

NUTRIOSE®, a soluble fibre with demonstrated benefits for blood glucose management in human

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STUDY OBJECTIVES

ROQUETTE has developed solutions contributing to the prevention of major health concerns worldwide. Among these solutions, NUTRIOSE® is a soluble non-viscous fibre produced from wheat or maize starch with a fibre content of 85% (on D.S).

The objectives of the present research were to demonstrate in healthy volunteers that NUTRIOSE® displayed positive effects on blood glucose management, with:

- a **low glycaemic response**,
- a beneficial impact on **glucose response** when incorporated in a **powder mix beverage**,
- a **long term** attenuation of **blood glucose spikes** following a carbohydrates challenge.



METHODS

Short-term impact of NUTRIOSE® on glucose response

Study 1

- Cross-over study (**Eurofins Optimed**)
- Healthy volunteers (n=6)
- 50g intake of NUTRIOSE® or glucose
- 1-day study

Short-term impact of NUTRIOSE® incorporation in a beverage on glucose response

Study 2

- Cross-over study (**QPS Bio-Kinetic**)
- Healthy volunteers (n=30)
- 30g intake of powder mix beverage containing NUTRIOSE® dissolved in 300ml of water or a control powder mix beverage
- 1-day study

Long-term glucose blunting impact of NUTRIOSE®

Study 3

- Cross-over study (**University of Reading**)
- Normal weight (n=20) and overweight (n=16) volunteers
- 14g/day of NUTRIOSE® or an energy-matched placebo as a mid-morning and mid-afternoon drinks
- 28-day study

In % wt/wt	Control beverage	NUTRIOSE®-based beverage
Sucrose	50.00	20.00
Dextrose	45.39	0.00
Mango flavor	2.28	2.28
Strawberry flavor	1.50	1.50
Citric acid	0.77	0.77
Color red powder	0.06	0.06
Acesulfame K	0.00	0.12
NUTRIOSE®	0.00	75.27
Total	100.00	100.00

