




Clean label delivery of even better dairy with Saphera® Fiber

Clean Label Conference
May 24-25, 2022

A hand is holding a white and blue carton of 'FRESH MILK' in a supermarket aisle. The carton is tilted, and a stream of milk is pouring out from the bottom. In the background, there are rows of similar milk cartons on shelves, slightly out of focus. The lighting is bright and cool, typical of a modern grocery store.

Dairy used to be very simple,
but times are changing fast

Consumers are now spoilt for choice

Past



Low
fat

Low
sugar

High
fiber

Lactose
free

High
protein

Plant
based

Present



This means a new challenge for dairy suppliers



Health focused

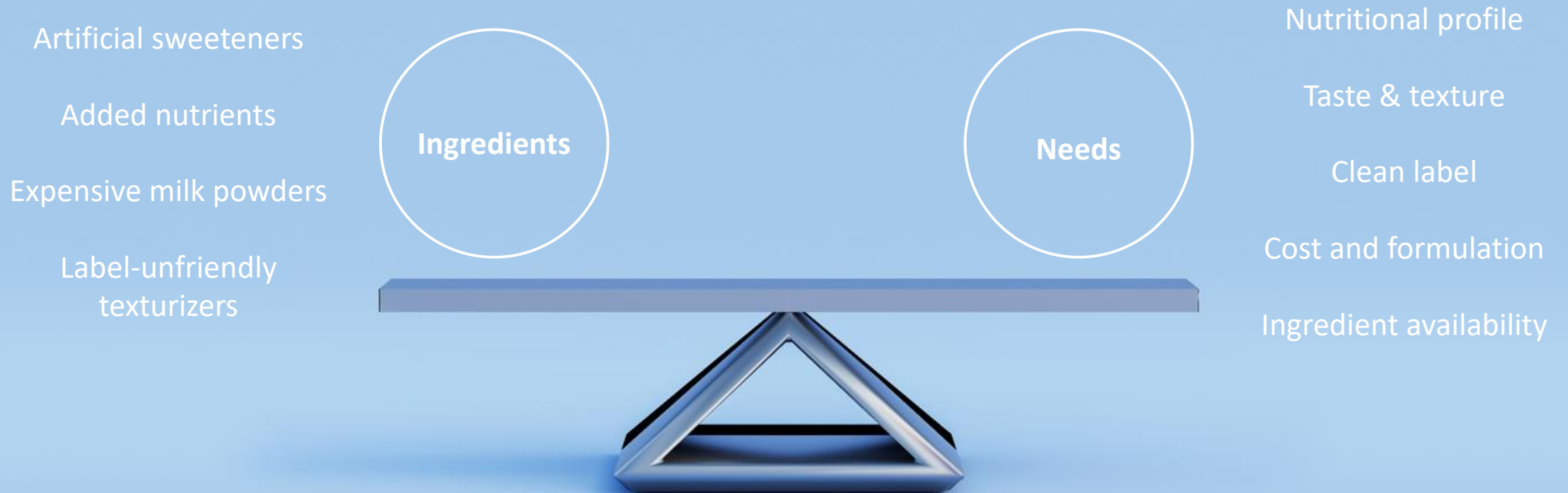


Explosion of SKUs



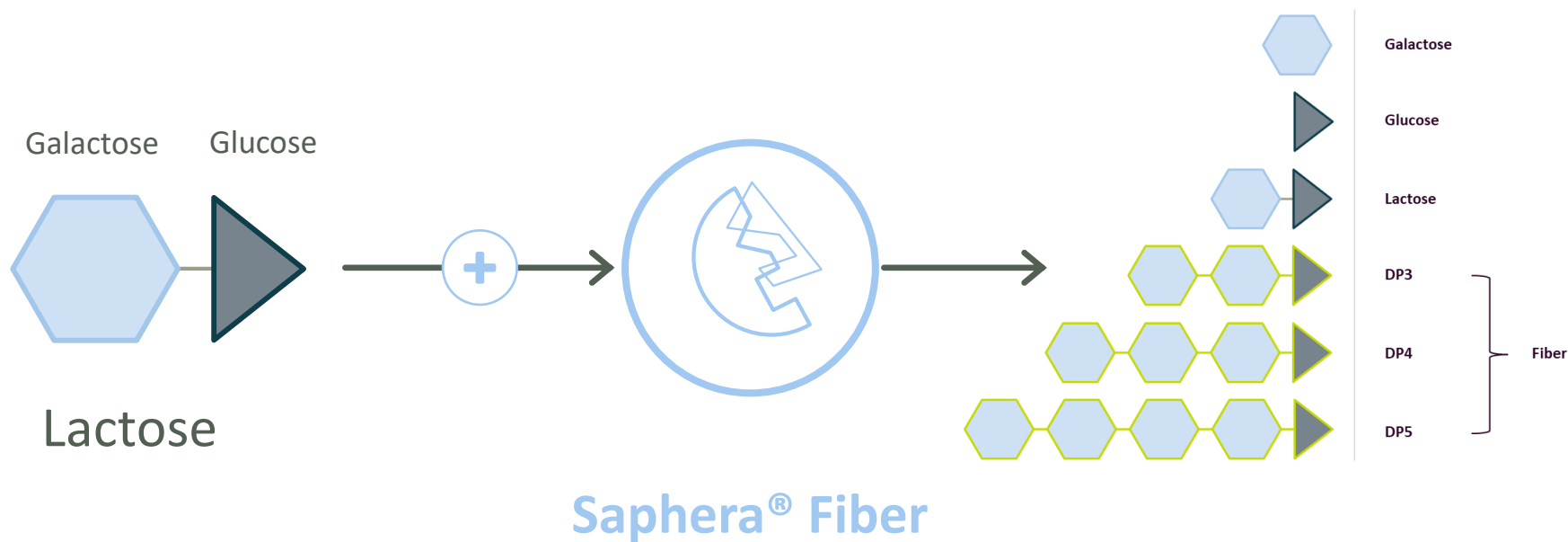
Market saturation

Today you're forced to sacrifice one or more success factors in expense of another



What if the answer was right in front of you?

Boost nutrition directly in your raw milk with a new lactase enzyme



Beta-galactosidase
Enzyme

GOS are a chain of galactose
units with a terminal glucose
unit

GOS are resistant
to hydrolysis
by digestive enzymes
and thus can be
claimed
as a dietary fiber

GOS is categorized as a dietary fiber in the US

- FDA guidance on non-digestible carbohydrates designates that GOS meets the definition of dietary fiber
- Carbohydrates that qualify under the definition can be added to the “Dietary Fiber” total on the nutrition facts label

