

REFORMULATION FOR A HEALTHY IRELAND, OCTOBER 2023

HEALY GROUP

Reformulation for a Healthy Ireland
Welcome to Teagasc Ashtown





HEALY GROUP

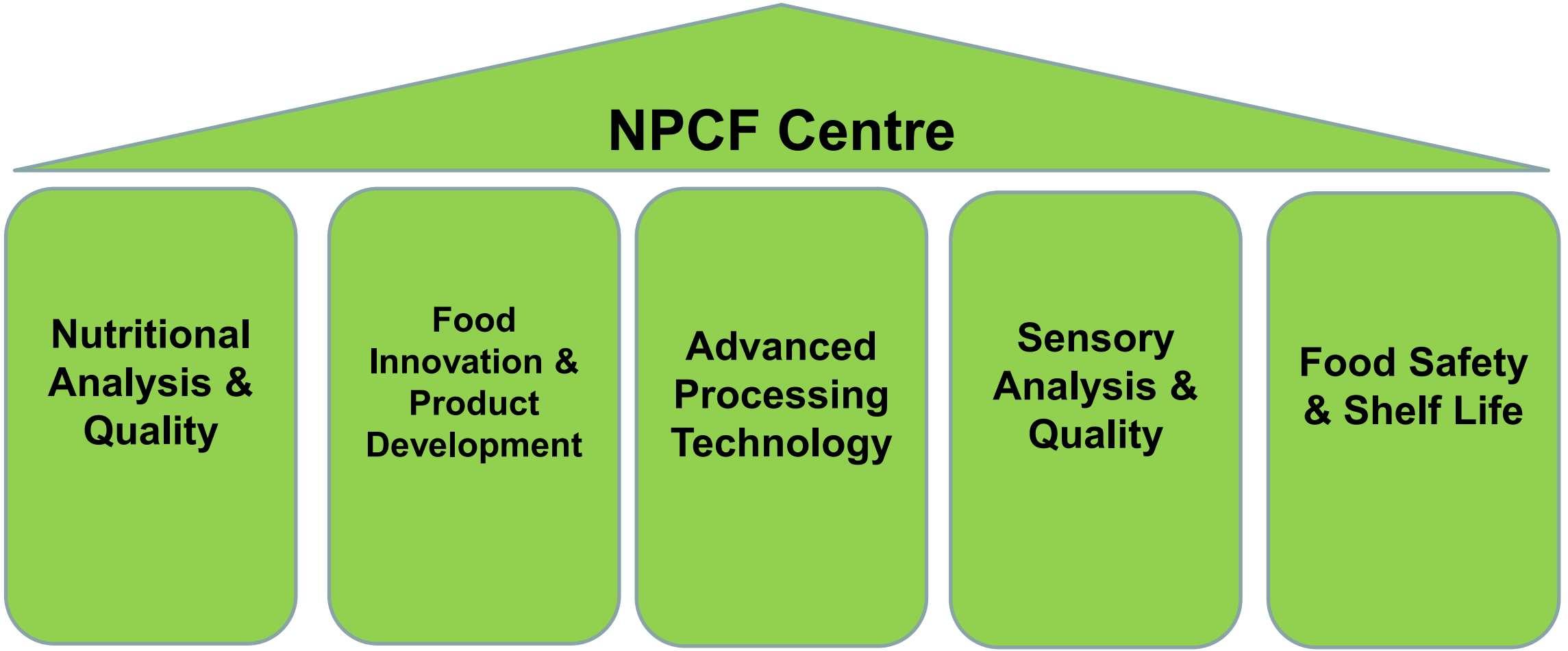
teagasc
Agriculture and Food Development Authority

Welcome - Reformulation for a Healthy Ireland

- **Fire Exits -** Assembly Point -> Car Park
- **E-charge Points –** Located at the front of Conference Centre
- **Toilet Facilities –** Located in the Foyer
- **Mobile Phones –** Switch to silent

WIFI
Username: teagascguest
Password: Username: Seyklcp9

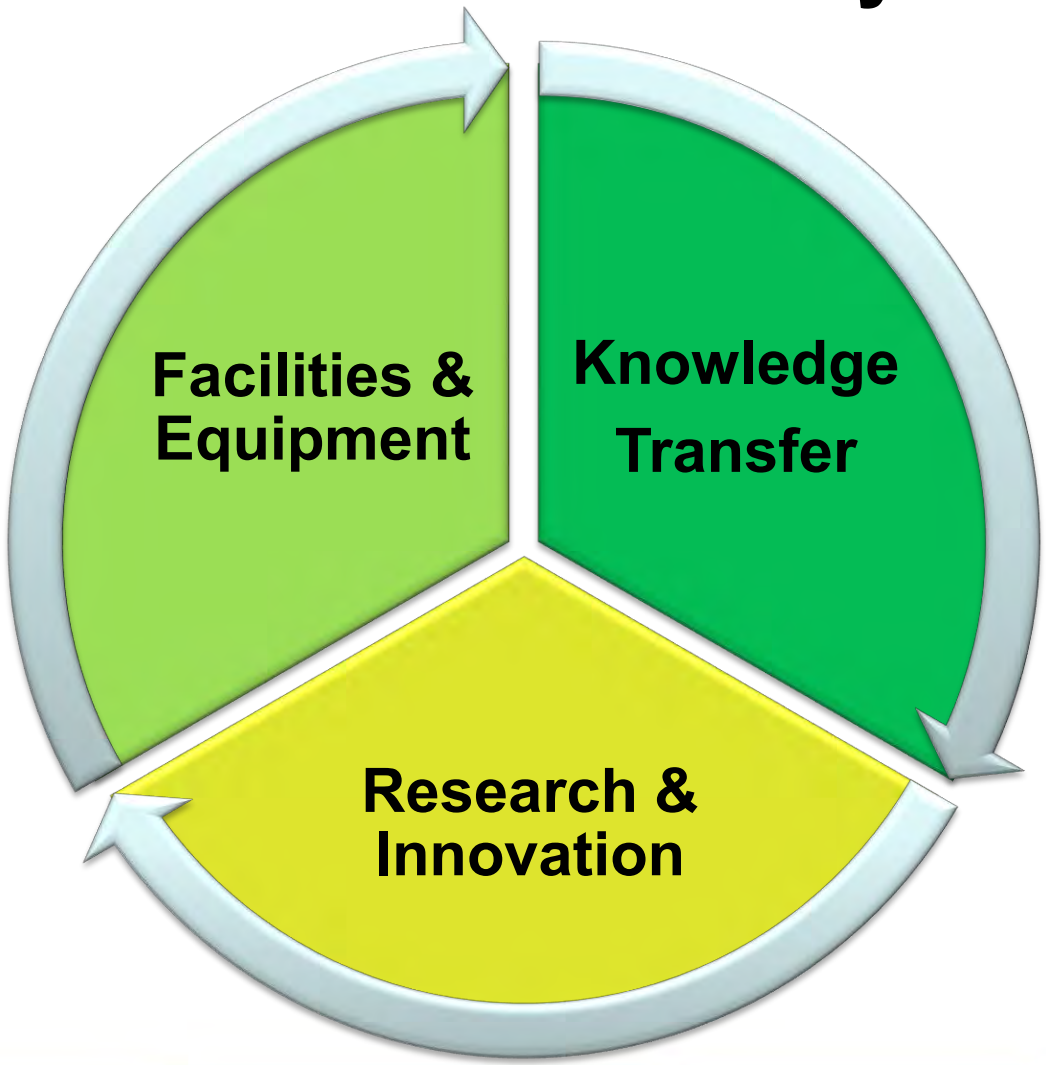
NPCFC Pillars

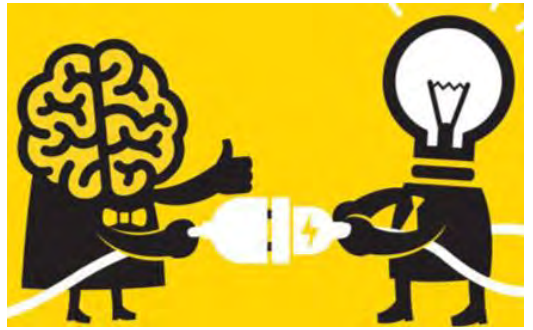


NPCFC – Circular Innovation Pathway











WELCOME & AGENDA

10:00	Introduction
10:30	Nuala Collins, Food Reformulation Taskforce
11:00	Andrew Arbuthnott, Saltwell
12:00	Healy Group: Supporting Tech
12:30	Lunch
13:00	Katrien Verhaegen, BENEO
14:00	Conor Buckley, Socius
14:45	Healy Group Salt: Sugar & Fat Science, HFSS
15:30	End

ABOUT US

Global solutions-driven agent & distributor of ingredients and raw materials

Focussed on food innovation through technical expertise and market understanding

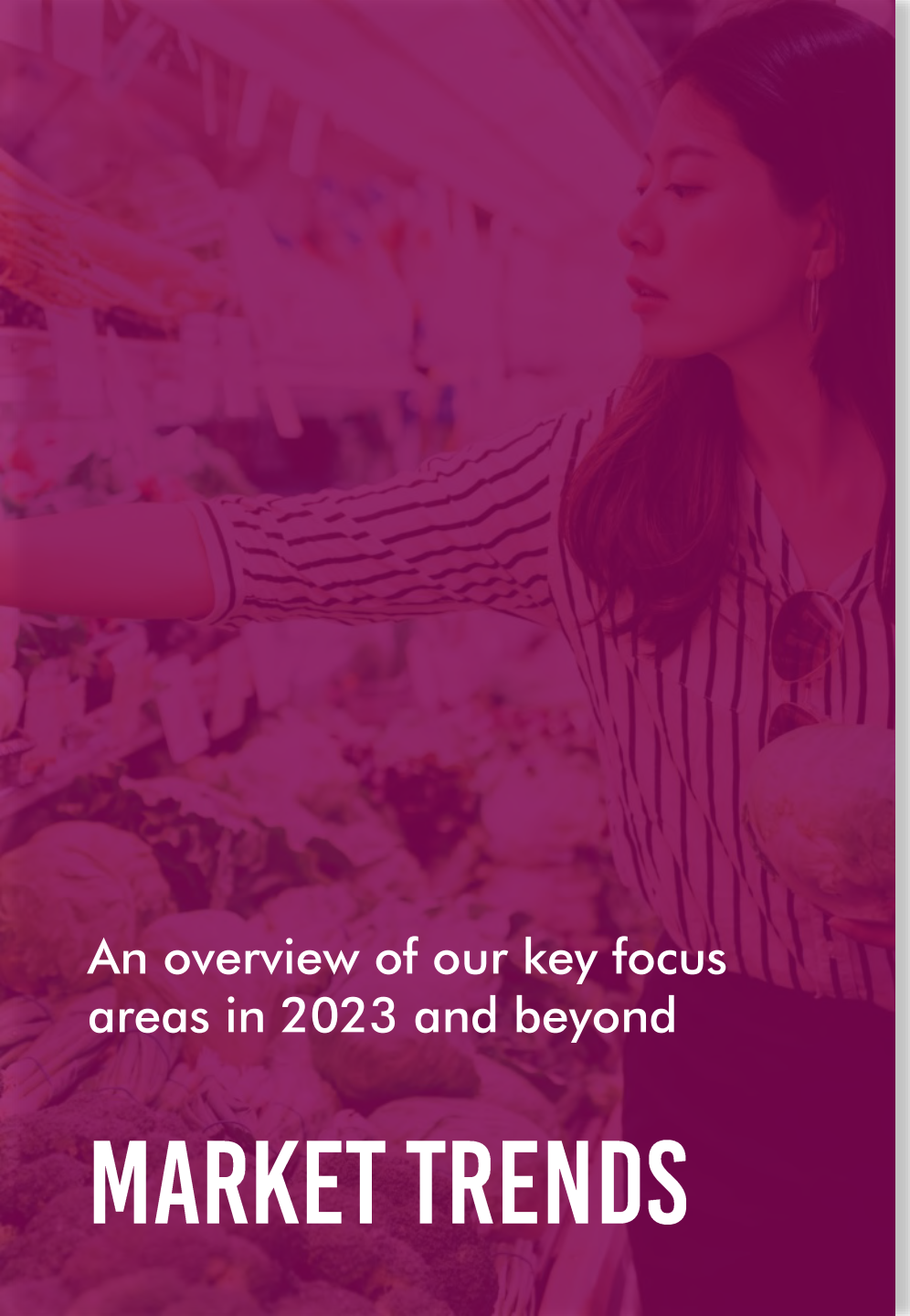
Food Ingredients & Speciality teams in Dublin and Leicestershire

HEALY GROUP

OUR LOCATIONS

Dublin, IE
Leicestershire, UK
Gennep, NL
Shanghai, CN
Kampala, UG

BRC AA-Grade Storage & Distribution and Agents & Brokers certification across our IE & UK sites



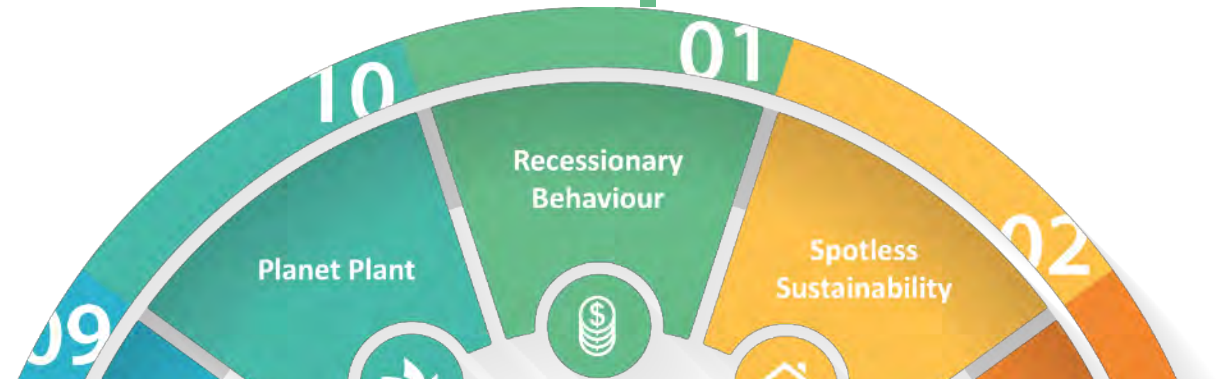
An overview of our key focus areas in 2023 and beyond

MARKET TRENDS




01
Recessionary Behaviour
02
Spotless Sustainability
03
Holistic Wellbeing
04
"Scratch" Cooking
05
Mission Cognition
06
Evidenced Enrichment
07
Healthy Nation
08
Moral Messaging
09
Specialised Diets
10
Planet Plant
10
Healy Group Food & Drink Trends for 2023
Are your ingredients delivering on this year's top trends?

1 in 2 global consumers agree that "cost" and "value for money" have become more important when buying food and drink in the past 12 months (Innova, 2022)




01
02
Recessionary Behaviour
Spotless Sustainability
Planet Plant
09
10



60% of global consumers say that they have become more conscious about their health over the last two years, whilst 42% of global consumers have taken a greater interest in ingredients that are known to boost health (FMCG Gurus, 2022)


01
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Spotless
Sustainability
02
Holistic
Wellbeing
03
Healy Group
Food & Drink
Trends for 2023
redients delivering
ar's top trends?
"Scratch"
Cooking



80% of consumers deem being a healthy weight as important to their overall health and wellbeing, with 40% admitting to monitoring their calorie intake on an average day (FMCG Gurus, 2022)



COST

1 in 2 global consumers agree that "cost" and "value for money" have become more important when buying food and drink in the past 12 months (Innova, 2022)

Reducing and stabilising cost in recipe with the use of new functional solutions

HFSS

60% of global consumers say that they have become more conscious about their health over the last two years, whilst 42% of global consumers have taken a greater interest in ingredients that are known to boost health (FMCG Gurus, 2022)

- Salt reduction
- Sugar reduction
- Fat reduction
- Fibre enrichment/ Protein enhancement

SUSTAIN -ABILITY

49% of global consumers have made changes to their diets in the last two years in order to live a more sustainable lifestyle (FMCG Gurus, 2022)

- Upcycling
- Better for the planet
- Less waste
- Availability

PLANT PLANET

79% of consumers state that it is important that plant-based food and drink products are made with familiar and well-known ingredients (FMCG Gurus, 2022), with "Too Processed" being the third biggest barrier to purchase (Innova, 2022)

- New alternative proteins, flavours and textures
- Improved processes, textures and flavours

LABELLING

25% UK consumers buy ethical food and drink as they think they will contain fewer unwanted ingredients (Mintel, 2021), with top clean-label concerns being additives and preservatives (Innova, 2020)

- Nitrite-free
- Clean label potassium sorbate replacement
- Natural shelf-life extension

OUR PARTNERS





































OUR PARTNERS

	beneo	EMSLAND GROUP	SALTWELL	SenseFi	MILLBIO	kikkoman	MCLS EUROPE	Lantmännen BioRefineries
INTRO	Specialised ingredients for improved nutrition and health	Potato & pea derivatives such as starches, fibres, protein and dehydrates	A sea salt from the Atacama Desert in Chile with 35% less sodium	A microfibrillated fibre with creaminess and mouthfeel enhancing properties	Rowanberry extract with 25% natural sorbic acid	Naturally-brewed soy sauce from the iconic brand	High-quality torula yeast extracts for clean-label flavour enhancement and modulation	New functional solutions derived from oats for human nutrition and health
FOCUS	Functional fibres and carbohydrates for digestive health, fat and sugar reduction	Clean-label functional starches Vegan protein/fibre enrichment Thickening/gelling Sugar reduction	Salt reduction Flavour enhancement	Fat reduction Vegan/non-dairy texture	Natural shelf-life extension	High-quality soy sauces and powders	Flavour enhancement Flavour modulation Salt reduction	Vegan protein enrichment Fibre enrichment Fat reduction Beta-glucan fortification (heart health)
PRODUCTS	Prebiotic Fibres Functional Carbohydrates Speciality Rice Ingredients **supply only in Ireland*	Potato & Pea Starches Potato Flakes & Granules Pea & Potato Fibres Pea Proteins	Saltwell Regular Saltwell Microfine Saltwell Natural Saltwell Coarse	SenseFi SenseFi Oat* **In development*	X-TRA Guard X-TRA Guard S	Soy Sauce Standard Gluten Free (Tamari) Low Salt Soy Sauce Soy Sauce Powders	Aromild Ajirex Ajitop Yeast Extract GLY Aromaway Ajirex NH	PrOatein PromOat Wheat Starch Wheat Gluten

OUR PARTNERS

	Prima	EDLONG	EXTER	DOMCA	CanBiocin	Rousselot	SEAWEED & Co.	MCLS EUROPE
INTRO	Functional protein, fibre and flour solutions through micronisation and extrusion technology	Specialists in the creation of non-dairy, dairy-type flavours	Using oven roast technology to create authentic natural vegan meat-type flavours and flavour enhancers	Natural herb, spice, allium and fruit extracts with a high poly -phenol content and anti-oxidant capacity	Species-specific probiotics and bespoke probiotic/ prebiotic blend creation. (Pet/animal nutrition)	Porcine and bovine collagen and gelatine	Outer Hebrides seaweed powder with proven health claims and flavour enhancement properties	Patented solutions for health & nutrition
FOCUS	Sugar Reduction in Chocolate Protein & Fibre Enrichment Keto/low-carb Omega 3 enrichment	Vegan flavours (dairy-type) Sugar reduction Flavour enhancement	Vegan flavours Flavour enhancement Salt reduction	Natural shelf-life extension No nitrite meat	Probiotics/ prebiotics/gut health	Protein enhancement Joint & bone care Skin care	Umami enhancement Vegan fish/sea type flavour Fortification (Iodine)	Fast acting carbohydrate Postbiotic/gut health Cognitive health Skin care
PRODUCTS	PrimaFi Cocoa PrimaPro Rice/Pea PrimaFi Pea PrimaTex PrimaFlax	Cheese, cream, milk, butter, caramel, chocolate-type flavours Sugar enhancing range	P, B, C and F Ranges (Pork, Beef, Chicken & Fish -type) UM range (umami) Culinairex range	Proallium range DMC range Cycrom range Bespoke products	Canine probiotic blends* Feline, Equine and Pig probiotics blends** ** In final stages of Novel/EU approval.* *** Not started Novel/EU approval yet.*	Hydro-B Hydro-P ProTake BH ProTake P Peptan B range* Peptan P range* Peptan F range* **Only Ireland*	Fine & Coarse: PureSea Natural PureSea Smoked PureSea Smoked PureSea Protect	Cluster Dextrin HK L-137 PharmaGABA Opitac Glutathione