Table 1 : Composition of the powder mix beverages

RESULTS

Short-term impact of NUTRIOSE® on glucose response

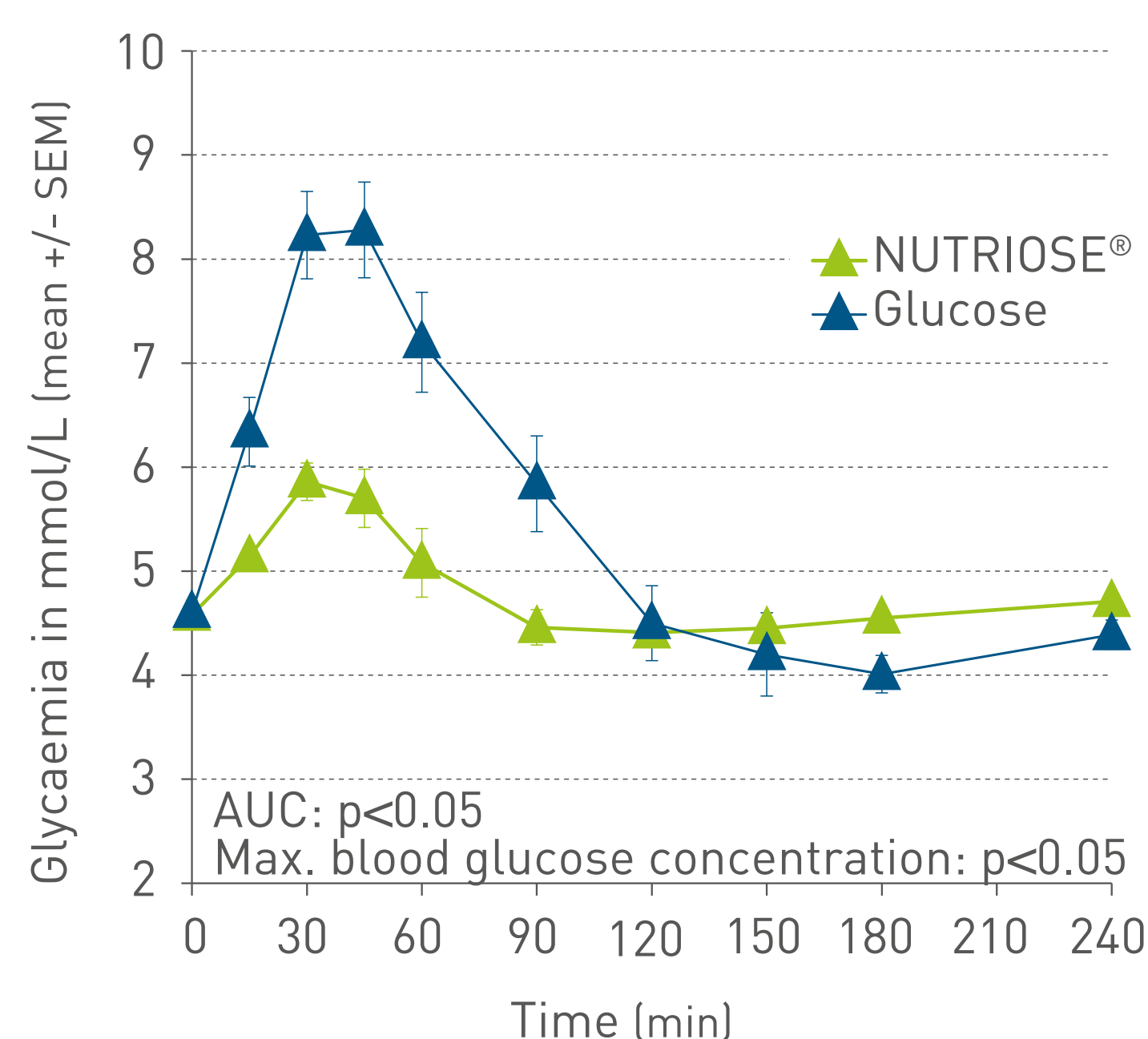


Fig. 1: Evolution of Glycaemia after product intake

- Glycaemic response of NUTRIOSE®: 25%
- Insulinaemic response of NUTRIOSE®: 13% (data not shown)