***Definition** - non-digestible soluble and insoluble carbohydrates (with 3 or more monomeric units), and lignin that are intrinsic and intact in plants; isolated or synthetic non-digestible carbohydrates (with 3 or more monomeric units) determined by FDA to have *physiological effects that are beneficial to human health* (21 CFR 101.9(c)(6)(i)).

Caloric value of isolated or synthetic non-digestible carbohydrates (GOS) is **2 calories per gram** as compared to 4 calories per gram for carbohydrates from traditional sources i.e. fruits, vegetables whole grains etc. (Insoluble fiber is zero calories)

GOS-Enriched skim milk nutrition facts (US)

Theoretical values

Non-treated with GOS enzyme

Nutrition Facts	
1 servings per container	
Serving size	240 mL
Amount Per Serving	
Calories	90
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol < 5mg	2%
Sodium 125mg	5%
Total Carbohydrate 13g	5%
Dietary Fiber 0g	0%
Total Sugars 12g	
Includes 0g Added Sugars	0%
Protein 8g	16%
Not a significant source of vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

Treated with GOS enzyme

Nutrition Facts	
1 servings per container	
Serving size	240 mL
Amount Per Serving	
Calories	90
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol < 5mg	2%
Sodium 125mg	5%
Total Carbohydrate 13g	5%
Dietary Fiber 3g	11%
Total Sugars 9g	
Includes 0g Added Sugars	0%
Protein 8g	16%
Not a significant source of vitamin D, calcium, iron, and potassium	
*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.	