YOUR HEALY TEAM TODAY



Gareth Healy, CEO



Eduard Scripcaru, Business Development Manager



Paul Sheldrake, Application & Technical Director



Paul Waters, Business Development Manager



Rosemary Doyle, Business Development Manager



Genna Freeman-Dennis, Application Specialist



Brennan Anderson, Business Development Manager

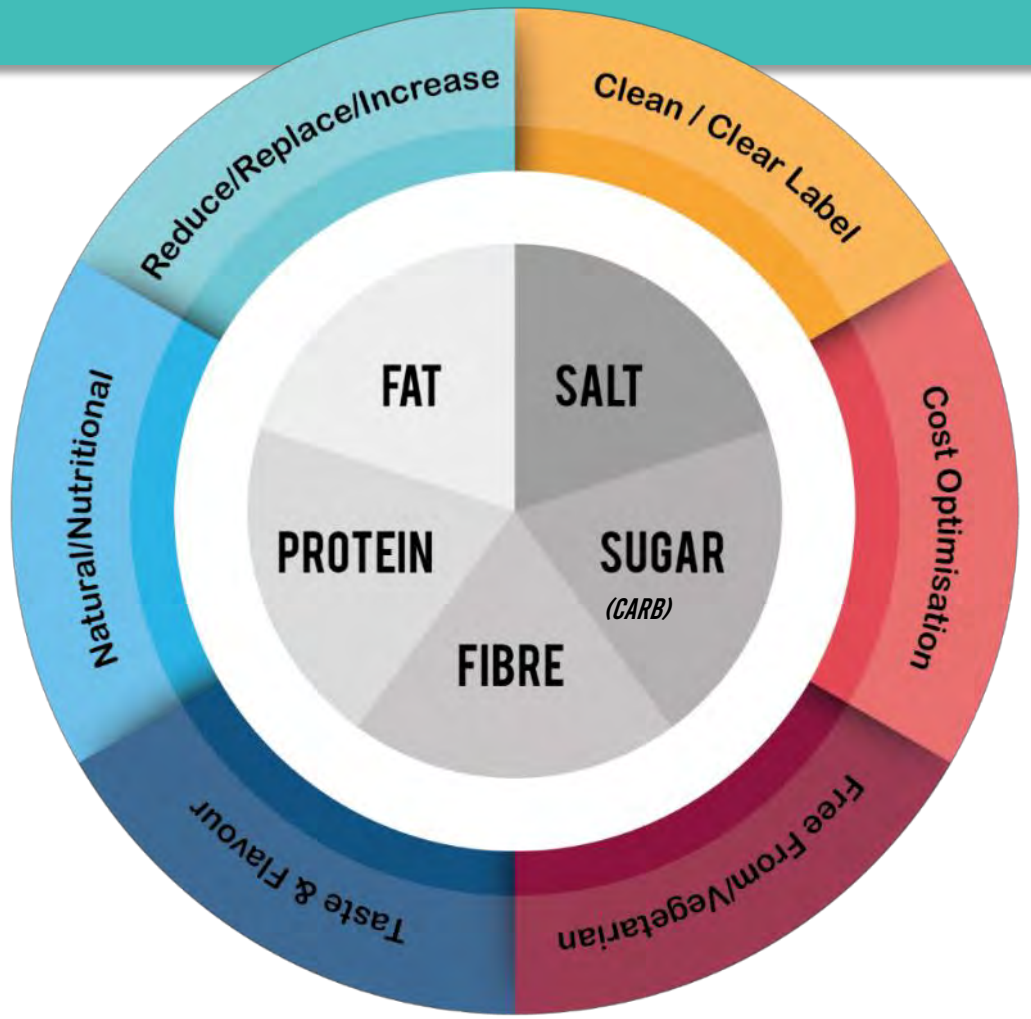


Samual Bambrough, Business Development Manager



Hannah Rackham, Marketing Director

HOLISTIC APPROACH



PRODUCT

- What makes something 100%? Impact of change
- Impact of reductions e.g. Salt, Sugar Fat
- Consider enrichment e.g. Fibre and Protein

PROCESS

- What is the process? Impact of change
- Quality (over shelf life, flavour, texture)
- Safety considerations inc. microbiological, pH, storage

LABEL

- What declaration? Clean or clear, legislation
- Consumer understanding e.g. Ultra-processed
- Retailer standards and preferences

TECHNICAL FUNCTIONALITY

RECIPE

- Reduction/Removal: Salt, Sugar, Fat
- Impact: Taste, Texture, Nutrition, Food Safety/Shelf Life, Quality, Properties e.g. Emulsification

PROCESS

- Same process or different? Any new processes?
- Impact: Taste, Texture, Nutrition, Food Safety/Shelf Life, Quality, Properties e.g. Emulsification

Follow the flow…



QUESTION:
WHAT IS MOST IMPORTANT TO YOU WHEN REFORMULATING?



HEALY GROUP

SETTING THE SCENE

HEALTH OF THE NATION



MAKING GOOD PRODUCTS



MAINTAINING FOOD SAFETY



LABELLING PREFACE

Clean & Clear

- Look “Natural”, kitchen cupboard staples
- Sometimes products that consumers are getting more used to e.g. guar gum

E-Numbers

- Tells us the product is safe to eat
- Not always used as can damage appeal e.g. E415 more acceptable as Xanthan Gum

Ultra Processed

- Not formally defined but a growing concern for consumers following media focus
- Ingredient focus on emulsifiers, preservatives and sweeteners

DEMONSTRATION: CHOCOLATE MUFFIN -SUGAR REDUCTION

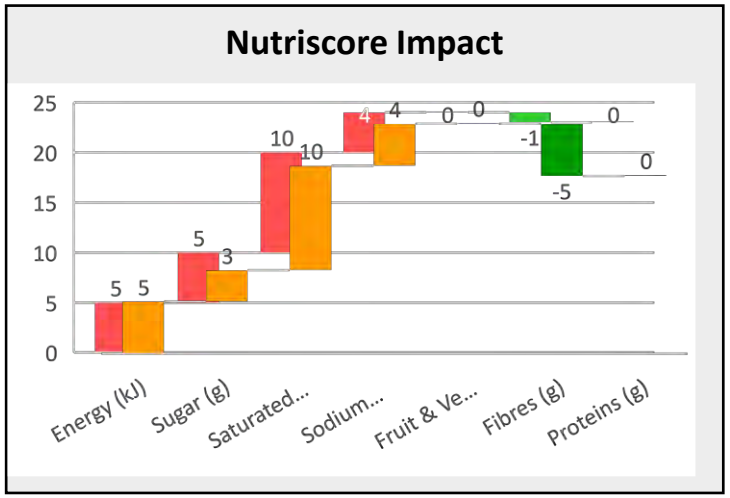
CHOCOLATE MUFFIN - SUGAR REDUCTION

- Orafti HSI
  - Chicory root fibre to replace part of the sugar
- PrimaFi Cocoa
  - Micronized, upcycled, cocoa fibre
  - Replaces a further part of the sugar
- Sugar reduced
  - 41% sugar reduction

Ingredient Declaration (Control): Sugar, Salted **Butter**, Whole **Egg**, **Wheatflour**, Cocoa Powder, Whole **Milk**, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501))

Ingredient Declaration (Reduced Sugar): Salted **Butter**, Whole **Egg**, **Wheatflour**, Sugar, Chicory Root Fibre / Inulin, Cocoa Fibre, Cocoa Powder, Whole **Milk**, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501))

Notes:



Nutritional Data: /100g	Control / Standard	Reduced Sugar
Energy kJ	1,829	1,749
Energy k Cal	439	420
Fat	25.5	25.6
Of which saturates	15.1	15.1
Carbohydrates	47.8	37.3
Of which Sugar	26.4	15.6
Fibre	1.0	10.0
Protein	6.4	7.1
Sodium	0.372	0.391
Equivalent as Salt	0.954	1.003

NUTRISCORE	E	D
	[23]	[17]



Severance

Habituation/ Consumer Acceptance

Use Natural Alternative

e.g. Saltwell Sea Salt, different grain structure

Add Salt Enhancer

Umami effects, flavour modulation

Use Potassium Chloride

Can use flavour modulator to remove metallic notes

APPROACHES TO SALT REPLACEMENT

SALT REDUCTION DECISION MAKING

Declared *Salt* Content (Back of Pack)

WHO Targets (By Segment)

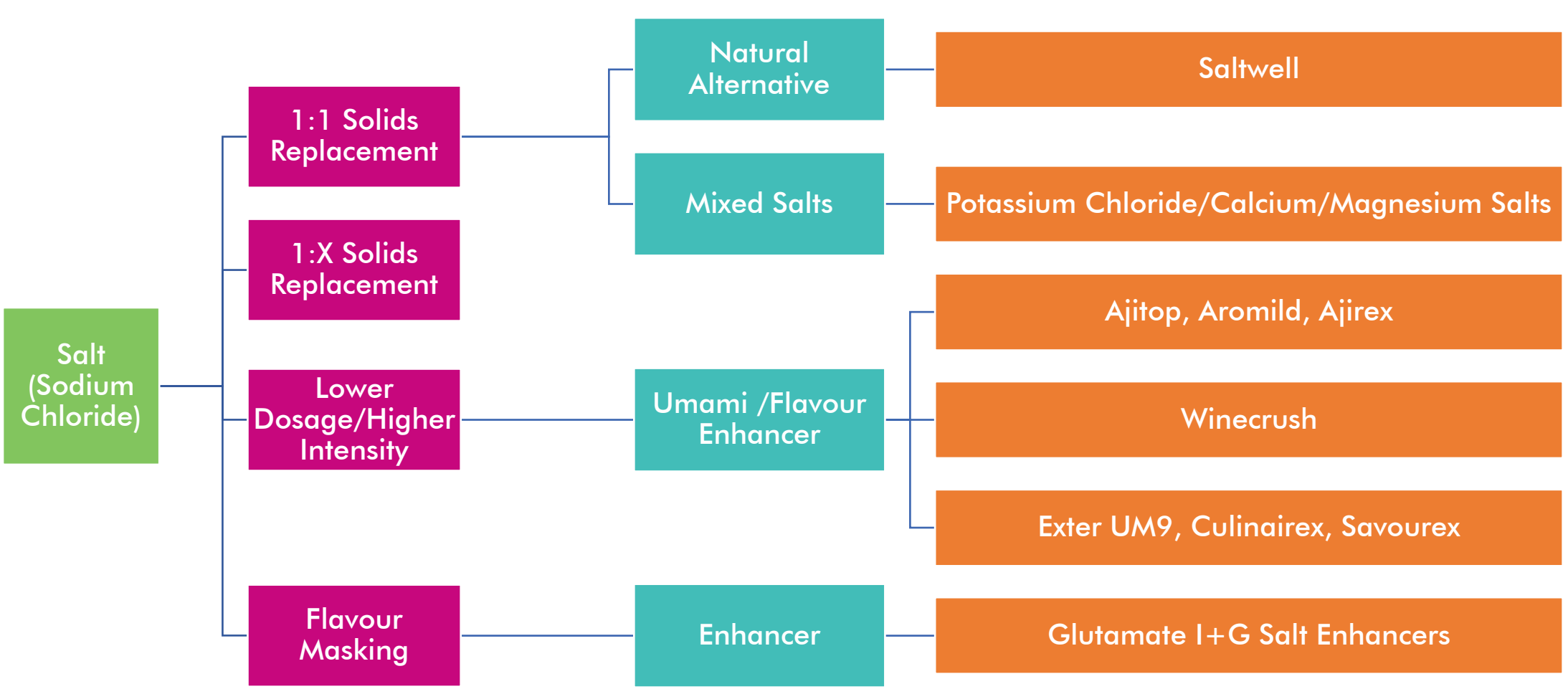
What do you want to achieve?

What can you achieve?

What is (food) safe to do?

'Salt' is declared on back of pack	Ingredients with sodium in name	Hidden sources	Component-made products
Is this added salt?	Bicarbonate of Soda *(baking powder)* Sodium caseinate	Poly phosphates, Natural Flavours, Yeast Extracts, Plant Proteins…	Ready Meal, Sandwich Pizza, Coated Meat / Fish, (Vegan) Burgers
Potential for direct swap	Need to find 'non' / reduced sodium alternative	Need to find 'non' / reduced sodium alternative	Need to reduce sodium in each component
		Lower salt alternatives / *Umami flavour boosters*	Lower salt alternatives / *Bread, cheese, meat, sauces, TVP, breadcrumbs…*

SALT REDUCTION OPTIONS



SUPPORTING TECHNOLOGIES

MCLS EUROPE

High-quality torula yeast extracts for clean-label flavour enhancement and modulation

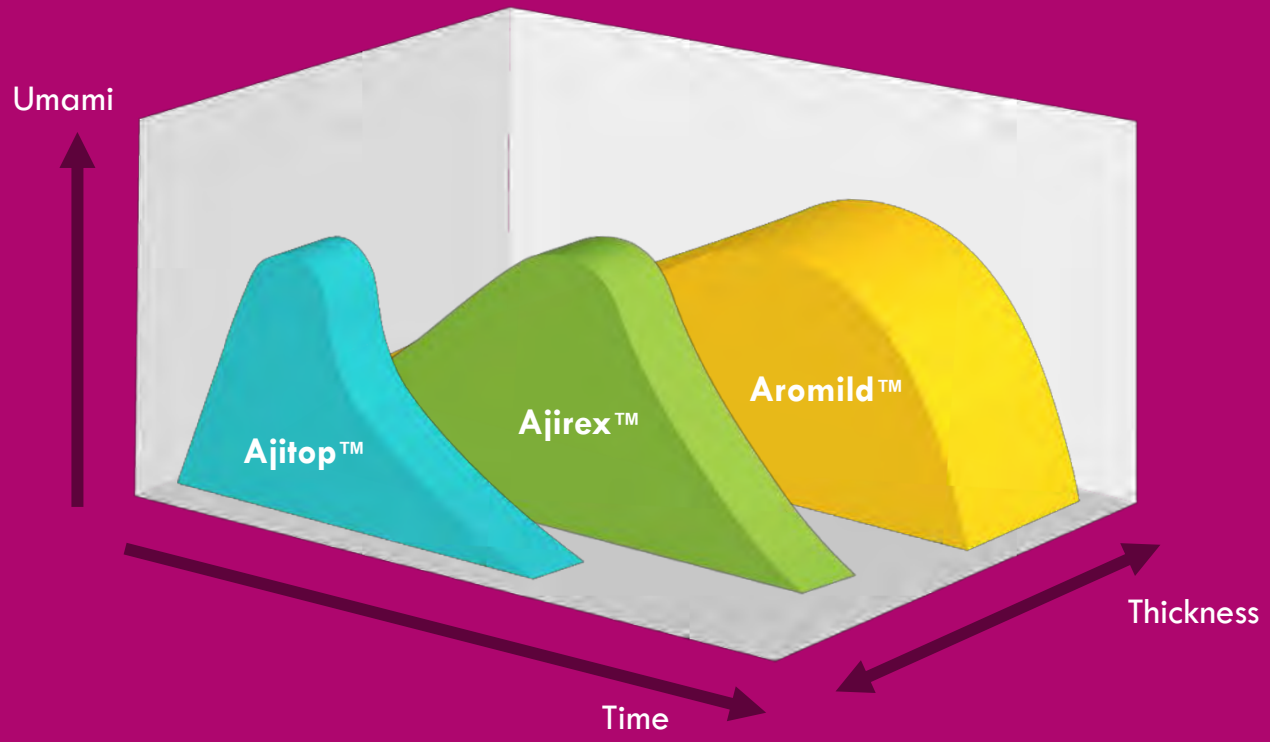


X-TRAGUARD™
THE SHIELD FROM PLANTS

Rowanberry extract with 25% natural sorbic acid



MCLS UMAMI & TASTE



Different levels of glutamic acid and I+G in each yeast extract target different areas of the taste experience

Ajitop	Sharpness & Impact
Ajirex	Body & Fullness
Aromild	Longer Lasting Umami
Aromild U15	Flavour Complexity
Aromaway	Balance & Richness
Ajirex NH	Mouthfeel & Masking

HEALY GROUP
Where your needs become our focus

MCLS EUROPE

Tasting Notes:

X-TRA GUARD

- Clean label solution with declaration: “Botanical / Plant Extract (Sorbus Aucuparia) or Rowan berry extract”
- Allergen-free
- Kosher and Halal Certified
- Two varieties: Standard and Soluble





ANDREW ARBUTHNOTT, SALTWELL

HEALY GROUP

QUESTION:
WHAT IS MOST IMPORTANT TO YOU WHEN REDUCING SALT?



HEALY GROUP


SALINITY
EXPERTS IN SALT SINCE 1830
SALTWELL®
— LESS SODIUM · ALL NATURAL —

AGENDA

- ✓ ROLE OF SALT AND DANGERS OF SODIUM
- ✓ SODIUM REDUCTION TECHNIQUES
  - ✓ REFORMULATIONS, RESULTS AND APPLICATIONS
- ✓ TASTINGS OF COMMERCIALLY SUCCESFUL EU & UK SALT REDUCED PRODUCTS
- ✓ TIPS ON REDUCING SALT WITHOUT COMPENSATING ON FLAVOUR OR FUNCTION; AND WITHOUT MAKING CHANGES IN PRODUCTION OR PROCESS.



ROLE OF SALT - IMPACT

SALTWELL®

PRESERVATIVE

AVAILABILITY OF WATER
+
IMPEDES GROWTH OF PATHOGENS/SPOILAGE ORGANISMS

IMPACT ON YEASTS / ENZYMES

TEXTURE

ALTERS STRUCTURE AND INTERACTION OF PROTEINS WITH OTHER COMPONENTS E.G. CHEESE, BREAD
FREEZING POINT DEPRESSION

BINDER

ADDED TO PROCESSED MEATS; RESTRUCTURES PROTEINS

→ BINDING/EMULSIFYING

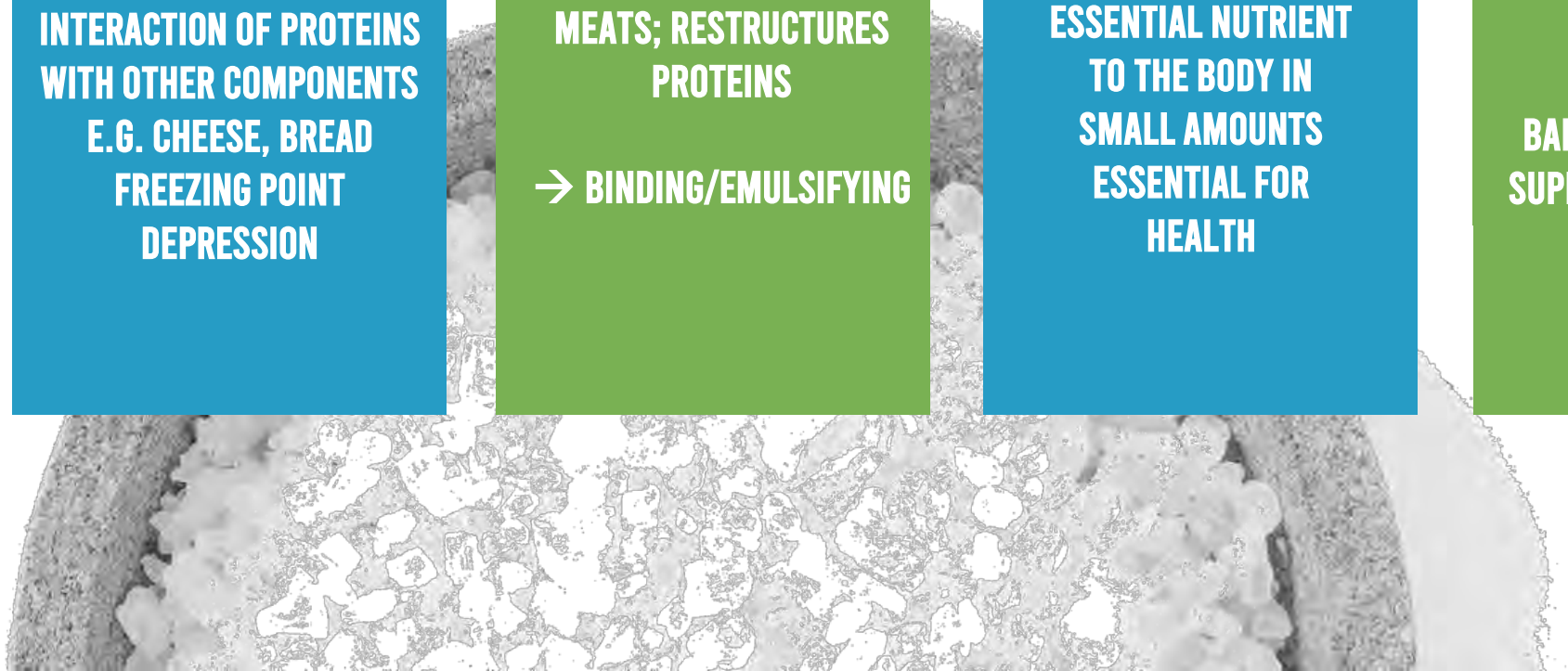
NUTRIENT

SODIUM IS AN ESSENTIAL NUTRIENT TO THE BODY IN SMALL AMOUNTS
ESSENTIAL FOR HEALTH

FLAVOUR

ENHANCES OTHER FLAVOURS

BALANCES SWEETNESS, SUPPRESSES BITTERNESS



SALT AND SODIUM REDUCTION

SALTWELL®

SALT IS ESSENTIAL BUT IS ALSO A SILENT KILLER

CONSUMERS ARE DEMANDING LESS SODIUM BUT GOOD TASTE

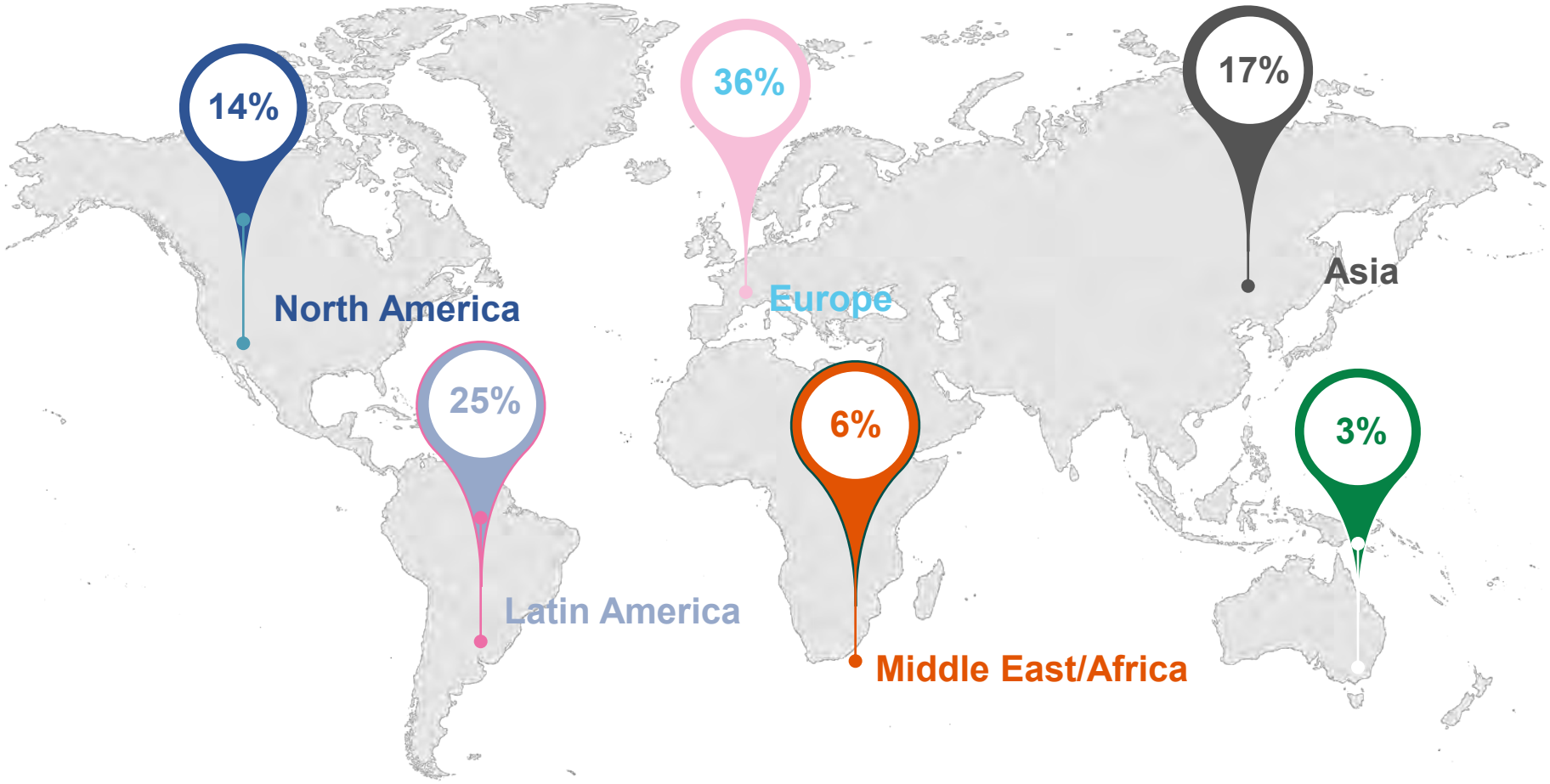
FOOD MANUFACTURERS IN EUROPE COMMITTED TO SODIUM REDUCTION

GLOBAL SODIUM TARGETS; FSAI SALT TARGETS (TO ACHIEVE BY 2024/25)



1 IN 3 GLOBAL LAUNCHES WITH SALT REDUCTION CLAIMS ARE FROM EUROPE

Figure 3 | Region as a percentage (%) of food and beverage launches tracked with a low/no/reduced sodium claim (Global, 2021)



Source: Innova Database
Note: Percentages may not add up to 100 due to rounding

GLOBAL INDUSTRY COMMITMENTS TO SODIUM REDUCTION



In 2021, IFBA members collectively developed a global sodium reduction commitment with standardized, stepwise voluntary targets for key categories of products to be achieved by 2025 and 2030.