NUTRIOSE® displays a low glycaemic response and limits hyperglycaemic peaks

Short-term impact of NUTRIOSE® incorporation in a beverage on glucose response

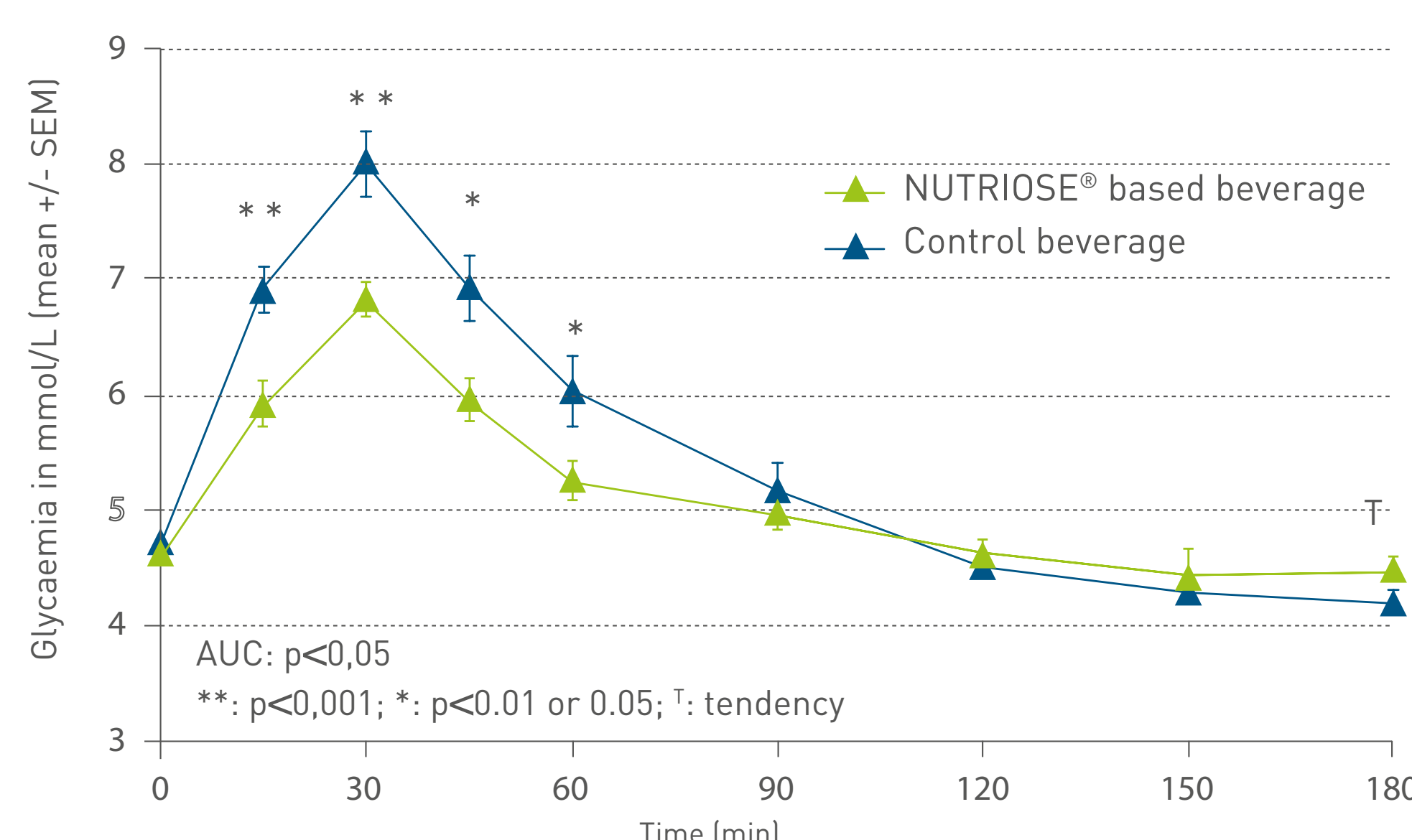


Fig. 2: Evolution of Glycaemia after product intake

- Significant reduction of the glycaemic impact of the fibre beverage
- Glycaemic response of the NUTRIOSE®-based beverage: 64%
- Insulinaemic response of the NUTRIOSE®-based beverage: 42% (data not shown)

NUTRIOSE® has a beneficial impact in lowering the glycaemic impact of a powder mix beverage by substituting a fraction of the digestible and glycaemic carbohydrates