BENEFITS

- Good source of fiber (11% DV), 3 grams of dietary fiber per serving
- Reduction of 25% of sugar (3 grams of sugar per serving)

*Calories are the same due to rounding rules for labels

Fiber Claims Enabled by Saphera Fiber

- Reference Daily Intake (RDI) or Daily Reference Value (DRV) **for fiber is 28 g**
- Claims are based on one serving size for the specific food, as defined by the FDA

“Good Source”, “Contains” or “Provides”: at least 10-19% of the RDI/DRV for fiber

2) Example: One serving of milk = 240 ml; 10% - 19% of the RDI/DRV = 2.8 g to 5.32 g

Qualifier: **each serving of milk must contain at least 2.8 to 5.32 g** of fiber to make these claims

“More”, “Added”, *”Fortified”, *”Enriched”, “Extra” or “Plus”: at least 10% more of the RDI/DRV for fiber (see Example 1 above) as compared to an appropriate reference food, i.e. a similar food without added fiber

3) Example: **“10% more fiber than regular yogurt”**

*Fortified or Enriched are potential claims for fiber, but there are additional regulatory qualifiers for these claims. FDA’s Fortification Policy must be considered.

Sugar Claims Enabled By Saphera Fiber

- No Reference Daily Intake (RDI) or Daily Reference Value (DRV) for Total Sugar
- RDI/DRV for **Added Sugar** is 50 g
- Claims are based on one serving size for the specific food, as defined by the FDA

“Reduced Sugar”, Reduced in Sugar”, “Sugar Reduced”, “Less Sugar”, “Lower Sugar” or “Lower in Sugar”:

- The food contains **25% less sugar** per serving
- Must be labeled with a comparison statement referencing a similar food e.g. 25% less sugar per 3 oz as compared to our regular XXX

*Note: qualifiers and disclaimers apply

Labeling: Galacto-oligosaccharide is declared as fiber ingredient; Enzyme is a process aid

The lactase complies with processing aid definition (21 CFR 101.100) because:

1. It performs its technological function (catalytic activity) during dairy processing
2. It is not intended to and does not exert its technological function in the final food
3. It is used at an insignificant level

*GOS fiber would need to be included in the ingredient declaration list, if making a fiber claim.

NOTE: The information provided in this document is accurate to the best of Novozymes' knowledge based on the current situation. Nevertheless, it is and remains the **responsibility of the customer** to ensure that its specific use of Novozymes' products does not infringe relevant laws or regulations and does not infringe third party intellectual property rights. Without a separate, specific, written agreement between the customer and Novozymes to such effect, this document does not constitute a representation, warranty or guarantee of any kind, and Novozymes shall in no event be held liable for the adherence by the customer to the information herein. Customer may only disclose the information herein to a 3rd party subject to Novozymes' prior written consent. The content of this document is subject to change without notice.

GOS has favorable consumer perception from a labelling perspective

64%

of yogurt consumers rate **Galacto-oligosaccharides (GOS)** as **healthy** and **good for digestion**

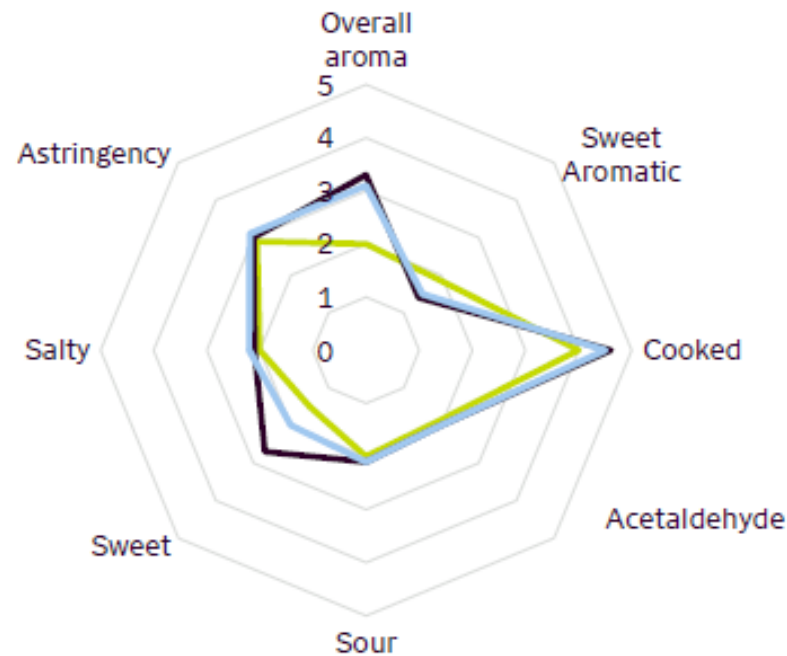


Source: Novozymes consumer research, Performed by Conjoint.ly 2021 (2400 consumers, US, Canada)