Source: IFBA, commitment to reduce sodium globally in manufacture foods

TYPICAL SODIUM REDUCTION TECHNIQUES

- ❑ DOSAGE LOWERING
- ❑ PORTION SIZE LOWERING
- ❑ INGREDIENT SOLUTIONS
  - *FLAVOR ENHANCERS (E.G., MSG, YEAST EXTRACTS, MUSHROOM POWDERS)*
  - *CHEMICAL BASED SALT MODULATORS*
  - *INGREDIENT INCLUSIONS (E.G., POTASSIUM BASED EMULSIFYING SALTS, LOWER SODIUM PROTEINS)*
  - *ARTIFICIAL MINERAL SALT BLENDS*
  - ***NATURAL LOW SODIUM SALTS***
    - SALTWELL



WHAT IS SALTWELL?

SALTWELL®

- ✓ A NATURAL SEA **SALT** WITH 35% LESS SODIUM COMPARED TO STANDARD SALT
- ✓ EACH GRAIN OF SALTWELL NATURALLY CONTAINS 65% SODIUM CHLORIDE, 30% POTASSIUM CHLORIDE & 5% TRACE MINERALS
- ✓ IT PROVIDES A SALTY TASTE LIKE STANDARD SALT BUT HAS 35% LESS SODIUM – A BETTER CHOICE



WHAT IS SALTWELL?

SALTWELL®

NATURAL SODIUM REDUCTION SOLUTION

SEA SALT WITH 35% LESS SODIUM

NATURALY LOW IN SODIUM

SMOOTH SALTY PROFILE

1:1 REPLACEMENT

SIMPLE TO USE

HIGH QUALITY

CLEAN LABEL



KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000 ControlCert

qValify ISO 9001

qValify ISO 14001

DEMONSTRATION: COMMERCIAL SALTED CRIPS - SALTWELL

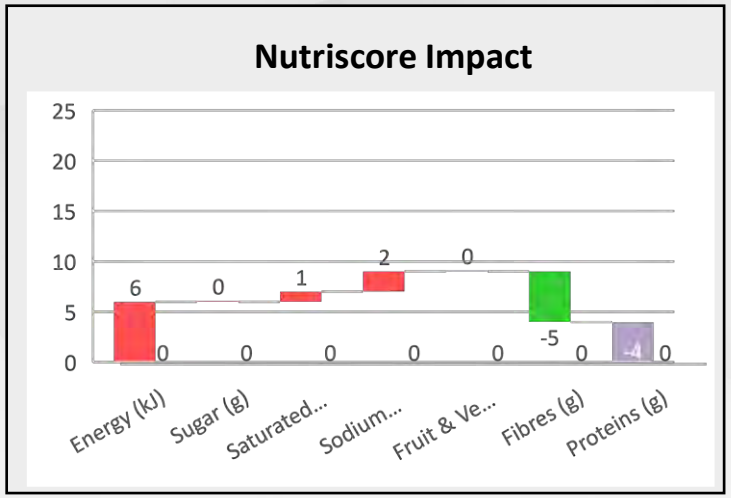
COMMERCIAL EXAMPLES - CRISPS

- Saltwell is a natural sea salt with 35% less sodium.
- Simple 1:1 swap with regular salt
- No loss in functionality/performance
- Some say it tastes “saltier”

- These are (UK) HFSS compliant

Ingredient Declaration: Potatoes (72%), Rapeseed Oil (27%), Salt (1%)

Notes:



Nutritional Data: /100g	Saltwell Crisps
Energy kJ	2,178
Energy k Cal	521
Fat	29.8
Of which saturates	1.9
Carbohydrates	55.8
Of which Sugar	0.4
Fibre	6.1
Protein	7.4
Sodium	0.240
Equivalent as Salt	0.600
NUTRISCORE	B
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DEMONSTRATION: COMMERCIAL FLAPJACK - SALTWELL

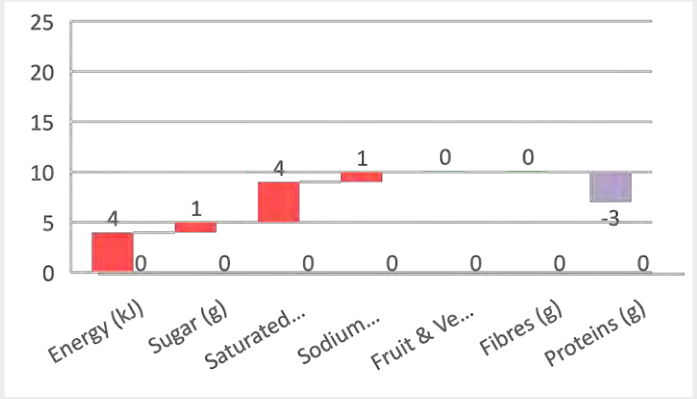
COMMERCIAL FLAPJACK - SALTWELL

- Salt is used in sweet products as part of improving / enhancing the flavour
- Simple 1:1 swap with regular salt can help I the overall product performance and back of pack performance
- No loss in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration: Oats (38%), Chicory Root Fibre, Vegetable Oils (Rapeseed, Palm), Sunflower Seeds, Golden Syrup, Fat-Reduced Cocoa Powder (3.6%), Liquid Sugar, Chocolate (2.5%) (Cocoa Mass, Sugar, Cocoa Butter, Fat-Reduced Cocoa Powder, Emulsifier: **Soya** Lecithin), Humectant: Glycerine, Linseed, Palm Fat, Modified Starch, Soya Flour, Demerara Sugar, Starch, Natural Vanilla Flavouring, Sea Salt, Emulsifier: **Soya** Lecithin, Citrus Fibre, Natural Flavouring, Stabiliser: Xanthan Gum, Molasses

Notes:

Nutriscore Impact



Nutritional Data: /100g	Saltwell
Energy kJ	1,607
Energy k Cal	386
Fat	22.0
Of which saturates	4.0
Carbohydrates	33.0
Of which Sugar	8.9
Fibre	17.0
Protein	6.3
Sodium	0.092
Equivalent as Salt	0.230
NUTRISCORE	C
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SALT TO SALTWELL - IN SOLUTION

SALTWELL®
— LESS SODIUM · ALL NATURAL —

Salt in application / solution



1% standard salt
(388mg Na)

1% SALTWELL
(256mg Na)

Performs like / actual effects / tastes like

1% standard salt	388mg sodium
1% SALTWELL	256mg sodium
1.5% SALTWELL	388mg sodium

Nutritional Data: /100g	Control / Standard	Saltwell
Energy kJ	0	0
Energy k Cal	0	0
Fat	0.0	0.0
Of which saturates	0.0	0.0
Carbohydrates	0.0	0.0
Of which Sugar	0.0	0.0
Fibre	0.0	0.0
Protein	0.0	0.0
Sodium	0.388	0.256
Equivalent as Salt	0.994	0.655

1% Salt Nutritional

SALTWELL®

— LESS SODIUM · ALL NATURAL —

HIGH QUALITY INGREDIENT INTERNATIONALLY CERTIFIED

KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000

ControlCert

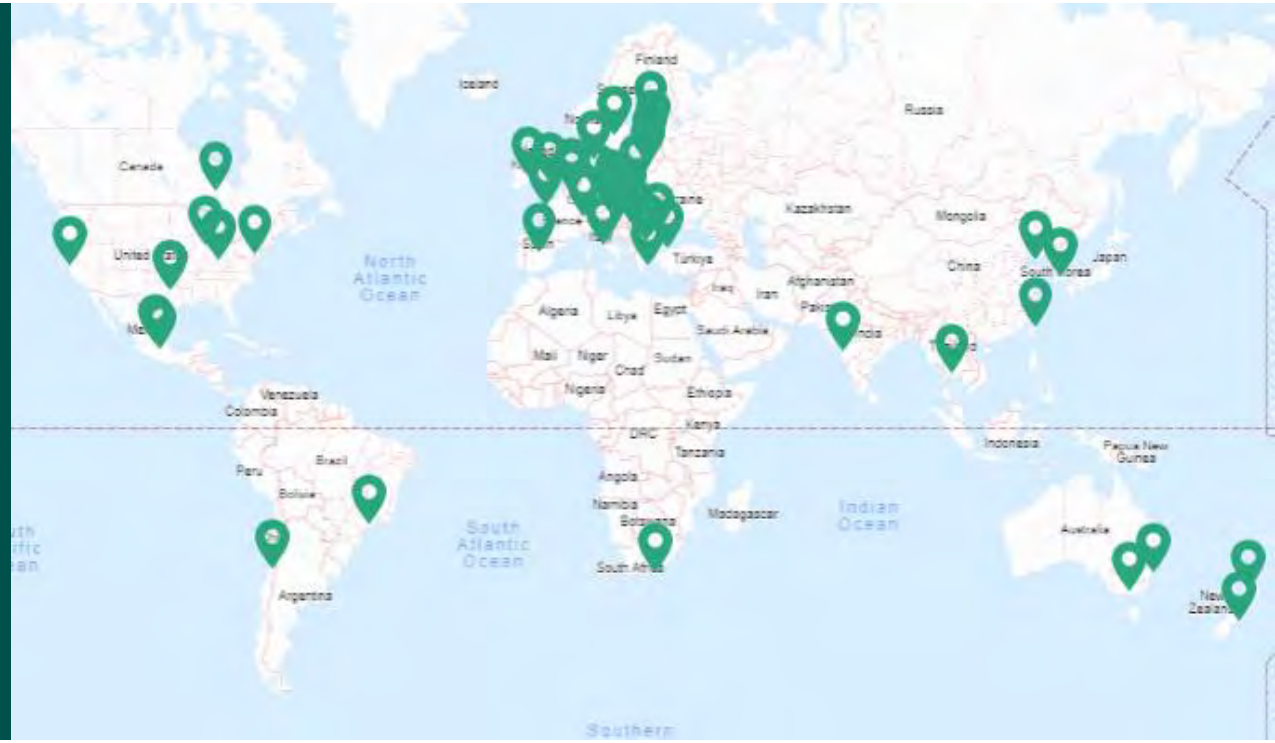
qValify ISO 9001

qValify ISO 14001

RAPID GLOBAL ADOPTION

SALTWELL®

- Used in ALL major market regions by 1000's food producers and brands.
  - As a direct single ingredient
  - Or in seasoning/ingredient blends
- Growing exponentially
- Requested and used by major supermarket retailers' own brands









SALTWELL®

REFINED, PROCESSED AND MADE FOOD GRADE QUALITY IN CYPRUS, EU

BRCGS

Food Safety

CERTIFICATED

SALTWELL vs SALT MINERAL BLENDS

SALTWELL®
— LESS SODIUM · ALL NATURAL —

SALTWELL

- ✓ **Tastes like salt**
- ✓ **Natural solar harvest and evaporation process**
- ✓ **NaCl, KCl, & minerals naturally present in each grain**
- ✓ **Functions like standard salt, 1:1 replacement**
- ✓ **No adjustments needed in recipe or ingredient dec**
- ✓ **Clean label**
  - ✓ **sea salt; salt; reduced sodium sea salt**



SALT MINERAL BLENDS

- ✗ **Bitter & metallic off-flavors**
- ✗ **Manufactured blending process**
- ✗ **KCl; MgCl; CaCl and NaCl added separately**
- ✗ **Functions differently to standard salt**
- ✗ **Recipe and ingredient adjustments needed**
- ✗ **Potassium chloride added to list of ingredients**



PRIMARY PRODUCT GRADES

SALTWELL®



SALTWELL REGULAR (271200)



SALTWELL Microfine (270221)



SALTWELL NATURAL (279200)

KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000 ControlCert

qValify ISO 9001

qValify ISO 14001

SALTWELL REGULAR (271200)

SALTWELL®

Normal grain size: 0.3–1.6 mm

Free-flowing assured with anti-caking agent

NATURALLY LOW IN SODIUM BY 35%



Applicable with various methods

- *Dry mixing*
- *Directly added in dry form*
- *Brine or other liquid solution*
- *Slurry, suspended in saturated brine or other liquids*
- *Able to be mechanically or manually dispersed/ broadcasted*

KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000 ControlCert

qValify ISO 9001

qValify ISO 14001

SALTWELL MICROFINE (270221)

SALTWELL®

Powder grain size: 0.01-0.3mm

Free-flowing assured with anti-caking agent

NATURALLY LOW IN SODIUM BY 35%

A high performer in topical seasoning applications!

Applicable with various methods

- *Dry mixing*
- *Directly added in dry form*
- *Brine or other liquid solution*
- *Slurry, suspended in saturated brine or other liquids*
- *Able to be mechanically or manually dispersed/ broadcasted*



KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000 ControlCert

qValify ISO 9001

qValify ISO 14001

SALTWELL NATURAL (279200)

SALTWELL®

Normal grain size: 0.3-1.6mm

NATURALLY LOW IN SODIUM BY 35%

NO ANTI-CAKING ADDITIVE USED

Applicable with various methods

- *Dry mixing*
- *Directly added in dry form*
- *Brine or other liquid solution*
- *Slurry, suspended in saturated brine or other liquids*
- *Able to be mechanically or manually dispersed/ broadcasted*



KOSHER

HALAL

BRC FOOD CERTIFICATED

ISO 22000

qValify ISO 9001

qValify ISO 14001

MAIN APPLICATION AREAS

SALTWELL®



COMMERICAL TASTINGS & SUCCESSES














SALTWELL®
— LESS SODIUM · ALL NATURAL —

SODIUM REDUCTION & REFORMULATION IN BREAD CASE

- SODIUM REDUCED BREAD
  - Using reduced sodium salt (Saltwell)
    - 1.143 kg / 100kg dough

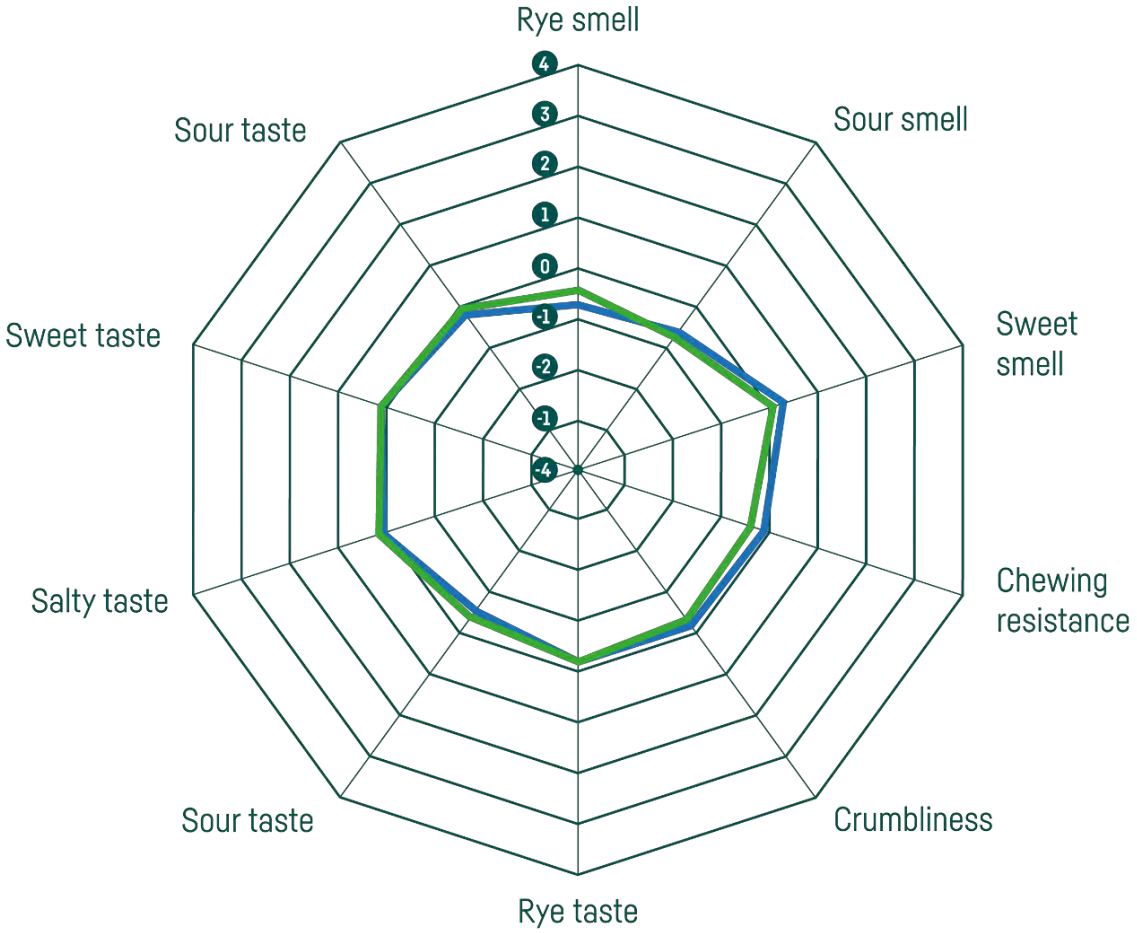
  Sensory Analysis
    - trained panel (7)

  Consumer test
    - 66 respondents





RESULTS



- **26% reduction in sodium achieved**
  - 0.74 g salt / 100 g [286.8 mg Na / 100 g] declared
- **No differences noticed SALTWELL v Standard Salt**
  - Confirmed by Consumer Test + Trained Panellists

SODIUM REDUCTION & REFORMULATION IN BREAD COMMERICAL CASE



- **Plain White Bread Rolls**
- Ingredients: wheat flour, water, yeast, sugar, wheat gluten, sodium-reduced iodized sea salt, soy flour, wheat sourdough, dextrose, emulsifier [E471], [E472e]), vegetable oil (canola, rapeseed), pre-gelatinized wheat flour, milk protein, wheat malt flour, pea protein, flour improver (ascorbic acid [E300]), maltodextrin, natural flavor, yeast.
- Of which added sugars are 2.9g per 100 grams and added salt is 0.70g per 100 grams.