Long-term glucose impact of NUTRIOSE®

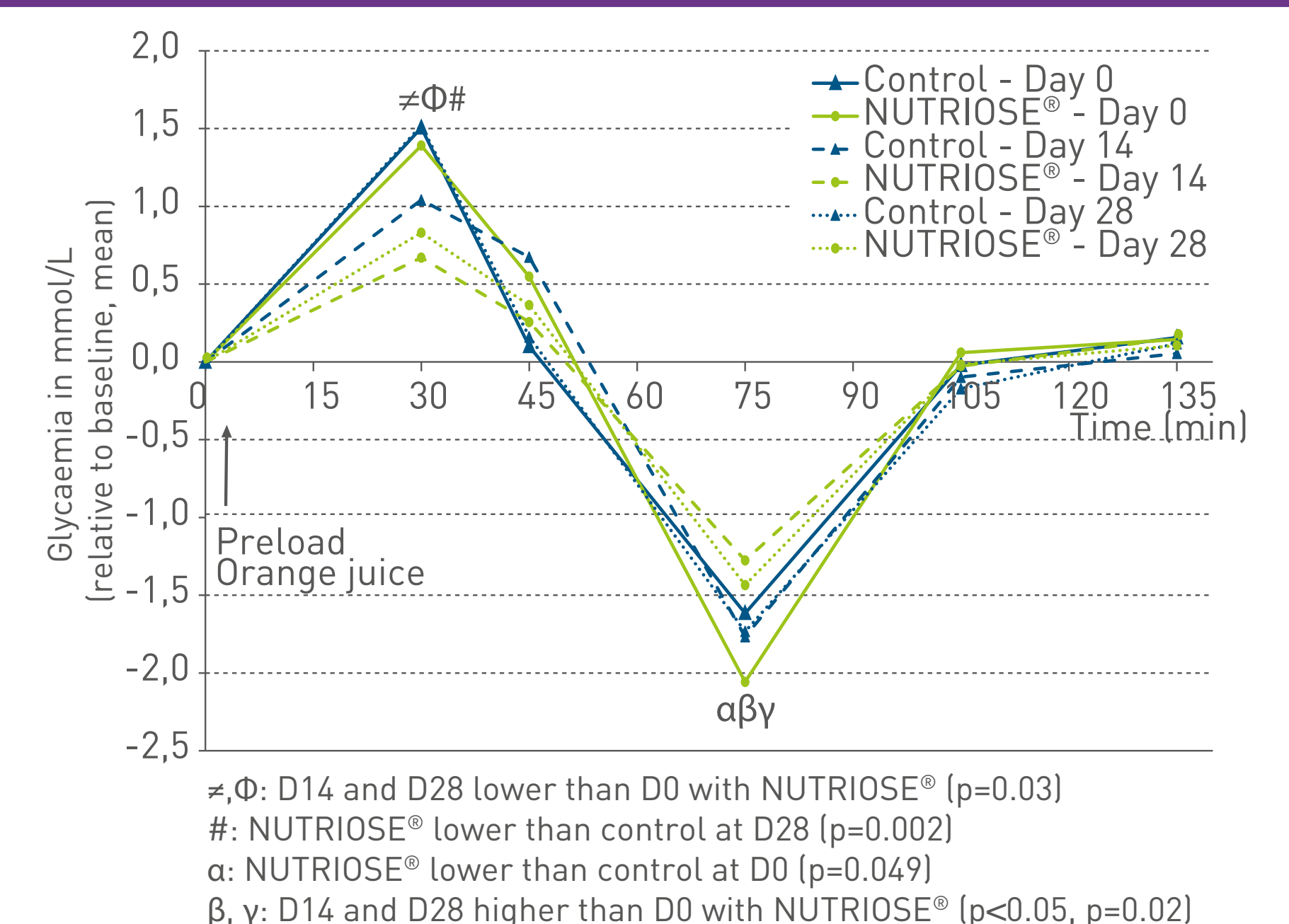


Fig. 3: Evolution of glycaemia after carbohydrates challenge

- After 14 and 28 days of NUTRIOSE® consumption, attenuation of the maximum blood glucose concentration following orange juice intake
- AUC (from 0 to 30 min) different at day 14 and 28 between groups (p<0.05) and within the NUTRIOSE® group over time (p<0.05)

NUTRIOSE® attenuates the blood glucose spikes following a carbohydrates challenge

CONCLUSION

Short-term Health Benefits

Improvement of the nutritional profile with a higher fibre content

Helps to maintain healthy blood glucose levels

Control of sudden fluctuations in blood glucose levels after meals rich in carbohydrates

Sustained Health Benefits

... for sustained and long-term health benefits

Source of fibre



- Enrichment in fibres
- Reduction in sugars

Less sugars



- Low Glycaemic & low Insulinaemic Responses in humans⁽¹⁾
- Limits hyperglycaemic peak & hypoglycaemic off-peak



Helps to limit the daily and chronic blood glucose impact of the meals



Improvement of the glucose tolerance and insulin sensitivity⁽²⁾⁽³⁾

NUTRIOSE® soluble fibre is a good candidate for **sugar reduction** and improvement of food products **fibre content**. And more interestingly, this fibre may be used as an **integrated solution for better blood glucose management** as NUTRIOSE® **helps maintaining healthy blood glucose levels and controls fluctuations in blood glucose after a preload rich in carbohydrates**.

REFERENCES:

⁽¹⁾: Lefranc et al., 2015, 6th international dietary fibre conference ; ⁽²⁾: Li et al., 2010, Appl Physiol Nutr Metab ; ⁽³⁾: Aliasgharzadeh et al., 2015, Br J Nutr