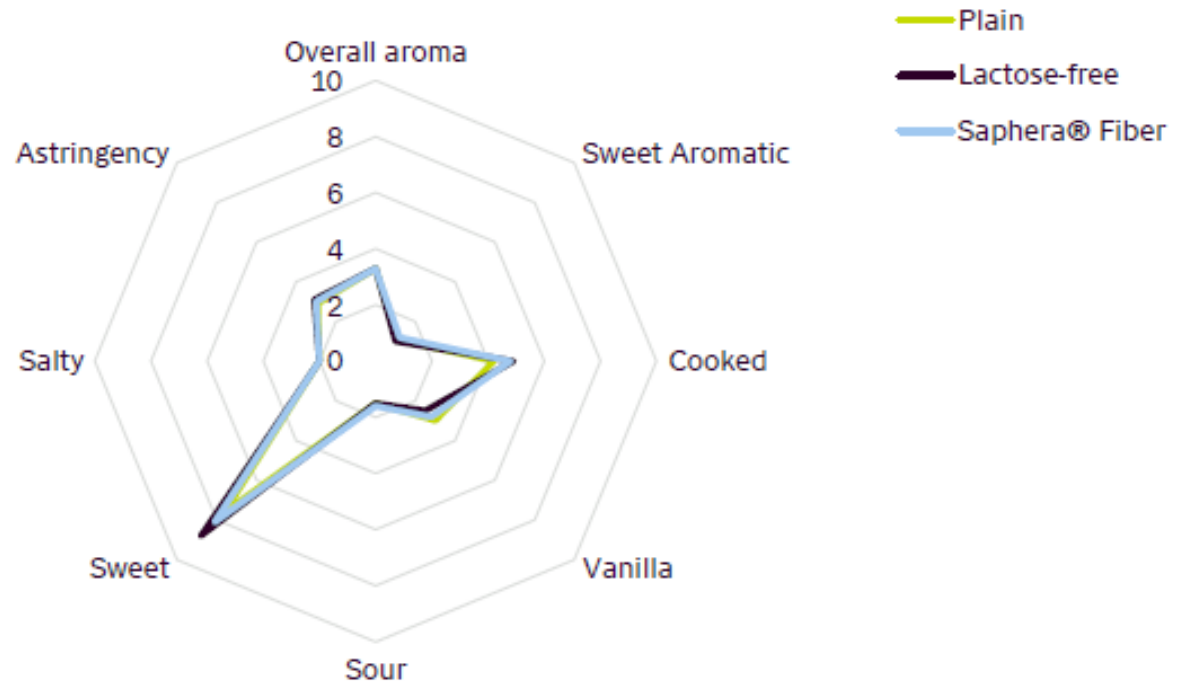
Sensory profiling validates clean flavor in yogurt beverages

- Skim milk + 3.3% SMP (or a vanilla formula), with no enzyme, Saphera 2600 L or Saphera Fiber incubated 24 h at 5 °C and inactivated at 90°C for 5 min
- Descriptive analysis performed at the North Carolina State University Sensory Services Center
- Attribute intensities were scored on a 0-15 pt universal intensity scale (Meilgaard et al., 2007)

Unsweetened yogurt beverage



Vanilla yogurt beverage



Saphera[®] Fiber increases fiber content and reduces sugar, maintaining a clean label!

Differentiators

Compared to fiber ingredients

- In-situ conversion i.e. smaller ingredient list ⁽¹⁾, simple food recipes, naturality ⁽²⁾
- Double benefit of fiber enrichment and sugar reduction
- No negative effects on taste and texture. Reducing sugar without reducing sweetness.
- Positive consumer perception of GOS

Compared to other GOS enzymes

- High fiber yield, stable and easy to handle solution

(1) our enzyme is applied as a processing aid and typically doesn't need to be mentioned on the final product label

(2) in most countries, the immediate interpretation would be that the application of enzymes as processing aids in the production of foods does not in itself restrict the use of the term 'natural'