Typical Values	Per 100g
Energy	1031kJ / 243kcal
Fat	1.3g
Saturates	0.4g
Carbohydrate	47g
Sugars	3.8g
Fibre	1.7g
Protein	10g
Salt	0.7g

NUTRI-SCORE

A B C D E

SODIUM REDUCTION & REFORMULATION IN BREAD COMMERICAL CASE

Wholemeal Bread Rolls

- Ingredients:
- Wholewheat flour, water, yeast, wheat gluten, rye grains, poppy seeds, sesame seeds, corn grits, whole grain malt flour (barley, wheat), sodium-reduced iodized sea salt, sugar, vegetarian whey powder, soy grits, emulsifier [E471], [E481], rapeseed oil, dextrose, flour improver (ascorbic acid [E300]), natural flavor (milk), milk protein, pea protein, maltodextrin.
- Of which added sugars are 1.2g per 100 grams & added salt 0.74g per 100 grams



Typical Values	Per 100g
Energy	1049 / 249kcal
Fat	3.8g
Saturates	0.8g
Carbohydrate	38g
Sugars	5.8g
Fibre	12g
Protein	10g
Salt	0.8g

DEMONSTRATION: COMMERCIAL BREAD - SALTWELL

COMMERCIAL BREAD PRODUCT- SALTWELL

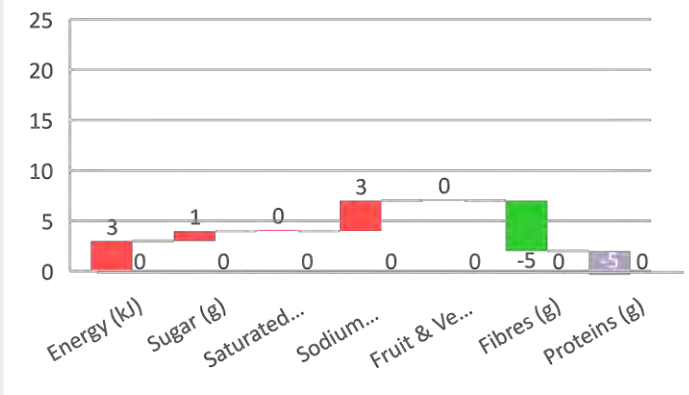
- Example of a commercially sold bread product
- The salt is added for functionality to help develop the dough and control the yeast
  - Too little can affect the quality and processability of the dough
- Simple 1:1 swap with regular salt can be performed
- No loss in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration: Whole **Wheat** Flour, Water, Baker's Yeast, Wheat **Gluten**, Rye Grain (**Gluten**), Poppy Seeds, **Sesame** Seeds, Corn Grits, Whole Wheat Malt Flour (Barley, **Wheat**), Sodium Reduced Iodized Sea Salt, Sugar, Vegetarian **Whey** Powder, **Soy** Grit, Emulsifier (Mono- And Diglycerides Of Fatty Acids, Sodium Stearoyl-2-lactylate), Rapeseed Oil, Dextrose, Flour Treatment Agent (Ascorbic Acid), Natural Flavour (**Milk**), Milk Protein, Pea Protein, Maltodextrin.

Nutritional Data: /100g	Saltwell Bread
Energy kJ	1,049
Energy k Cal	249
Fat	3.8
Of which saturates	0.8
Carbohydrates	38.0
Of which Sugar	5.8
Fibre	7.3
Protein	12.0
Sodium	0.320
Equivalent as Salt	0.800
NUTRISCORE	A
	[-3]

Notes:

Nutriscore Impact



DEMONSTRATION: BREADSTICKS - SALTWELL

BREADSTICKS - SALT VS SALTWELL

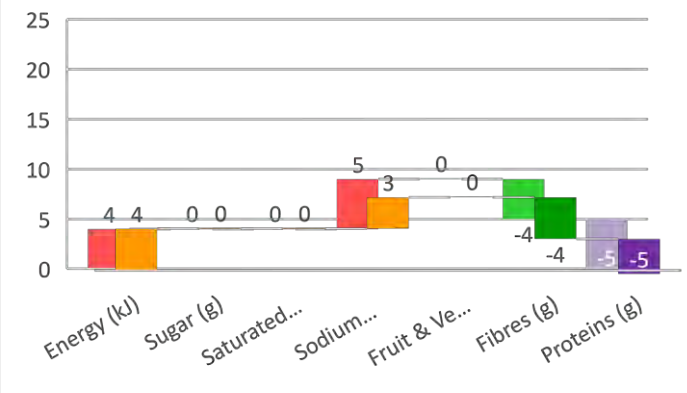
- Bread is a major contributor of salt in our diets and thus reduction can play a key role in helping to improve our diets
- The salt is added for functionality to help develop the dough and control the yeast
  - Too little can affect the quality and processability of the dough
- Simple 1:1 swap with regular salt can be performed
- No loss in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration (Control – Salt): Wheatflour (**Gluten**), Water, Vegetable Oil, Salt, Sugar, Yeast

Ingredient Declaration (Saltwell): Wheatflour (**Gluten**), Water, Vegetable Oil, Sea Salt or Salt, Sugar, Yeast

Notes:

Nutriscore Impact



Nutritional Data: /100g	Salt	Saltwell
Energy kJ	1,670	1,670
Energy k Cal	396	396
Fat	4.2	4.2
Of which saturates	0.6	0.6
Carbohydrates	70.6	70.6
Of which Sugar	1.2	1.2
Fibre	3.9	3.9
Protein	14.8	14.8
Sodium	0.485	0.320
Equivalent as Salt	1.243	0.820
NUTRISCORE	B	A
	[0]	[-2]

DEMONSTRATION: BUTTER - SALTWELL

BUTTER- SALT VS SALTWELL

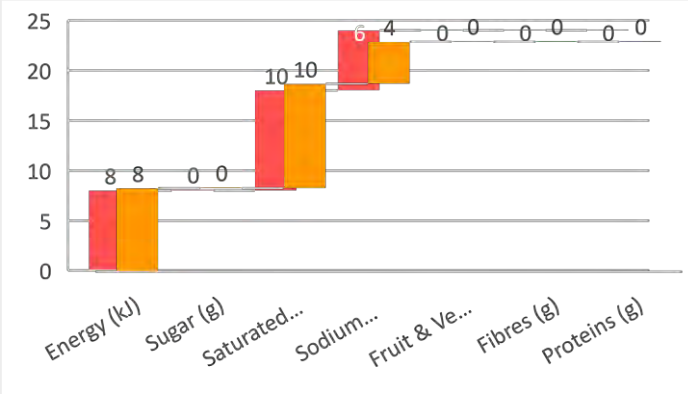
- Salt is added to butter to help with taste and thus a swap to a reduced sodium version is possible
  - Some butter is sold without salt so this will be to personal taste preference
- Saltwell is a natural sea salt with 35% less sodium.
- Simple 1:1 swap with regular salt
- No loss in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration (Control – Salt): Butter (**Milk**), Salt

Ingredient Declaration (Saltwell): Butter (**Milk**), Sea Salt or Salt

Notes:

Nutriscore Impact



Nutritional Data: /100g	Control / Standard	Saltwell
Energy kJ	3,013	3,013
Energy k Cal	733	733
Fat	81.0	81.0
Of which saturates	51.3	51.3
Carbohydrates	0.6	0.6
Of which Sugar	0.6	0.6
Fibre	0.0	0.0
Protein	0.6	0.6
Sodium	0.589	0.390
Equivalent as Salt	1.511	1.001
NUTRISCORE	E	E
	[24]	[22]

SODIUM REDUCTION REFORMULATION IN CURED MEATS COMMERCIAL CASE



COOKED HAM

- 2.53% sodium in SALTWELL formulated ham
  - vs 3.27% sodium in standard salt formulated ones
- 23% sodium reduction achieved
- The ***colour***, ***slice-ability, texture***, and ***moisture*** same in hams with SALTWELL vs Standard Salt

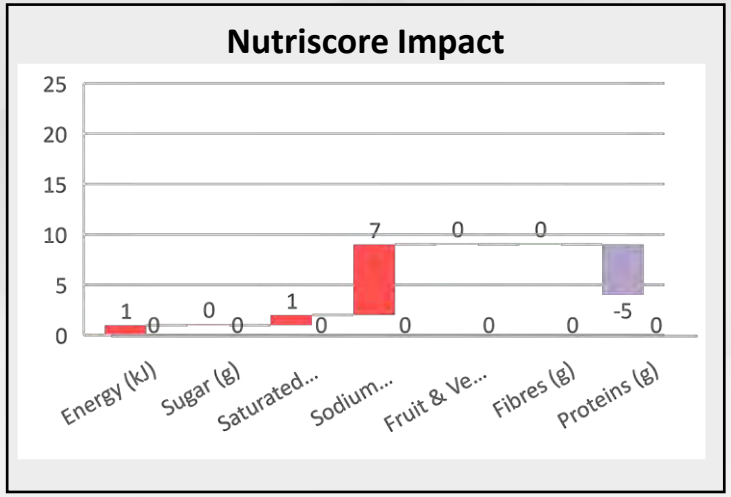
DEMONSTRATION: COMMERCIAL HAM - SALTWELL

COMMERCIAL HAM - SALTWELL

- Meat / cured meat products are significant users of salt in the brines and thus a key area where salt reduction can help create a more healthy diet
- The salt is essential for functionality and food safety and thus lowering levels may have risks
- Simple 1:1 swap to Saltwell still maintains the key functional and food safety parameters with no loss of in functionality/performance
- Some say it tastes “saltier”

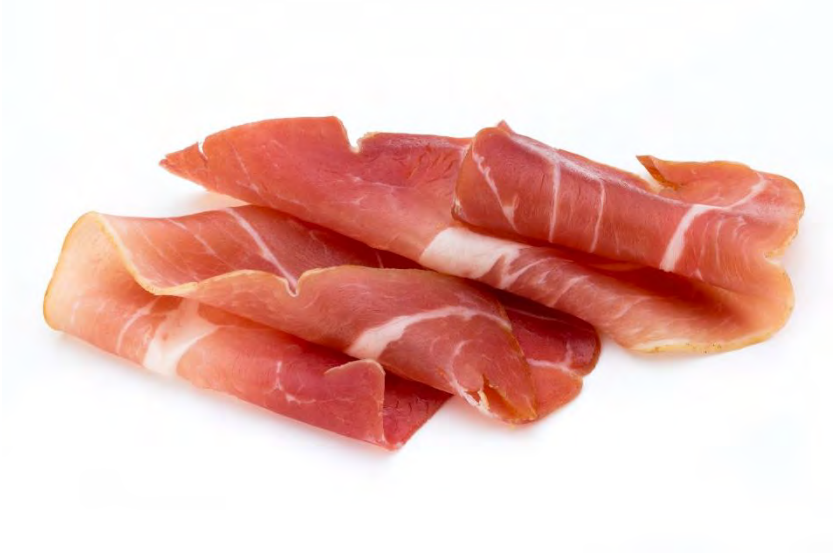
Ingredient Declaration: Pork, Salt, Stabilisers (Triphosphates, Potassium Phosphates, Polyphosphates), Preservative (Sodium Nitrite)

Notes:



Nutritional Data: /100g	Saltwell Ham
Energy kJ	644
Energy k Cal	153
Fat	5.5
Of which saturates	1.9
Carbohydrates	1.0
Of which Sugar	0.5
Fibre	0.6
Protein	25.0
Sodium	0.680
Equivalent as Salt	1.700
NUTRISCORE	C
	[4]

SODIUM REDUCTION REFORMULATION IN CURED MEATS COMMERICAL CASE



Typical Values	Per 100g
Energy	983kJ / 235kcal
Fat	13.0g
Saturates	5.0g
Carbohydrate	<0.5g
Sugars	<0.5g
Fibre	0.9g
Protein	29.03g
Salt	4.3g

INGREDIENTS: PORK; SALT

DRY CURED, PROSCUITTO

- 1720MG SODIUM (4.3% SALT) IN SALTWELL FORMULATED PROSCIUTTO
- 25% SALT/SODIUM REDUCTION ACHIEVED
  - 2320MG SODIUM (5.80% SALT) IN STANDARD PROSCIUTTO
- NO SIGNIFICANT ***TASTE***, ***SLICE-ABILITY***, ***TEXTURE***, AND ***MOISTURE*** IN THE PROSCIUTTO HAMS FORMULATED WITH SALTWELL VS STANDARD SALT

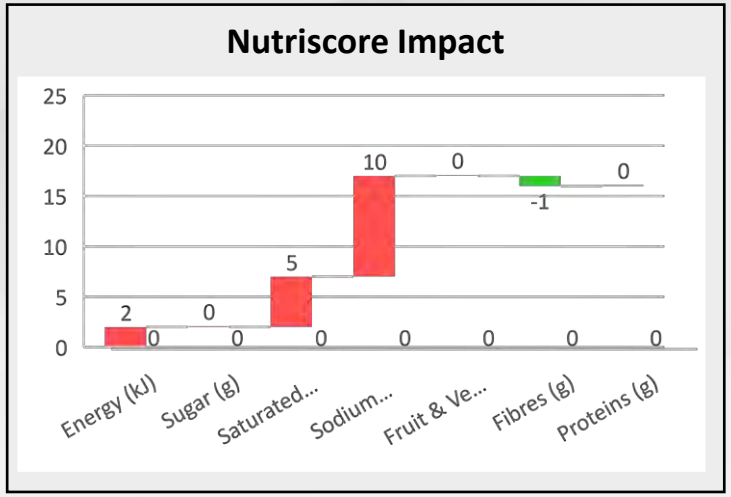
DEMONSTRATION: COMMERCIAL PROSCIUTTO - SALTWELL

Ingredient Declaration: Pork, Salt,

COMMERCIAL SAMPLE PROSCIUTTO - SALTWELL

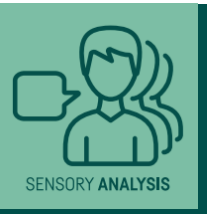
- Meat / cured meat products are significant users of salt in the brines and thus a key area where salt reduction can help create a more healthy diet
- The salt is essential for functionality and food safety and thus lowering levels may have risks
- Simple 1:1 swap to Saltwell still maintains the key functional and food safety parameters with no loss of in functionality/performance
- Some say it tastes “saltier”

Notes:



Nutritional Data: /100g	Saltwell Sausages
Energy kJ	983
Energy k Cal	235
Fat	13.0
Of which saturates	5.0
Carbohydrates	0.5
Of which Sugar	0.5
Fibre	0.9
Protein	29.0
Sodium	1.720
Equivalent as Salt	4.300
NUTRISCORE	D
	[16]

SODIUM REDUCTION REFORMULATION IN SAUCES COMMERICAL CASE

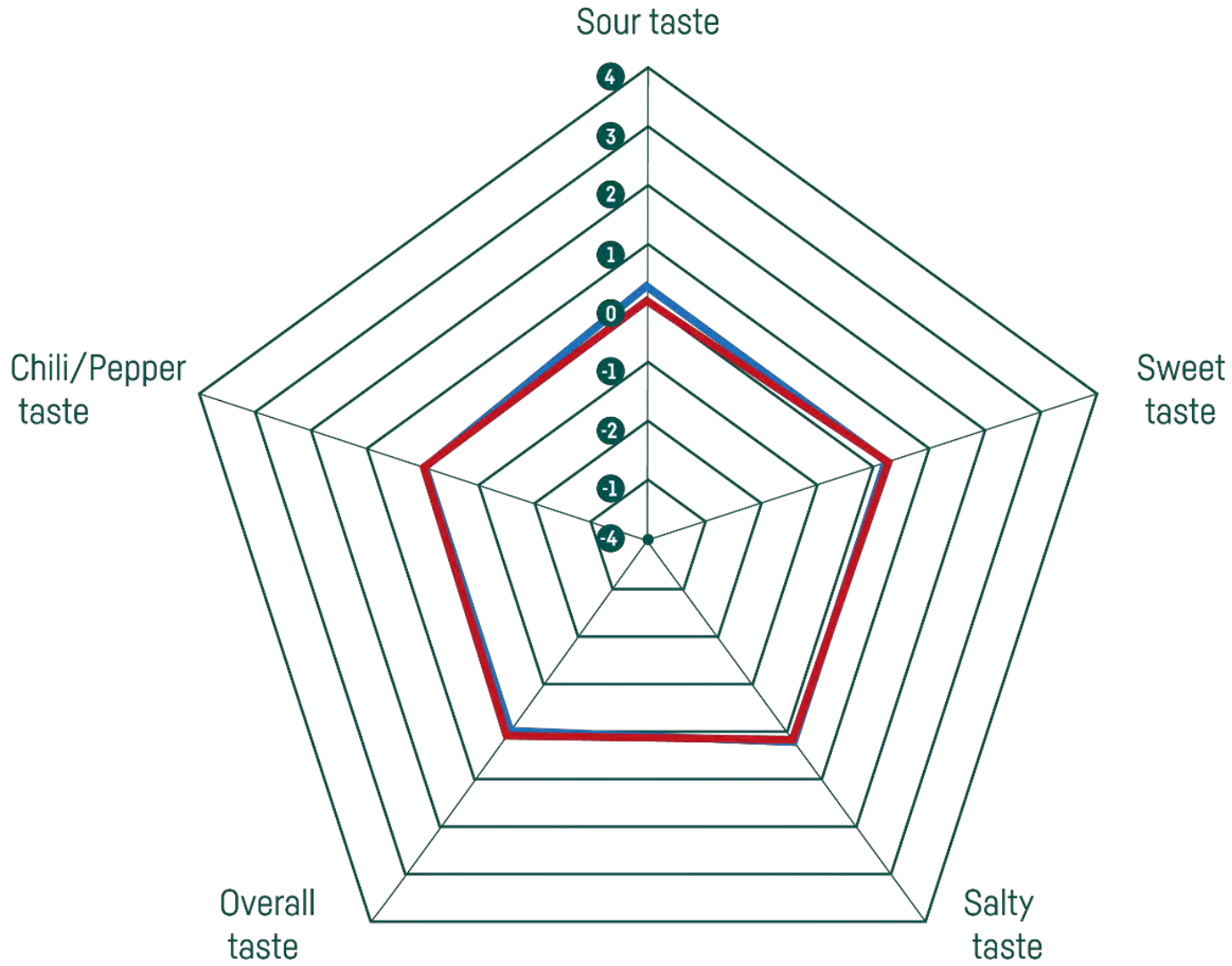


Tomato ketchup

with Standard salt vs. Saltwell

- 1:1 replacement
- Sensory analysis, trained panel
- 5 attributes considered
- Consumer test (60 respondents)





SENSORY **ANALYSIS**



Reference (2% salt)

SALTWELL® (35% reduction)

DEMONSTRATION: TOMATO RELISH - SALTWELL

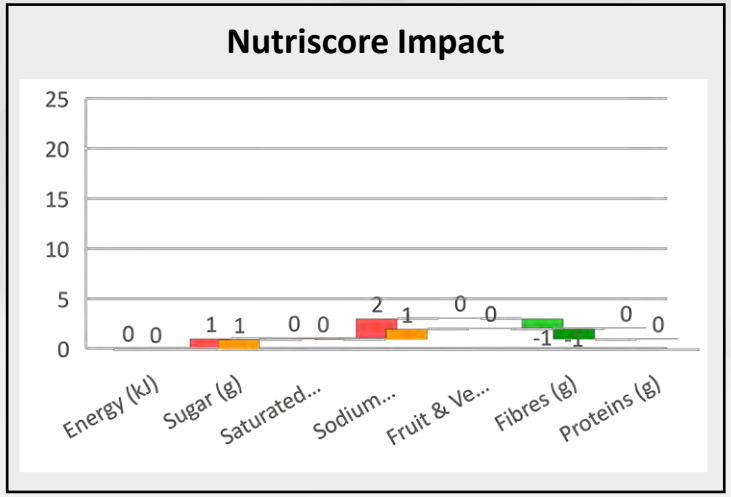
TOMATO RELISH - SALT VS SALTWELL

- Salt is used in sauces, dressings and relishes etc as part of the flavour, and a level of food safety (for example in CIMSCEE controlled emulsions) and low pH pasteurised sauces
- The sodium generally comes from the added salt and thus a simple 1:1 swap with regular salt can help in salt reduction
- No loss in functionality/performance
- Some say it tastes “saltier”
- Further reductions can be achieved using umami based products that can enhance the saltiness / flavour with even lower salt levels

Ingredient Declaration (Control – Salt): Tomatoes, Onions, Modified Potato Starch, Red Wine Vinegar, Brown Sugar, Olive Oil, Ginger, Salt, Garlic, Black Pepper, Chillies, Dried Bay Leaf

Ingredient Declaration (Saltwell): Tomatoes, Onions, Modified Potato Starch, Red Wine Vinegar, Brown Sugar, Olive Oil, Ginger, Sea Salt or Salt, Garlic, Black Pepper, Chillies, Dried Bay Leaf

Notes:



Nutritional Data: /100g	Control / Standard	Saltwell
Energy kJ	334	334
Energy k Cal	80	80
Fat	3.3	3.3
Of which saturates	0.5	0.5
Carbohydrates	11.9	11.9
Of which Sugar	7.4	7.4
Fibre	1.2	1.2
Protein	1.0	1.0
Sodium	0.182	0.122
Equivalent as Salt	0.468	0.312
NUTRISCORE	B	B
	[2]	[1]

SODIUM REDUCTION REFORMULATION COMMERICAL CASE: PORK BBQ SAUSAGES

SALTWELL®

Ingredients: Pork, Water, Starch, **Sea salt**, Spices (paprika, onion, white pepper), Natural aroma (black pepper), Vinegar, Radish plant extract. Smoked with maple and oak smoke aroma

Typical Values	Per 100g
Energy	1076kJ / 257kcal
Fat	2.1g
Saturates	0.7g
Carbohydrate	8.03g
Sugars	0.1g
Protein	10g
Salt	1.9g (2.5g previous)



