate source in common control foods. In various human trials, healthy adult volunteers were fed different foods including a dry beverage mix, a biscuit or breakfast cereals. Subjects who consumed in foods containing NUTRIOSE® had significantly lower glucose and insulin responses after the meal than those fed the standard foods. Put more simply: the subjects fed the NUTRIOSE® foods did not experience the sharp blood sugar highs and lows. These data demonstrate that NUTRIOSE® as a food ingredient in commonly consumed foods can reliably help soften glucose response ².

A FIBER WITH LONGER TERM IMPACTS ON HEALTH

A 28-day human study has demonstrated that the daily NUTRIOSE® intake mitigates the blood glucose rise after a beverage rich in simple carbohydrates thanks to its fermentation process in the gut tract. The consumption of NUTRIOSE® in addition to a beverage containing sugars is able to positively counteract the impact of the other carbohydrates ³. Improvements of factors involved in glucose management have been found in other studies examining the use of NUTRIOSE® in less healthy populations including overweight subjects, people with metabolic syndrome, and women with type 2 diabetes ^(4,5).

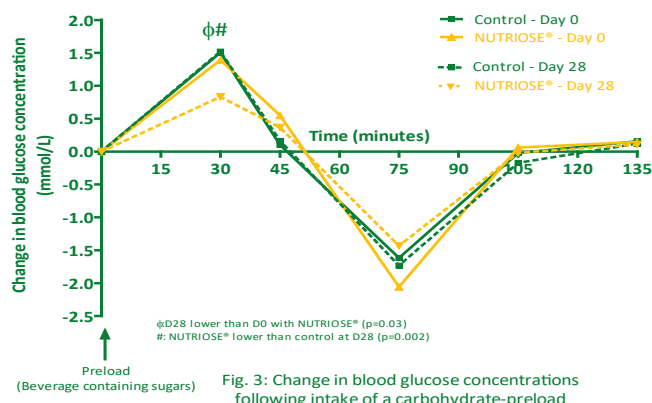


Fig. 3: Change in blood glucose concentrations following intake of a carbohydrate-preload



A FIBER THAT CAN EASILY HELP FILL THE FIBER GAP

An additional advantage of NUTRIOSE® soluble Fiber is a nutrient that most people worldwide do not consume in adequate amounts. NUTRIOSE® soluble fiber has the advantage to fill this gap in nutrition.

National dietary survey data revealed average fiber intakes of around 20 g/day for men and around 15 g/day for women. These intakes are well below the general recommendations included in guidelines developed by countries on the optimal daily intakes of fiber which are around 25 g to 35 g per day⁶.

Fiber is starting to be considered a “nutrient of public health concern” in many countries. NUTRIOSE® swapped into commonly consumed foods for other carbohydrate sources or added to a meal has the potential to help improve fiber intakes for a healthy lifestyle.

NUTRIOSE® SOLUBLE FIBER: A UNIQUE FIBER INGREDIENT

NUTRIOSE® soluble fiber is a healthy food ingredient that can significantly contribute to sugar reduction and consequently to caloric value reduction and overall daily caloric intake management. More importantly, this fiber can be used as an integrated solution for better blood glucose management. NUTRIOSE® has demonstrated distinct advantages when studied in multiple clinical trials:

- NUTRIOSE® has a low impact on the glucose and insulin responses, maintaining blood glucose levels in healthy adults,
- Foods containing NUTRIOSE® can be proposed as part of a healthy diet for glucose management, offering healthier alternatives to high-glycemic foods,
- NUTRIOSE® may contribute to a long term glucose control by mitigating the glucose rise of other carbohydrates.

Scientific References

¹: Lefranc-Millot *et al.*, 2015, European Congress of Obesity

²: Guérin-Deremaux *et al.*, 2018, Dietary Fibre Conference

³: Guérin-Deremaux *et al.*, 2018, Vitafood Europe

⁴: Li *et al.*, 2010, Appl. Physiol Nutr

⁵: Aliasgharzadeh *et al.*, 2015, Br J Nutr

⁶: Stephen *et al.*, 2017, Nutr Res Rev