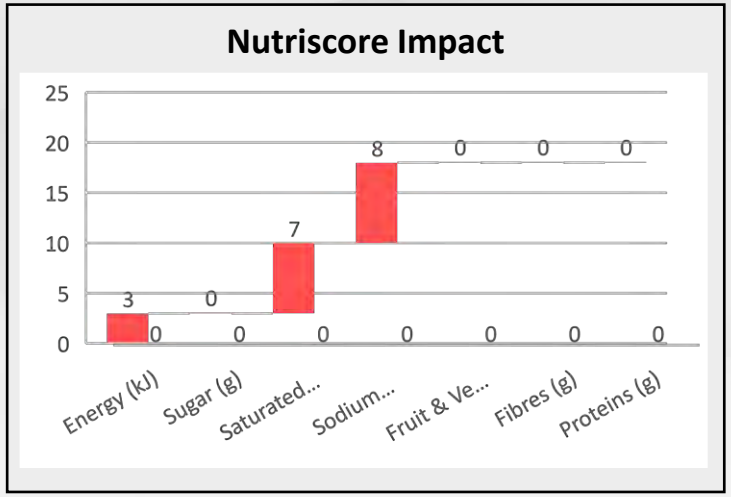
DEMONSTRATION: COMMERCIAL SAUSAGES – GRILLING SAUSAGE

COMMERCIAL SAUSAGES - SALTWELL

- Meat / cured meat products are significant users of salt in the brines and thus a key area where salt reduction can help create a more healthy diet
- The salt is essential for functionality and food safety and thus lowering levels may have risks
- Simple 1:1 swap to Saltwell still maintains the key functional and food safety parameters with no loss of in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration: Swedish Meat 70% (Pork), Water, Starch (Swedish Potato), Sea Salt, Spices (Paprika, Onion, White Pepper), Natural Aroma (Black Pepper), Vinegar, Plant-based Extract (Radish)

Notes:



Nutritional Data: /100g	Saltwell Sausages
Energy kJ	1,076
Energy k Cal	257
Fat	21.0
Of which saturates	7.0
Carbohydrates	8.0
Of which Sugar	0.1
Fibre	0.0
Protein	10.0
Sodium	0.760
Equivalent as Salt	1.900
NUTRISCORE	D
	[18]

DEMONSTRATION: COMMERCIAL SAUSAGES - FRANKFURTER

COMMERCIAL SAUSAGES - SALTWELL

- Meat / cured meat products are significant users of salt in the brines and thus a key area where salt reduction can help create a more healthy diet
- The salt is essential for functionality and food safety and thus lowering levels may have risks
- Simple 1:1 swap to Saltwell still maintains the key functional and food safety parameters with no loss of in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration: Swedish Meat 70% (Pork), Water, Starch (Swedish Potato), Sea Salt, Spices (Paprika, Onion, White Pepper, Ginger, Nutmeg, **Celery**), Natural Aroma (Black Pepper), Vinegar, Plant-based Extract (Radish)

Nutritional Data: /100g	Saltwell Sausages
Energy kJ	1,076
Energy k Cal	257
Fat	21.0
Of which saturates	7.0
Carbohydrates	8.0
Of which Sugar	0.1
Fibre	0.0
Protein	10.0
Sodium	0.760
Equivalent as Salt	1.900
NUTRISCORE	D
	[18]

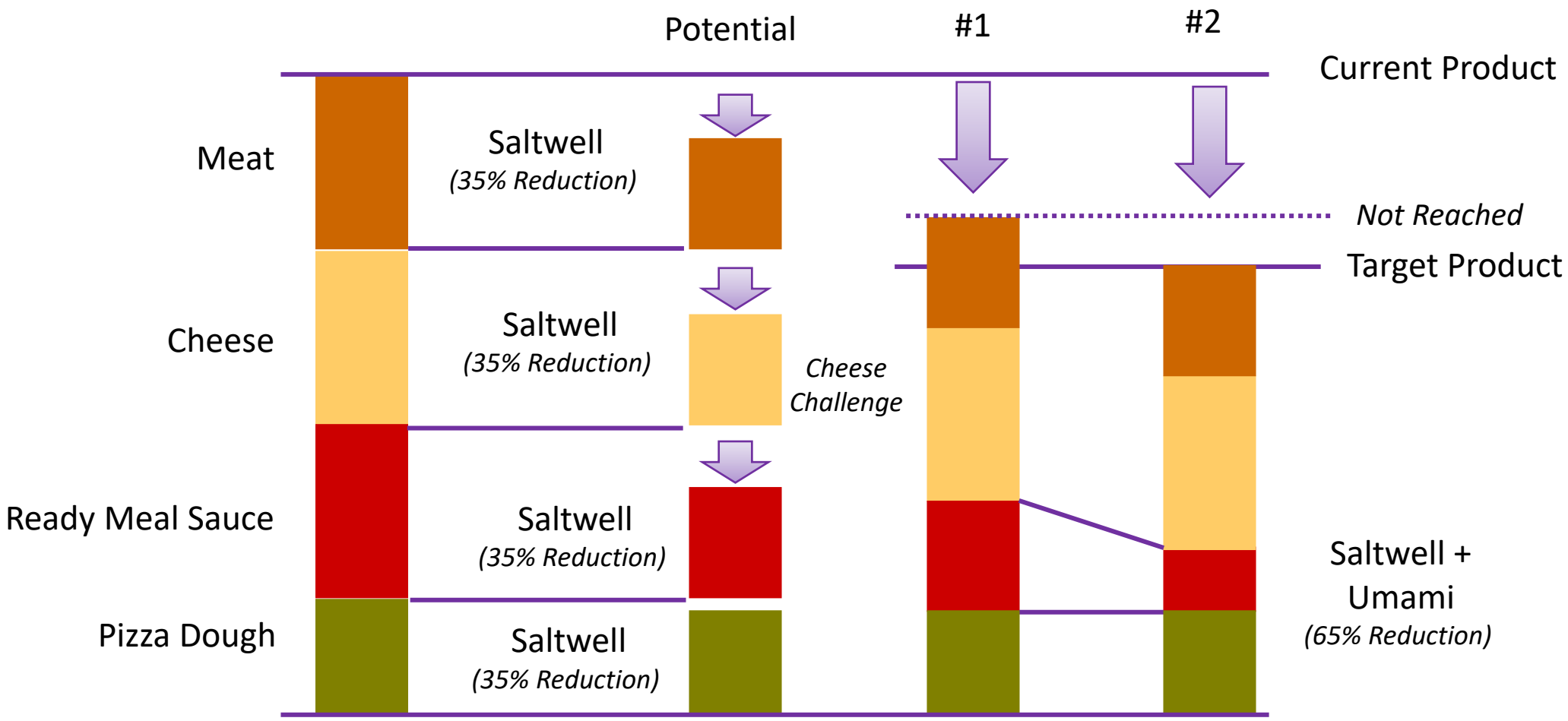
Notes:

Nutriscore Impact

COMPONENT BUILDS - MEALS / MEAL SOLUTIONS

SALTWELL®

Ready Meals / Pizzas / Sandwiches etc…



DEMONSTRATION: COMPLETE PIZZA BUILD

PIZZA BUILD - SALT VS SALTWELL

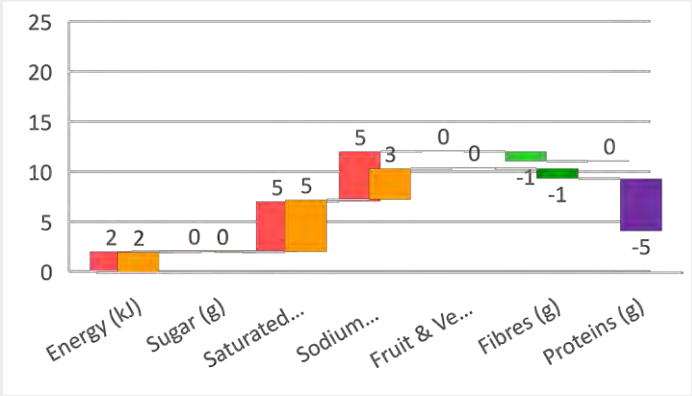
- Salt is found in many different components on making a pre-prepared product such as a pizza or a ready meal.
  - 25 – 30% reduction in example
- Salt reduction in each component can then lead to an overall salt reduction
  - Pizza – dough base
  - Pizza – tomato sauce (where salt is reduced further with umami taste enhancement)
  - Pizza – meat topping
  - Pizza – cheese – this is still more of a challenge but can be achieved

Ingredient Declaration:

See individual component slides

Notes:

Nutriscore Impact



Nutritional Data: /100g	Control / Standard	Saltwell
Energy kJ	966	969
Energy k Cal	230	231
Fat	11.5	11.5
Of which saturates	5.3	5.3
Carbohydrates	20.4	20.5
Of which Sugar	1.3	1.3
Fibre	1.2	1.2
Protein	10.6	10.7
Sodium	0.452	0.338
Equivalent as Salt	1.159	0.867
NUTRISCORE	D	C
	[11]	[4]

DEMONSTRATION: PIZZA DOUGH BASE - SALTWELL

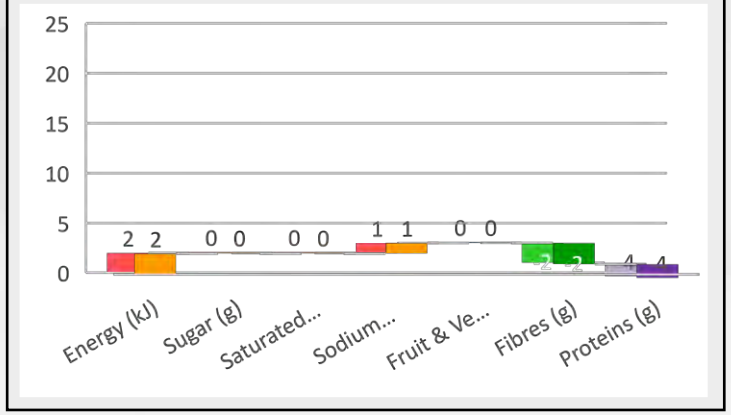
PIZZA BASE - SALT VS SALTWELL

- Pizza dough / bread is a major contributor of salt in our diets and thus reduction can play a key role in helping to improve our diets
- The salt is added for functionality to help develop the dough and control the yeast
  - Too little can affect the quality and processability of the dough
- Simple 1:1 swap with regular salt can be performed
- No loss in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration (Control – Salt): Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Water, Olive Oil, Yeast, Sugar, Salt

Ingredient Declaration (Saltwell): Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Water, Olive Oil, Yeast, Sugar, Sea Salt or Salt

Notes:



Nutritional Data: /100g	Salt	Saltwell
Energy kJ	897	897
Energy k Cal	213	213
Fat	3.0	3.0
Of which saturates	0.6	0.6
Carbohydrates	36.5	36.5
Of which Sugar	1.0	1.0
Fibre	2.1	2.1
Protein	7.8	7.8
Sodium	0.155	0.103
Equivalent as Salt	0.398	0.264
NUTRISCORE	A	A
	[-3]	[-3]

DEMONSTRATION: PIZZA SAUCE - SALTWELL

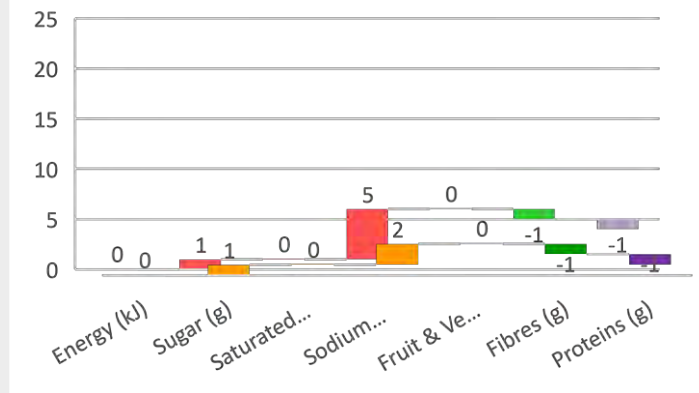
PIZZA BSAUCE - SALT VS SALTWELL

- Salt is used in sauces, dressings and relishes etc as part of the flavour, and a level of food safety (for example in CIMSCEE controlled emulsions) and low pH pasteurised sauces
- The sodium generally comes from the added salt and thus a simple 1:1 swap with regular salt can help in salt reduction
- Further reductions can be achieved using umami based products that can enhance the saltiness / flavour with even lower salt levels (70%)
    - MCLS – Aromild / Ajitop

Ingredient Declaration (Control – Salt): Water, Tomato Puree, Rapeseed Oil, Red Wine Vinegar, Potato Starch, Salt, Dried Mixed Herbs, Garlic Puree, Sugar, Rowan Extract

Ingredient Declaration (Saltwell): Water, Tomato Puree, Rapeseed Oil, Red Wine Vinegar, Potato Starch, Dried Mixed Herbs, Garlic Puree, Sea Salt or Salt, Sugar, Rowan Extract, Natural Flavour

Notes:



Nutritional Data: /100g	Standard - Control	Saltwell + MCLS
Energy kJ	319	327
Energy k Cal	77	79
Fat	4.2	4.2
Of which saturates	0.3	0.3
Carbohydrates	8.3	8.4
Of which Sugar	5.1	5.1
Fibre	1.7	1.7
Protein	1.7	2.0
Sodium	0.495	0.204
Equivalent as Salt	1.268	0.524
NUTRISCORE	C	B
	[4]	[1]

DEMONSTRATION: COMMERCIAL SAUSAGES - GUSTO DE ITALIA

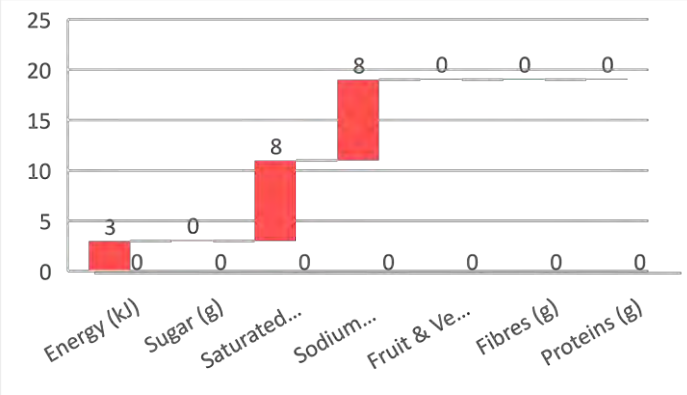
COMMERCIAL SAUSAGES - SALTWELL

- Meat / cured meat products are significant users of salt in the brines and thus a key area where salt reduction can help create a more healthy diet
- The salt is essential for functionality and food safety and thus lowering levels may have risks
- Simple 1:1 swap to Saltwell still maintains the key functional and food safety parameters with no loss of in functionality/performance
- Some say it tastes “saltier”

Ingredient Declaration: Swedish Meat 70% (Pork), Water, Starch (Swedish Potato), Sea Salt, Spices (Paprika, Onion, White Pepper, Tomato, Oregano, Basil, Garlic, Black Pepper, Kyndell), Natural Aroma (Black Pepper), Vinegar, Plant-based Extract (Radish), Smoked Aroma From Maple And Oak

Notes:

Nutriscore Impact



Nutritional Data: /100g	Saltwell Sausages
Energy kJ	1,121
Energy k Cal	268
Fat	21.0
Of which saturates	8.0
Carbohydrates	10.0
Of which Sugar	0.1
Fibre	0.0
Protein	10.0
Sodium	0.760
Equivalent as Salt	1.900
NUTRISCORE	E
	[19]

Role of Salt – IMPACT

SALTWELL®

Preser

Availability
+
Impedes g
pathogens
organ

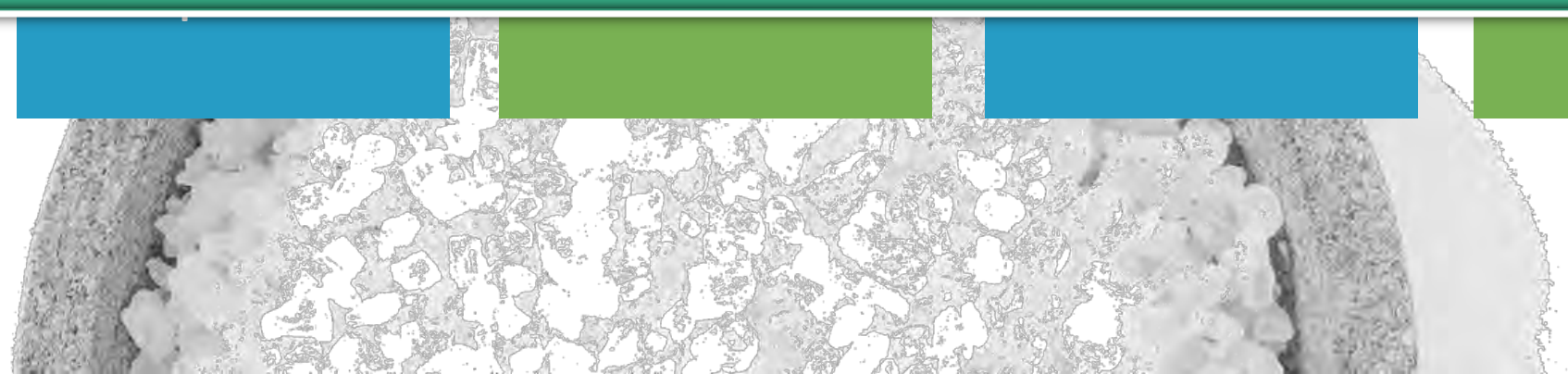
Impact on
enzymes

Flavour

hances other
flavours

ces sweetness,
esses bitterness

SALTWELL ENSURES
THE FULL FUNCTIONALITY OF SALT
BUT WITH 35% LESS SODIUM



Reduce salt without compromising on flavour or function.. use SALTWELL instead of standard salt

- Proven on wet and dry applications for +10yrs
- Naturally low in sodium
- 1:1 replacement for NaCl
- Simple, easy to use
- Cost efficient
- High quality
- Clean label





OTHER BENEFITS OF USING SALTWELL TO REFORMULATE YOUR PRODUCTS

- ✓Short NPD process
- ✓Ingredient labelling remains stable
- ✓No changes required in end production processes
- ✓Low risk for confusion or inclusion errors at production line levels

CONTACT

SALTWELL AB - HEAD OFFICE
Gothenburg, Sweden.

www.saltwellsalt.com

Main contact for EUROPE
Mr Andrew Arbuthnott
andrew@saltwellsalt.com

News and articles about Sodium Reduction
linkedin.com/company/saltwellab

For technical support and reformulation advise on sodium and salt reduction in IRELAND or the UK, contact Healy Group:

info@healy-group.com
+353 1 404 9200
www.healy-group.com





REFORMULATION FOR A HEALTHY IRELAND, OCTOBER 2023 LUNCH

HEALY GROUP

WHAT IS SUGAR?

Sugar is commonly associated with 'Sucrose'
This is a di-saccharide but there are many other types of 'sugar' in our food products e.g. glucose, fructose…

A 'sugar' – in chemical terms is made up of:
A small chain – carbohydrate
Carbon, hydrogen, oxygens in small molecular weights / sizes

Water soluble/Solubility
More or less soluble; important in food systems

$[C_6H_{12}O_6]n$





ROLE OF SUGAR

Flavour & Colour

- Sweetness enhancement
- Taste Modulation
- Maillard Reaction (Baking)

Moisture Retention

- Prevent staleness
- Water Activity

Energy

- Calories
- Fermentation Support
- Health Claims
- GI

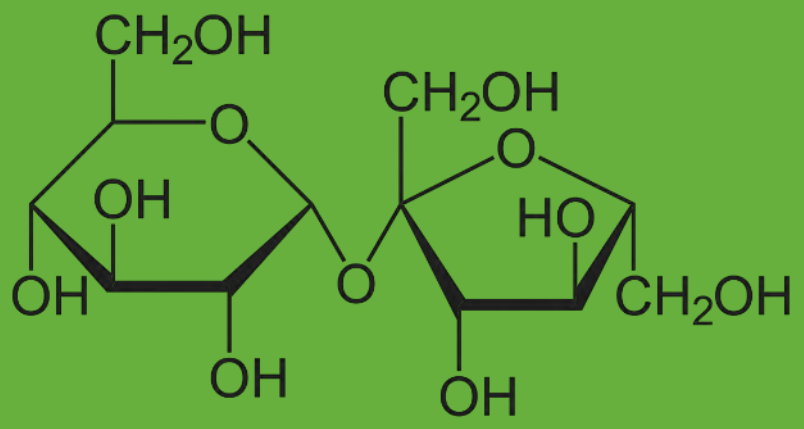
Texture

- Bulking
- Ice Crystal Growth
- Freezing Point Depression

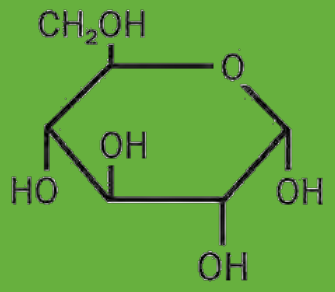
Preservation

- Processing
- Antimicrobial
- Water Activity

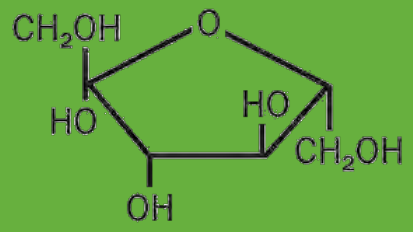
TYPES OF SUGAR

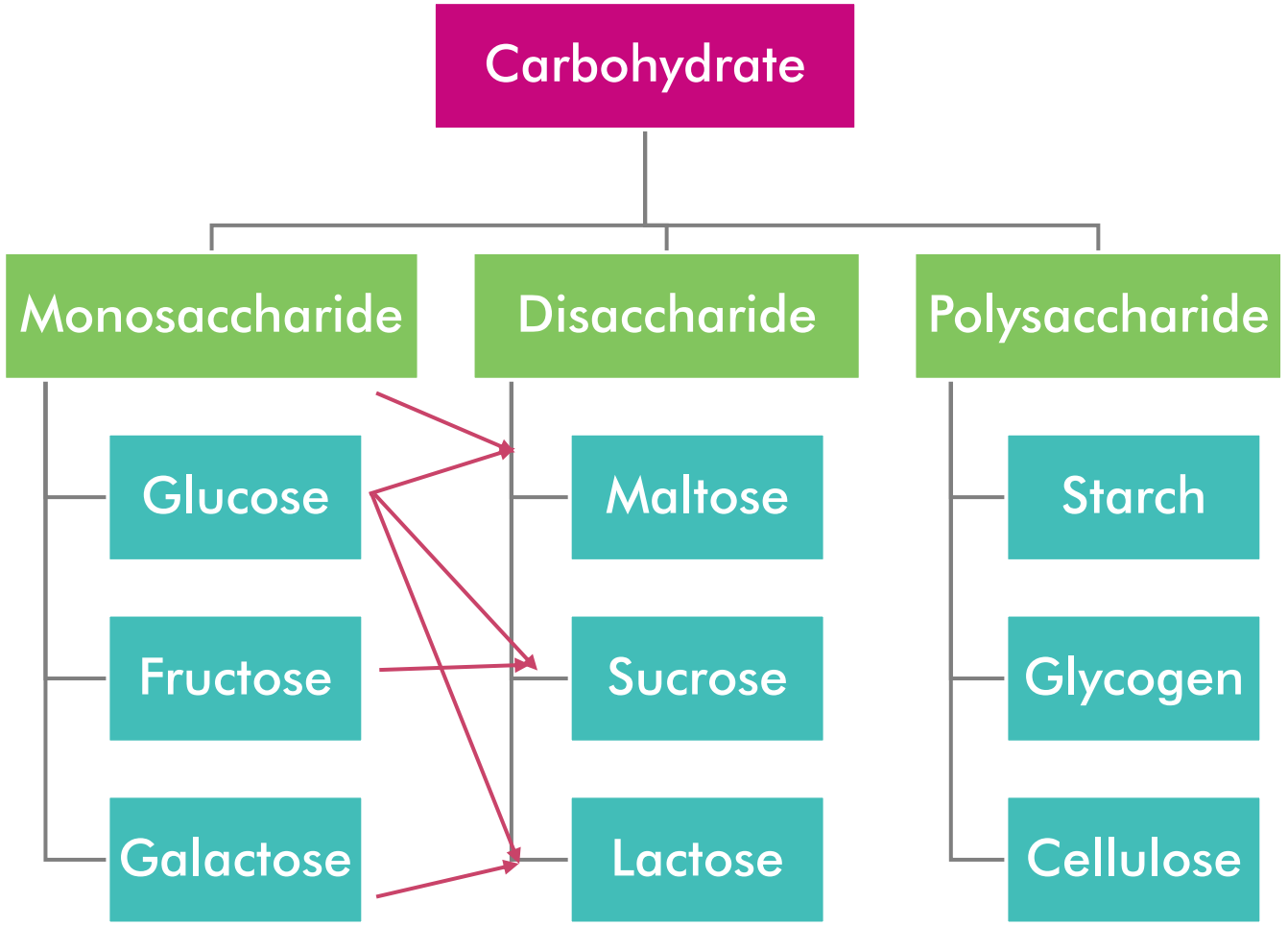


Glucose

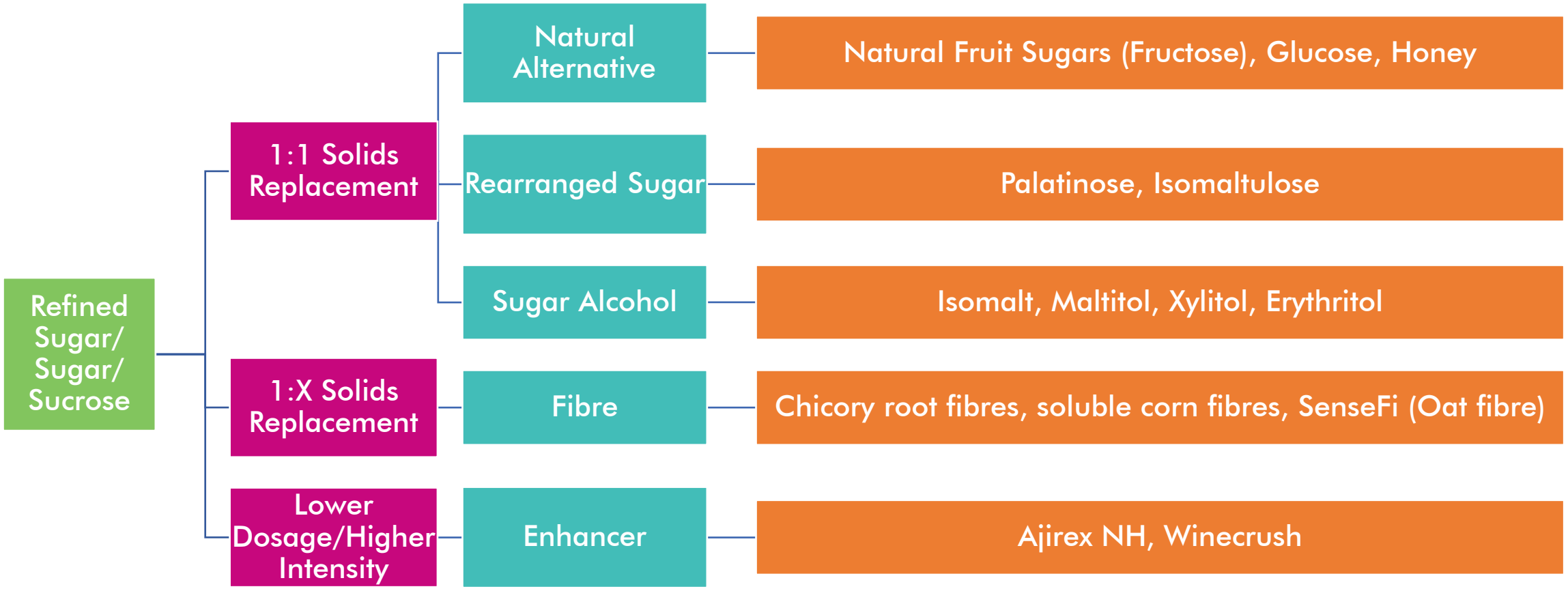


Fructose





SUGAR REDUCTION OPTIONS





Severance

Habituation/ Consumer Acceptance

Natural Substitution

Natural or non-digestible alternative

Sweetness Enhancing

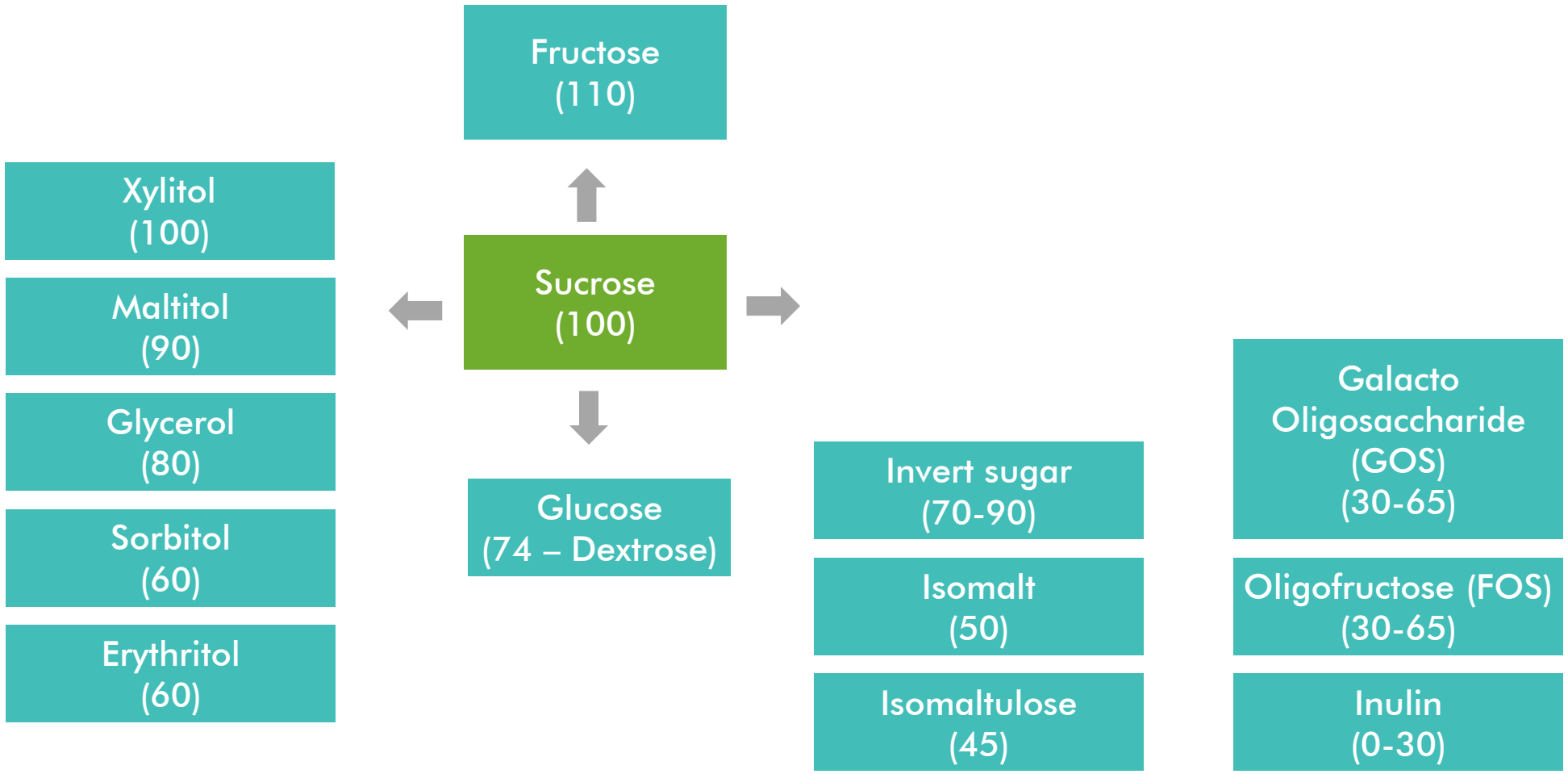
e.g. Taste modulators

Other Substitution

Add high intensity sweeteners

APPROACHES TO SUGAR REPLACEMENT

RELATIVE SWEETNESS (SIMPLIFIED)



SUGAR: ADDING BACK BULK

Replacing the bulk (solids)

- Sweetness
- Water absorption / holding
- Structure / texture
- Freeze point depression



Options

- Low molecular weights
  - Sugar alcohols (maltitol/isomalt)
- Medium chain
  - Functional starches
  - Oligosaccharides
- Longer chain
  - Chicory root fibres
  - Soluble corn fibres





KATRIEN VERHAEGEN, BENEO

HEALY GROUP

QUESTION:
FREE SUGARS ACCOUNT FOR WHAT % OF DAILY CALORIC INTAKE FOR IRISH ADULTS?



HEALY GROUP


beneo
connecting nutrition and health
Reformulation for a Healthy Ireland
BENEO's solutions for sugar and fat reduction



Agenda

- Introduction
- Chicory root fibres: Sugar and fat reduction with a plus +
- scFOS for sugar reduction and fibre enrichment
- Isomalt: sugar replacement
- Meatless®: fat reduction in meat with unique texturizing technology
- Optimizing HFSS: inspirational recipes
- Sustainability: part of BENEO's DNA
- Q&A

Introduction to BENEO

SÜDZUCKER



Formed in **2007**

6 production sites in Germany, Belgium, Netherlands, Italy and Chile

7 local offices in Belgium, Brazil, Germany, India, Singapore, Spain and USA

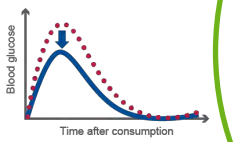
80 active in more than countries

more than **1000** employees

meatless® a brand of beneo

Orafti® Inulin & Oligofructose from chicory root



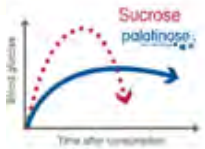


prebiotic

Functional carbohydrates from sugar beet







Faba Bean Protein Ingredients



Natural, Clean Label, Gluten Free

Protein enrichment

Excellent amino acids profile complementary to cereals (e.g. rice)

Functional products from 6+ natural sources

Beta Glucan from Barley



Fibre enrichment

Blood sugar management

Cardiovascular health

Specialty Rice Ingredients



Natural
Gluten Free
Unique textures

Functional protein from wheat



Reliable protein quality

Visco-elasticity

Water absorption

Innovative solutions from natural sources

Sugar reduction

Chicory root

- Oligofructose
- Inulin



Sugar beet

- scFOS



Sugar free

Sugar beet

- Isomalt



Fat reduction

Chicory root

- Inulin



Rice

- Native rice starch



Faba/Rice

- Textured rice/faba flakes



Agenda

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Optimizing HFSS: inspirational recipes

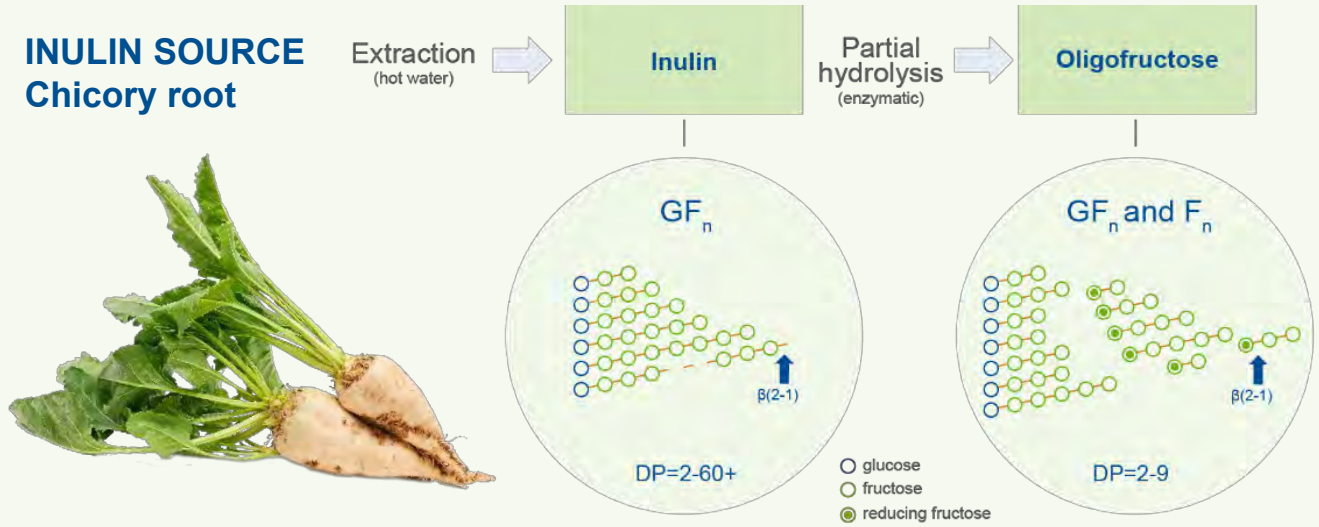
Sustainability: part of BENEO's DNA

Q&A

Inulin and oligofructose from the chicory root

What makes it so special?

Inulin naturally occurs in many foods. Chicory has one of the highest %





artichoke bananas onions leek garlic

Tackle fat and sugar*

- Sugar reduced
- Fat reduced
- Calorie reduced

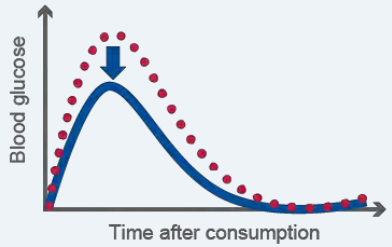
Improve digestive health*

- Support normal bowel function

+ prebiotic*



Reduce the blood sugar levels*



Fibre enrichment*

* Conditions of use to be applied

From Chicory Root to a wide range of Prebiotic Fibres

beneo
connecting nutrition and health

Chicory roots
(15-17% inulin)



Gentle hot water extraction

Inulin

Orafti®GR
Orafti®ST-Gel
Orafti®HSI

Partial Enzymatic Hydrolysis

Oligofructose

Orafti®P95
Orafti®L95
Orafti®L92/90/85/75

Removal of Short Chains

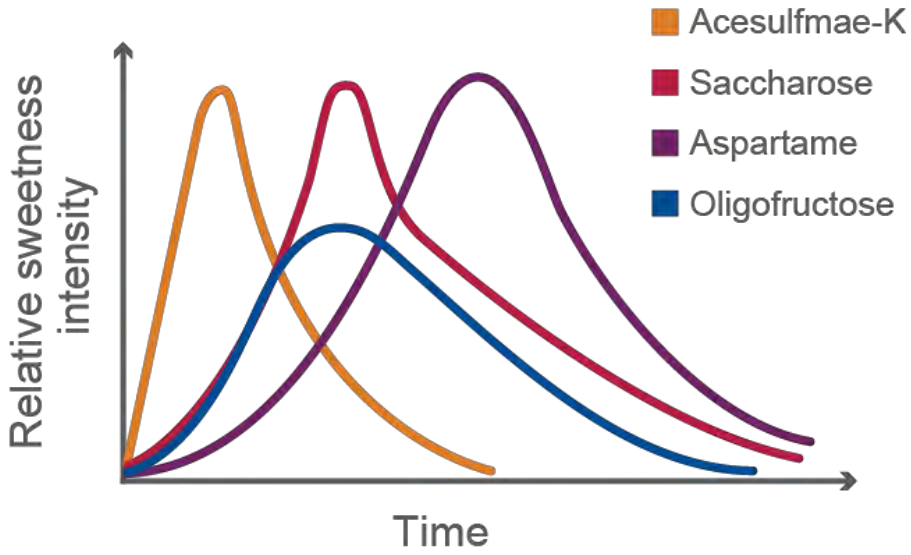
Long Chain Inulin

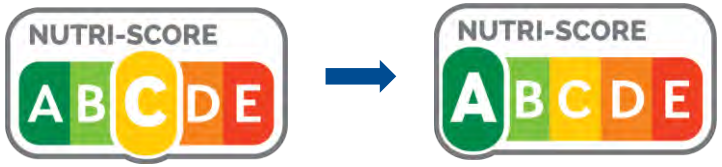
Orafti®HP
Orafti®HPX
Orafti®FTX

Labelling options: *chicory root fibre* (all), *inulin*, *oligofructose*

Chicory root fibres
…a great sugar reducer!

- Sugar-like physical properties:
  - High solubility
  - Bulk sweetener => texture/body
  - Easy handling (liquid or powder)
- Sugar-like sensorial properties:
  - Pleasant Sweetness
    - Sweetness profile similar to sucrose
    - Well-balanced, no off-taste & good fruit flavour release
  - Great in combination with HIS*
    - Masking after-taste
    - Synergies





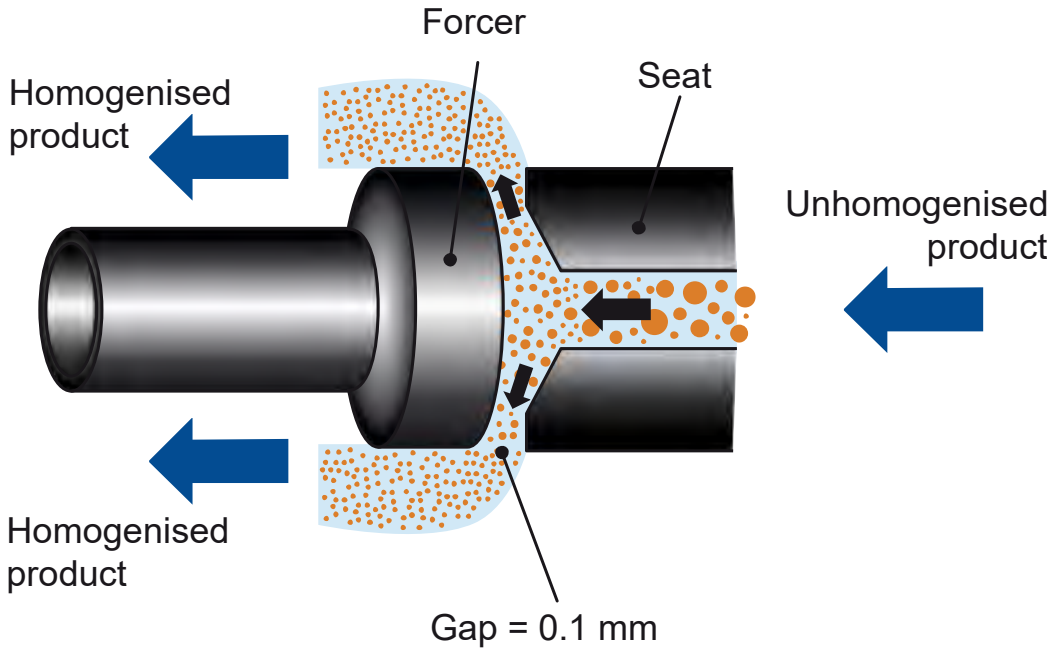
Fibre enriched + Sugar reduced + No taste compromise

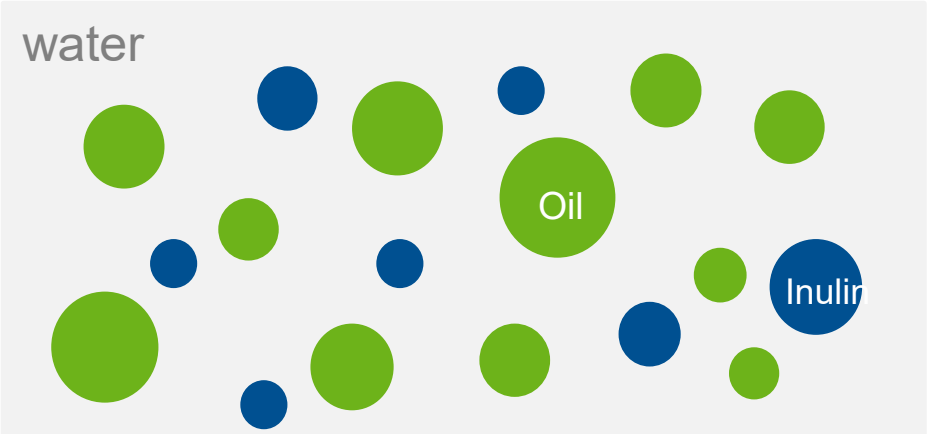
- No added sugar claim possible**

* HIS: High intensity sweeteners

** Under Conditions of Use

Chicory root inulin
…great fat reducers!



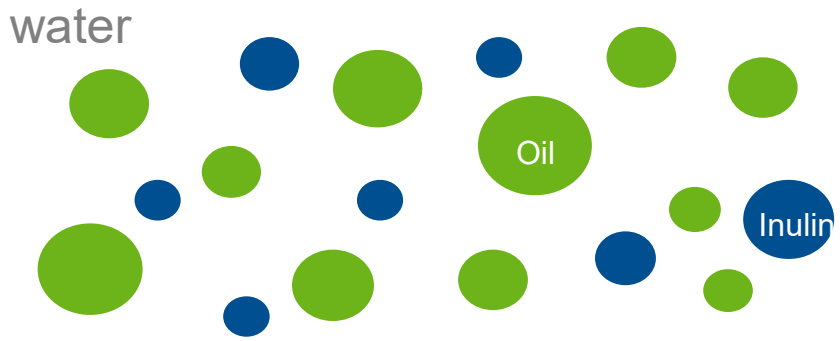


- **Add inulin to water-containing system**
- **Applying shear (f.e.homogenisation)**
  - Dispersed inulin particles in water phase
- **Dispersed inulin particles:**
  - Have similar size as fat droplets (1-3 µm)
  - Texturize the water phase
  - Result in fat mimic effect

Fat reduction with inulin

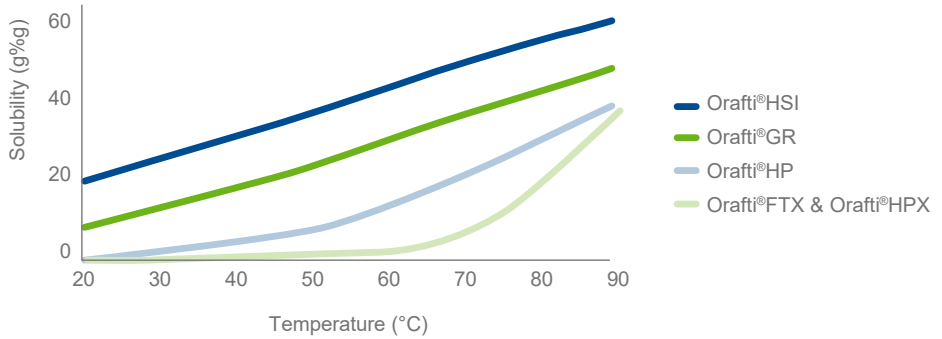
What do you need?

- Oil-in-water emulsion
- Process with high shear
- Inulin with low solubility



What do you get?

- Excellent texture!



Focus applications:

Dairy Desserts



Bakery



Cream Cheese & Dairy spreads



Processed Cheese



Yoghurt



Sauces



Sausages



Chocolate spreads & Fillings





Functional Fibres

beneo
connecting nutrition and health

Sugar & carb quality

Sugar Reduction & Replacement



Sensory immersion

Fat Reduction Texturizing



Digestive & immune health

Digestive Health Fibre Enrichment



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Prebiotic effect of chicory root fibre
Increase of bifidobacteria and various health benefits

beneo institute
connecting nutrition and health

Prebiotic effect of chicory root fibre

Selective increase of bifidobacteria[1,2]

Approved EU health claim

prebiotic*

Improved bowel function[1]

- Higher stool frequency in adults[3]
- Softer stools in children[4]

Improved bone health

- Increased calcium absorption[5,6]
- Higher bone mineral density[6]

Blood glucose management[7]

- Lower blood glucose response[8]
- Balanced blood glucose day profile[9]

Approved EU health claim

Stronger inner defence[10]

- Less infections[4]
- Improved antibody response[11]

Body weight management[7]

- Less energy intake[12,13]
- Supports weight loss in overweight / obesity[14]
- Healthy weight gain during growth[15,16]

Literature list available upon request

Gut happy inside



High in prebiotic* fibre promoting digestive health* and inner wellbeing*

Reduced sugars

Delicious taste

Supporting my family's digestive health is easy with YoGut. It contains a powerful blend of live cultures and prebiotics*. The natural prebiotics* feed the important bacteria naturally present in your gut, taking care of our digestive wellbeing*.

Prebiotic* Fruit Yoghurt tastes great on its own and makes a convenient breakfast or snack combined with cereal or fresh fruit. It is the perfect choice with 3.8 g of prebiotics* per portion for good digestive health* and day-to-day inner happiness*.

Healthy gut, happy family = a happy me!



*Chicory inulin promotes regular gut function by increasing frequency of bowel movements. This yoghurt, containing 3.8 g of chicory inulin per portion is ideal as part of a varied and balanced diet and healthy lifestyle. The beneficial effect is obtained with a daily intake of 12 g chicory inulin.

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Benefits of using prebiotic Orafti® Inulin & Oligofructose in food products

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connecting nutrition and health

Natural fibre from chicory root

- "Chicory root fibre" labelling
- Natural, clean label ingredient
- Soluble fibre



PREBIOTIC* fibre

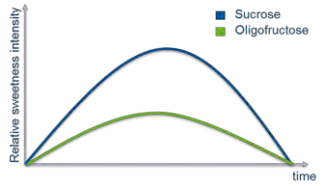
- The only plant-based prebiotic
- The highest level of scientific evidence

Additional health benefits*

- Reduced blood glucose response
- Weight management, …

Sugar reduction PLUS

- Sucrose-like physical properties => providing texture/body
- Sucrose-like sensorial properties => mild sweetness, no off-taste
- Sugars out, fibre in, less calories
- Improvement of nutritional profile



Texturising & fat reduction

- Excellent creaminess & texturising effect
- Fat out, fibre in, less calories
- Improvement of nutritional profile



NUTRI-SCORE
A B C D E

* Depending on local legislation



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- Optimizing HFSS: inspirational recipes
- Sustainability: part on BENEO's DNA
- Q&A

Short-chain fructooligosaccharides

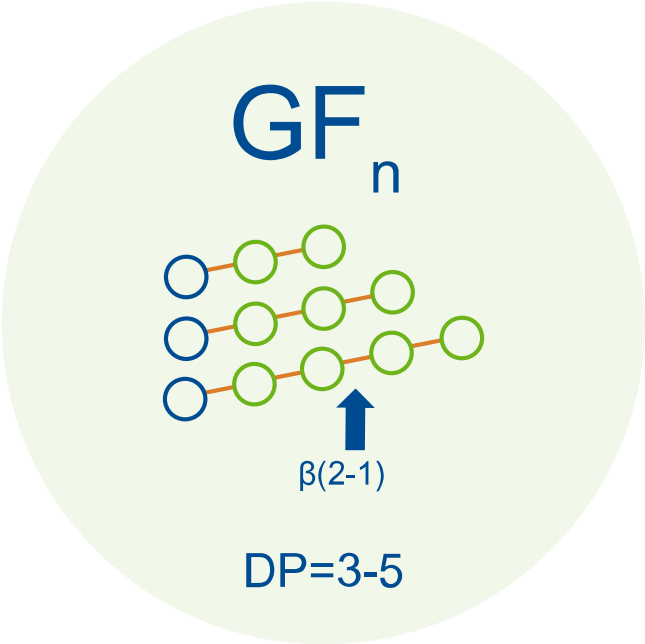
Beneo-scL85

Sugar syrup



Enzymatic re-arrangement

Short-chain fructo-oligosaccharides



Key properties:

- Solube fibre
- Slightly sweet & pleasant taste
- High solubility
- Easy fibre enrichment
- Tasty sugar reduction
- Wide variety of applications
- Labelling options "*short-chain fructooligosaccharides*" (*scFOS*) or "*fructooligosaccharides*"

An apple-a-day just got tastier!

Make mornings easy or afternoons feel good



An improved recipe: Rich in fibre and with 30% less sugars

Tastes great everytime!

These soft and chewy muesli bars wrap delicious **whole grains**, **dried apple** and a touch of **cinnamon**.

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connecting nutrition and health

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Q&A

BENEO Isomalt

What makes it so special?

Isomalt is the only sugar replacer derived from sugar beet

NATURAL SOURCE BEET SUGAR

Natural source

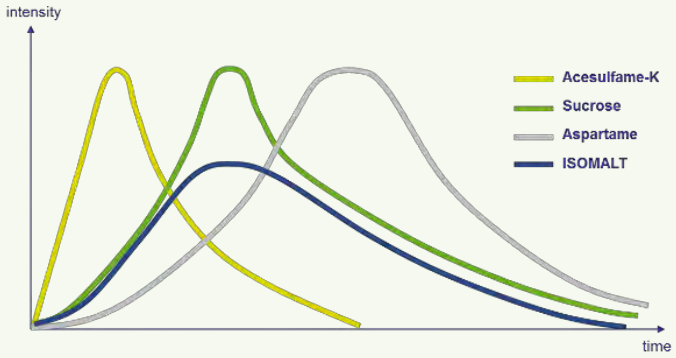
- Bulk sweetener with only half the calories of sugar
- Pure, sugar-like taste
- Low digestible (fibre-like)
- Kind to teeth

Tooth friendly

Polyols (bulk sweeteners) replace sugar cup by cup (1:1)



Sweetness Profile



SUGAR FREE

LESS SUGAR

NO SUGAR ADDED

ISOMALT = 2.4 kcal/g [EU]
[2.0 kcal/g – US]

Reduction of blood sugar levels









APPLICATIONS

Hard boiled candies Chewing gum centre Hard baked goods Ice cream	Chewing gum coating Jam Soft baked goods Ice cream	Direct compressible tablets	Chocolate



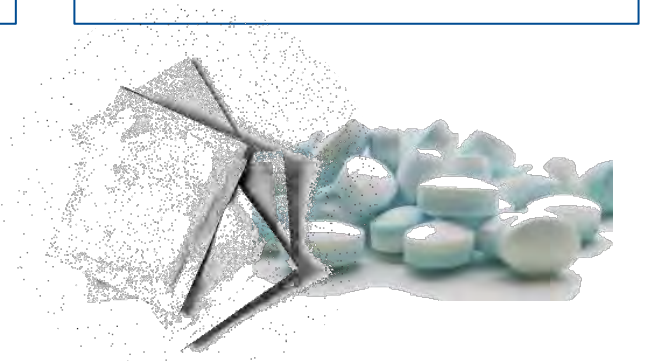
ISOMALT ST

Excellent stability Very low hygroscopic



ISOMALT GS

Higher solubility Effect on softness



ISOMALT DC

Good flowability Excellent compression



ISOMALT LM

Low moisture Good texture

TECHNICAL PROPERTIES

Reduce or replace the sugar… Main Applications for ISOMALT



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* Consumption of foods containing isomalt instead of sugar contributes to the maintenance of tooth mineralization. ** Consumption of foods containing isomalt instead of sugar leads to a lower blood glucose rise after consumption compared to sugar-containing foods. Marketing product concept – developed by and for BENEO. National food legislation to be considered.



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Meat & fish alternatives with Meatless®

Unique hydrocolloid technology





Raw materials

Mixing

Hydrocolloid technology

Drying	Freezing
DEHYDRATED flake	**FROZEN flake**
Packaging	Packaging
Storage	Frozen storage

Transport to the customer

- **Fast scalable** technology
- **Not** dependent on the functionality of proteins, different raw materials possible

- Meatless® products are **low processed**:
  - Not made under high pressure
  - Made with low use of energy
  - Pasteurised, not sterilised
  - Made of whole food grains and pulses

Meat & fish alternatives with Meatless®

Unique benefits of Meatless® flakes



- Hydrocolloid-based texturising solutions => irregularly formed flake
- High flexibility & variety in raw materials
- Particle size: **fine** (≤ 10 mm*) and **coarse** (2-20 mm)





- Colour: ranging from very white to brownish, depending on the raw material



- Clean taste
- Protein content is depending on the type

* For frozen fine flakes ≤ 10 mm; for dehydrated fine flakes ≤ 3 mm

FITness BURGER

CONSCIOUS, RESPONSIBLE, ACTIVE



- Tasty burger made with 50% certified beef and 50% plant-based ingredients and vegetables such as faba bean
- Source of nutritious faba bean protein keeping you going through active days
- Same great taste and texture as a regular quality burger





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Sugar and fat reducing solutions in a wide range of applications

Sugar reduction

Chicory root

- Oligofructose
- Inulin



Sugar beet

- scFOS



Sugar free

Sugar beet

- Isomalt



Fat reduction

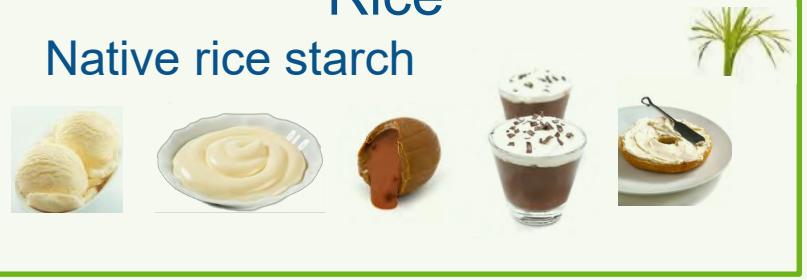
Chicory root

- Inulin



Rice

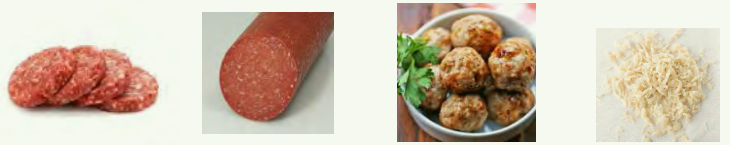
- Native rice starch



Faba/Rice

- Textured rice/faba flakes

meatless® a brand of beneo





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Instant Cappuccino

Formulation

INGREDIENTS (powder mix)	Test recipe Dry Mix % w/w	Reference Dry Mix % w/w
Cappuccino base[1)]	56.00	56.17
Orafti®GR	28.00	0.00
Sucrose	0.00	28.00
Instant coffee	15.70	15.75
Acesulfame K	0.20	0.00
Anti-caking agent[2)]	0.10	0.08
Total	**100.00**	**100.00**

1) Vana Cappa 23B, Kievit
2) Cafos M, Budenheim

Key benefits:

- Reduced blood sugar response
- Source of fibre

HFSS : Less Healthy ➔ Healthy

Instant Cappuccino

Typical values per 100 g	Reference Recipe	Points	Test Recipe	Points
Energy (kJ/kcal)	150,4	0	129,5	0
Fat (g)	1,1		1,1	
of which saturates (g)	1,1	1	1,1	1
Carbohydrate (g)	5,6		3,3	
of which sugars (g)	3,8	0	1,5	0
Fibre (g)	0,4	0	2,7	2
Protein (g)	0,6	0	0,7	0
Salt (g)	0,0		0,0	
Sodium (mg)	5	0	5	0
A point		1		1
C point		0		2
Score		1 Less Healthy		-1 Healthy

Case Study
Starbucks Caffè Latte & Caramel Macchiato Multiserve (UK)

Stay in. Chill out.

Caffè Latte, the classic chilled blend of Starbucks® bold espresso and creamy milk. Whilst Caramel Macchiato offers a mix of bold espresso with creamy milk and hints of caramel flavour.



BIGGER PACK

The same great taste as your classic favorites, in a convenient bigger pack which delivers more coffee and more value for chilled coffee moments at home.



100% ARABICA COFFEE

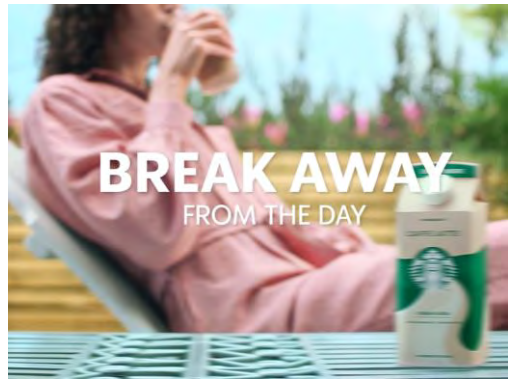
Made with a chilled blend of our bold signature espresso roast coffee and cool creamy milk.

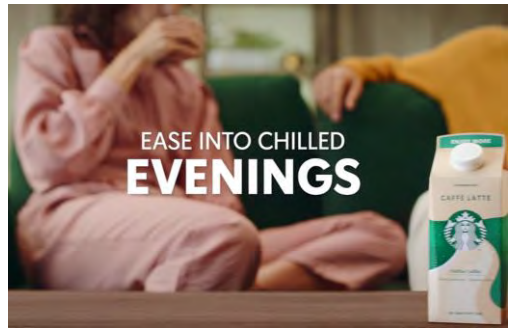
Café Latte

3.1% Fat milk (75%), Starbucks® Arabica coffee (Water, Coffee Extract) (19.2%). Sugar (4.7%), Chicory Inulin, Natural Coffee Flavouring, Acidity Regulator (Potassium Carbonate), Emulsifiers (Mono- and Diglycerides of Fatty Acids of Vegetable Origin), Stabilisers (Carrageenan, Guar Gum)









DISCLAIMER: The information contained in this document is the description of the product as it is publicly available. This document contains no confidential information obtained from the producing company. By showing products containing functional ingredients in this document, BENEO does not imply that the product contains BENEO functional ingredients.

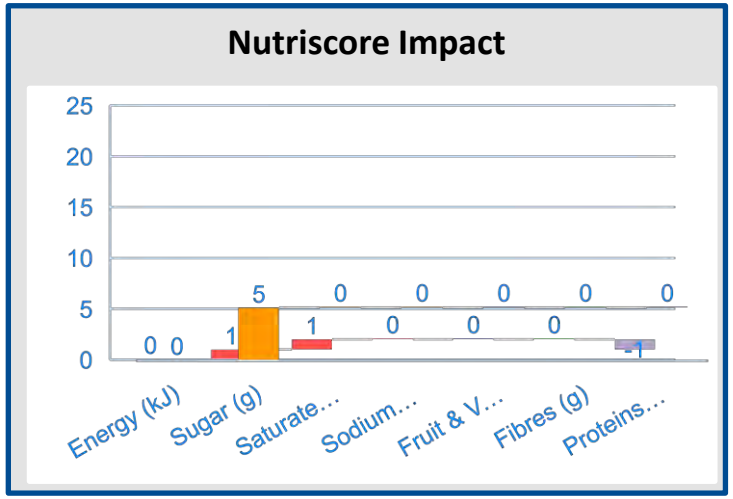
DEMONSTRATION: LATTE COFFEE-SUGAR REDUCTION

MILK BEVERAGE - SUGAR REDUCTION

- Chicory root fibres / inulin can help reduce sugar whilst giving body, mouthfeel and some sweetness
  - Orafti fibres

Ingredient Declaration: 3.1% Fat **Milk** (75%), Starbucks® Arabica Coffee (Water, Coffee Extract) (19.8%), Sugar (4.2%), Chicory Inulin, Acidity Regulator (Potassium Carbonate), Stabilisers (Gellan Gum, Carrageenan)

Notes:



Nutritional Data: /100g	Latte
Energy kJ	293
Energy k Cal	70
Fat	2.4
Of which saturates	1.5
Carbohydrates	8.7
Of which Sugar	8.2
Fibre	0.0
Protein	2.8
Sodium	0.036
Equivalent as Salt	0.090

NUTRISCORE	B
	[1]

Reduced sugars plant-based muffin

INGREDIENTS (% w/w)	Reference	Test recipe
Wheat flour	30.00	31.50
Water	17.00	22.60
Sugar	15.80	9.80
Vegetable fat	13.00	13.00
Beneo-scL85	-	**7.50**
Invert sugar	5.00	5.00
BeneoPro FB P60	-	**3.50**
Remygel 663	3.00	3.00
Glycerol	2.50	2.50
Minor ingredients (e.g. raising agents, salt)	q.s.	q.s.
Eggs	9.60	-
Skimmed milk powder	2.50	-
TOTAL	**100.00**	**100.00**
Energy (kJ/kcal)	*1604/383*	*1532/366*
Sugars (g/100 g)	*23.8*	*16.6*
Protein (g/100 g)	*5.7*	*6.0*
Fibre (g)	*1.3*	*7.6*

Key benefits:

- **Total egg replacement** thanks to addition of **faba bean protein concentrate**
- Further improvement of nutritional profile by using scFOS or Orafti® Fibre to **reduce sugar** content and increase fibre level & additional health claims possible*

HFSS : Less Healthy ➔ Healthy

*Depending on local legislation; ** The information given is subject to final publication of the new algorithm changes in the Nutri-Score Usage Regulations

Reduced sugars plant-based muffin

Typical values per 100 g	Ref Muffin	Point	Plant Based & SR Muffin	Point
Energy (kJ/kcal)	1598/383	4	1532/366	4
Fat (g)	16,2		15,3	
of which saturates (g)	2,1	2	1,7	1
Carbohydrate (g)	52,9		47,3	
of which sugars (g)	23,8	5	16,6	3
Fibre (g)	1,3	1	7,6	5
Protein (g)	5,7	3	6,0	3
Salt (g)	0,40		0,4	
Sodium (mg)	160	1	160	1
A point		12		9
C point		1		8
Score		11		1
		Less Healthy		Healthy

DEMONSTRATION: BENEO MUFFIN-SUGAR REDUCTION

MUFFIN (PLANT-BASED) - SUGAR REDUCTION

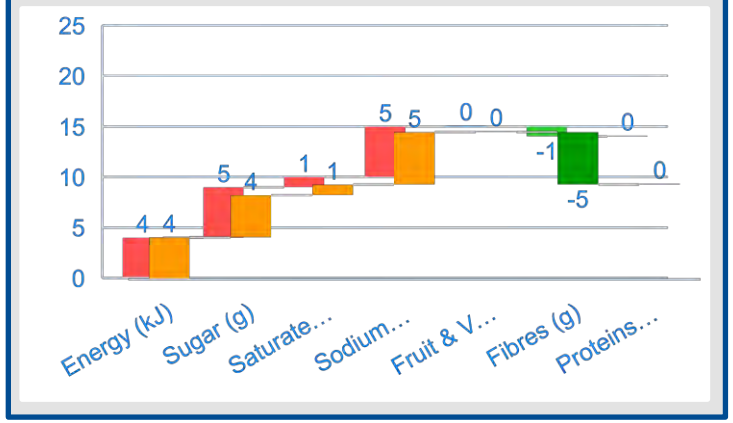
- Sugar reduction in bakery requires functional solids to replace the sugar and retain the bulk needed to create the cake
- Fibres derived from chicory root / inulin offer one potential solution to do this for partial replace
  - Orafti L85
- Sugar reduced
  - 31% sugar reduction

Ingredient Declaration (Control Sugar, Egg): Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Water, Sugar, Vegetable Oil, Whole **Egg**, Invert Syrup, Modified Rice Starch, Glycerol, Skim **Milk** Powder, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501)), Salt

Ingredient Declaration (Sugar Reduced, Plant Based): Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Water, Vegetable Oil, Sugar, Oligofructose, Invert Syrup, Faba Bean Protein Concentrate, Modified Rice Starch, Glycerol, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501)), Salt

Notes:

Nutriscore Impact



Nutritional Data: /100g	Control Muffin	Reduced Sugar Muffins
Energy kJ	1,612	1,532
Energy k Cal	384	366
Fat	16.1	15.2
Of which saturates	1.5	1.1
Carbohydrates	56.6	50.9
Of which Sugar	26.5	19.5
Fibre	1.4	7.3
Protein	5.4	5.6
Sodium	0.487	0.461
Equivalent as Salt	1.250	1.182

NUTRISCORE	D	C
	[14]	[9]

PLANT BASED HEAVEN

No eggs, no milk and no butter inside!

Incredibly delicious & delightfully soft



With a source of fibre

100% plant-based

Legal Disclaimer: This information is presented in good faith and believed to be correct, nevertheless no responsibility / warranties as to the completeness or accuracy of this information can be taken. This information is supplied upon the conditions that the persons receiving the same will make their own determination as to its suitability for their purposes prior to use. Marketing product concept – developed by and for BENEO – protected by copyright – all rights reserved by BENEO.

Blended Beef Burger with Meatless®Textured Rice Flakes

Formulation

INGREDIENTS (% w/w)	Test recipe
Beef lean meat (2% fat)	80.25
Meatless® TRF Coarse	14.00
Onions	3.00
Powder mix of spices and herbs[1)]	2.75
Total	**100.00**

1) Burgermix with salt A376920 (Solina Netherlands BV)

Key benefits

- Cost reduction possible
- Freeze-thaw stable
- Same juiciness as reference

HFSS : Less Healthy ➔ Healthy

Blended Beef Burger with Meatless®Textured Rice Flakes

Typical values per 100 g	Tesco Burger	Point	Hybrid Beef Burger 15 % Meat replacement	Point
Energy (kJ/kcal)	1134	3	460 /110	1
Fat (g)	17,4		1,7	
of which saturates (g)	7,8	7	0,7	0
Carbohydrate (g)	13,6		5,4	
of which sugars (g)	2,0	0	0,9	0
Fibre (g)	1,1	1,0	0,3	0,0
Protein (g)	14,7	5,0	18,3	5,0
Salt (g)	0,75		1,0	
Sodium (mg)	300	3	400	4
A point		13		5
C point		1		5
Score		12		0
		Less Healthy		Healthy

Meatless Textured Flakes to reduce saturated fat in burgers



Smart ways for cost reduction in meat.
Go hybrid with just 1 ingredient.

Contact us for samples & cost reduction template

meatless
a brand of beneo

beneo
connecting nutrition and health

Sugar Free Hard Boiled Candy with isomalt

Formulation

INGREDIENTS (% w/w)	Test recipe
Isomalt ST-M	97.95
Citric acid [1)]	1.50
Lemon garden mint flavour [2)]	0.20
Lemon lime flavour [3)]	0.15
Lemon yellow colour [4)]	0.15
Cu-Chlorophyllin colour [5)]	0.03
Sweetener [6)]	0.02
Total	**100.00**

1) Citric acid (Citribel N.V.)
2) 986806 Lemon garden mint flavour (Symrise)
3) 210388 Lemon lime flavour (Symrise)
4) 419280 Lemon yellow L-WS (Sensient)
5) 409058 Copper-chlorophyllin 10% L-WS (Sensient)
6) Sucralose Solo (VB Medicare)

Key benefits

- Reduced blood sugar response
- Shelf-life improvement
- Sugar free
- Tooth friendly

HFSS : Less Healthy ➔ Healthy

Sugar Free Hard Boiled Candy with isomalt

Typical values per 100 g	HBC Sugar reduced (non EU)	Point	HBC Isomalt	Point
Energy (kJ/kcal)	1544/370	4	971/233	2
Fat (g)	0,0		0,0	
of which saturates (g)	0,0	0	0,0	0
Carbohydrate (g)	98,0		95,1	
of which sugars (g)	49,0	10	0,0	0
Fibre (g)	0,0	0	95,1	0
Protein (g)	0,0	0	0,0	0
Salt (g)	0,00		0,0	
Sodium (mg)	0	0	0	0
A point		14		2
C point		0		0
Score		14		2
		Less Healthy		Healthy









GET THAT

SUGAR-FREE, HYDRATED FEEL

Enjoy a stimulating, sugar-free treat with Isomalt. A plant-based sugar replacer of the purest quality that is better for your teeth*.

This great-tasting candy stimulates saliva production so you feel fresh & hydrated. To top it all, it's gentle on your blood sugar levels** and is less calorific than sugar based candy.

For a lifetime of long-time joy.

Sugar-Free

Tooth-friendly*

Gentle on Blood Sugar**

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Agenda

- Introduction
- Chicory root fibres: Sugar and fat reduction with a plus +
- scFOS for sugar reduction and fibre enrichment
- Isomalt: sugar replacement
- Meatless®: fat reduction in meat with unique texturizing technology
- Optimizing HFSS: inspirational recipes
- Sustainability: part of BENEO's DNA
- Q&A

From farm to fork, The functional fibres story of sustainability

BENEO's business is based on agronomic products and aims for voluntary certifications of it's **raw materials** using **Farm Sustainability**



beneo
connecting nutrition and health

FSA tool of the Sustainable Agriculture Initiative (SAI)

fsa Farm Sustainability Assessment

- Asses sustainable farming practices:
  - Protect the natural environment
  - Produce safe and high-quality raw materials



FSA values

- Sustainable soil
- Waste, nutrient and water management
- Crop protection
- Biodiversity principles
- Air quality + Greenhouse gas emissions
- Good labour conditions



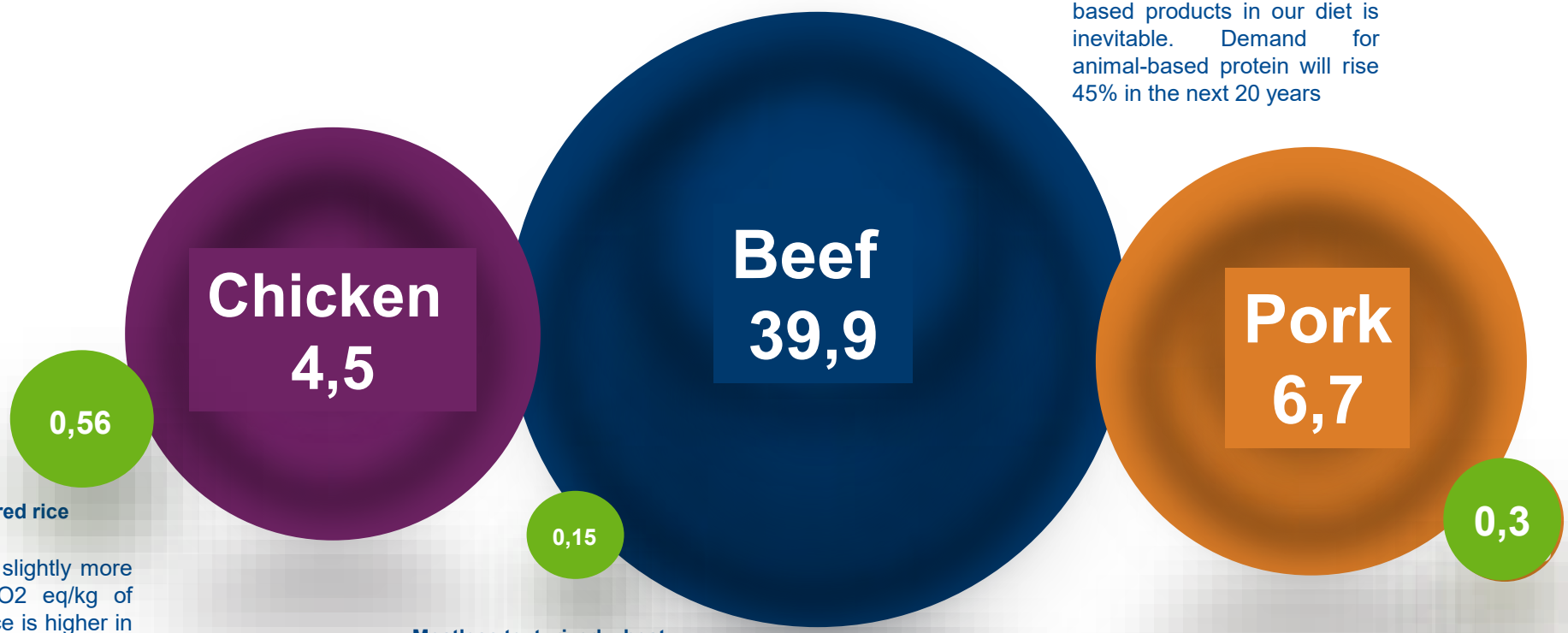
European certification system (REDcert 2) and Belgian VegaPlan Certification

- Equivalent to the highest FSA Gold Level
- Almost 100 % of chicory farmers in BE/GER meet the strict requirements for the FSA Gold Label (under REDcert2 or VegaPlan)

- Role of BENEO:
  - Provide an expertise on sustainable farming
  - Act as a supplier of agricultural services
  - Climate farming project:
    - To promote sustainable practices
      - ✓ Reduce carbon footprint by CO2 emission reduction and removal + increase biodiversity
  - 100 % valorization
    - The waste from the crop is minimized and the raw material is completely valorized

Meatless® ingredients

Sustainability – carbon footprint



Meat reduction is inevitable

The necessity to produce more food in near future means a reduction of animal-based products in our diet is inevitable. Demand for animal-based protein will rise 45% in the next 20 years

Meatless texturized faba

As one of the most efficient pulses, faba offers high efficiency and good protein content.

Meatless textured rice

Having an output of slightly more than half a kilo CO2 eq/kg of product, Meatless rice is higher in output compared to faba and wheat, but still it is a textured plant-based product with one of the lowest footprints in the business.

Meatless texturized wheat, champion in low carbon footprint

As a highly efficient grain, wheat is our champion raw material for low carbon footprint. Not many products can beat this product on footprint

Source: Blonk consultants, 2022; Numbers in kg CO2eq/kg product

Solutions in a wide range of applications

Sugar reduction

Chicory root

- Oligofructose
- Inulin



Sugar beet

- scFOS



Sugar free

Sugar beet

- Isomalt



Fat reduction

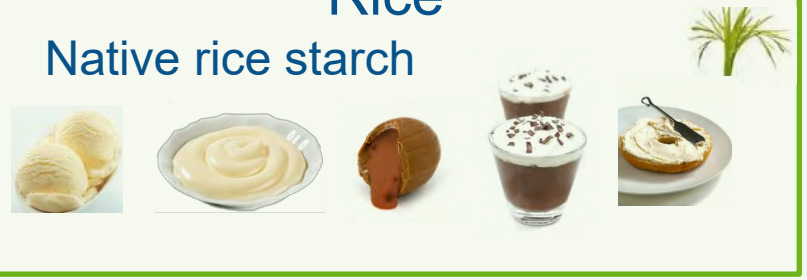
Chicory root

- Inulin



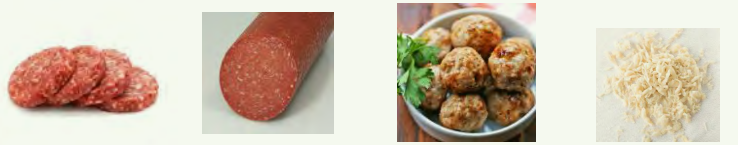
Rice

- Native rice starch



Faba/Rice

- Textured rice/faba flakes



Thank you for your attention



Q&A

What can we do for you?

Brennan Anderson
Business development manager Healy Group
banderson@healy-group.ie

Katrien Verhaegen
Country Manager Ireland
katrien.verhaegen@beneo.com



Find out more on www.beneo.com



ROLE OF FAT

Process

- Heat Transfer
- Melting Point

Flavour

- Satiety
- Taste
- Aftertaste

Nutrition

- Calories

Texture

- Mouthfeel/body
- Solubility
- Emulsions
- Shortening

APPROACHES TO FAT REPLACEMENT

Severance

Habituation/ Consumer Acceptance

Replacement/ Substitution

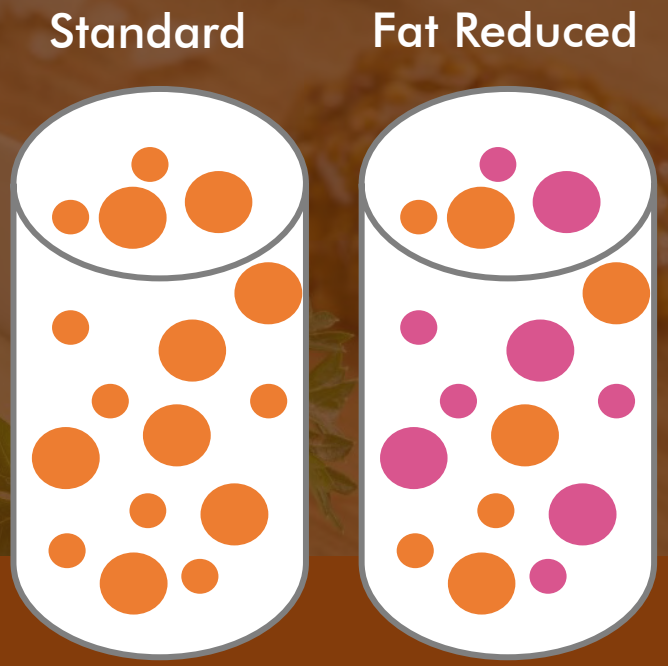
1:1 replacement. Similar chemical structure but resists digestion

Fat Mimetic

Non-fat substance requiring high water content. Replaces some fat function.

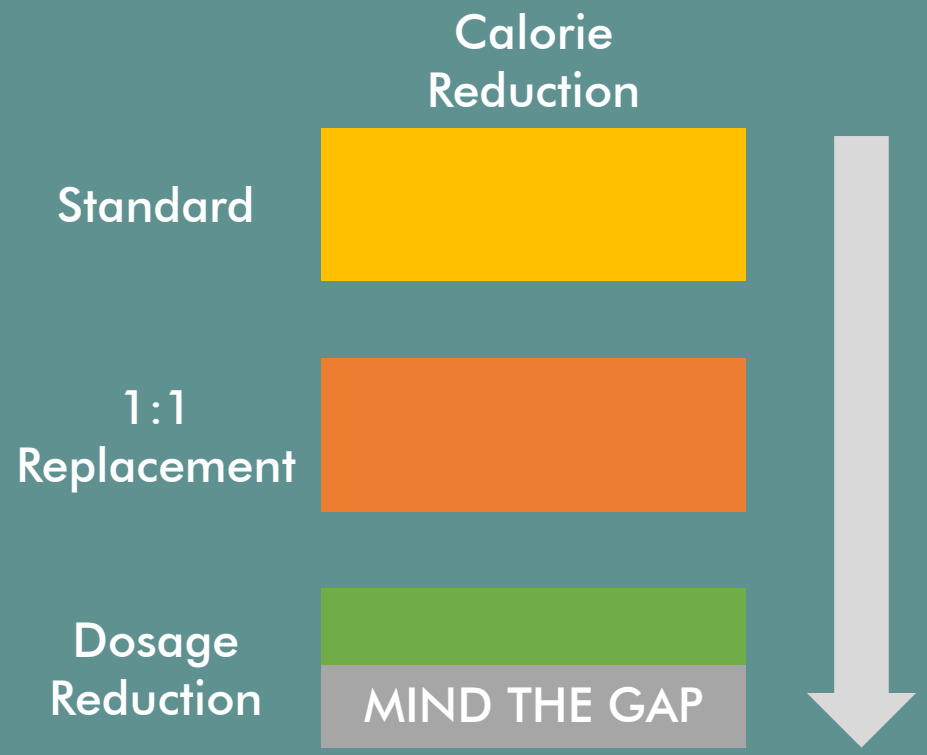
Fat Extender

Ingredients used in conjunction with fats





DRIVING CALORIE REDUCTION



Energy Contribution

Fat	9 cal /g
Carbohydrates	4 cal /g
Proteins	4 cal /g
Fibre	2.4 cal/g
Cellulose	0 cal/g
Water?	0 cal/g
Air?	0 cal/g

Calorie Reduction



CONOR BUCKLEY, SOCIUS

HEALY GROUP


SOCIUS®
INGREDIENTS BY DESIGN

Welcome

SenseFi®

Functional Plant Fibers

BEVERAGES ICE CREAM DRESSINGS CREAM CHEESE COATINGS



Presentation October 11th 2023

Conor Buckley

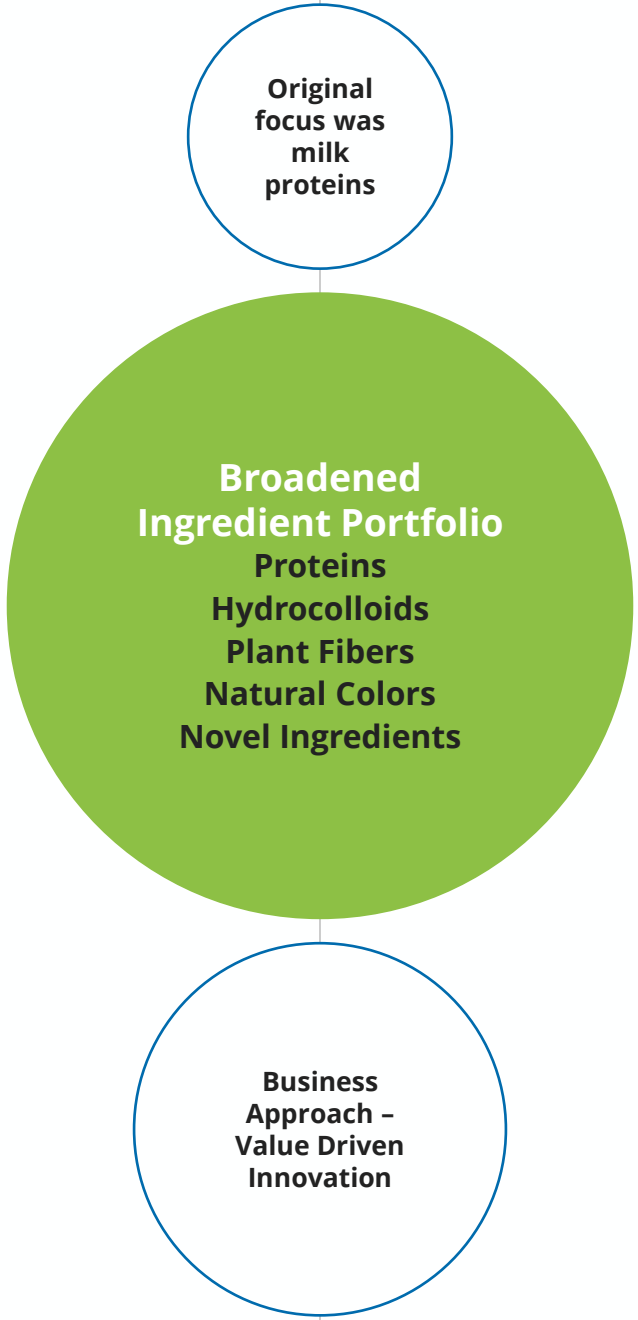


SOCIUS®
INGREDIENTS BY DESIGN

Background

VALUE DRIVEN INNOVATION


Socius was
formed in
2000


Original focus was milk proteins
Broadened Ingredient Portfolio
Proteins
Hydrocolloids
Plant Fibers
Natural Colors
Novel Ingredients
Business Approach – Value Driven Innovation



Technical Center
Our state-of-the-art Technical Center offers the opportunity to test concepts and ingredients at pilot scale. We can produce prototypes and fine tune formulations to test value propositions in a wide variety of applications.

Our core applications are Beverages, Cultured products, Cheeses, Frozen Desserts, Nutritional Bars, Creamers, Dressings and Sauces.





PROTEINS

so-pro®
Protein Ingredients

so-sol®
Instant Ingredients

proform™
Optimized Protein Systems

plantec®
Next Generation Plant Proteins

NATURAL COLORS

so-clear®
Natural Colors

ClearWhey®
Cheese Color Technology

plantcol™
Plant Based Colors

HYDROCOLLOIDS

so-text®
Texture Ingredients & Systems

sensefi®
Functional Plant Fibers

GLYLOID®
Tamarind Seed Gum

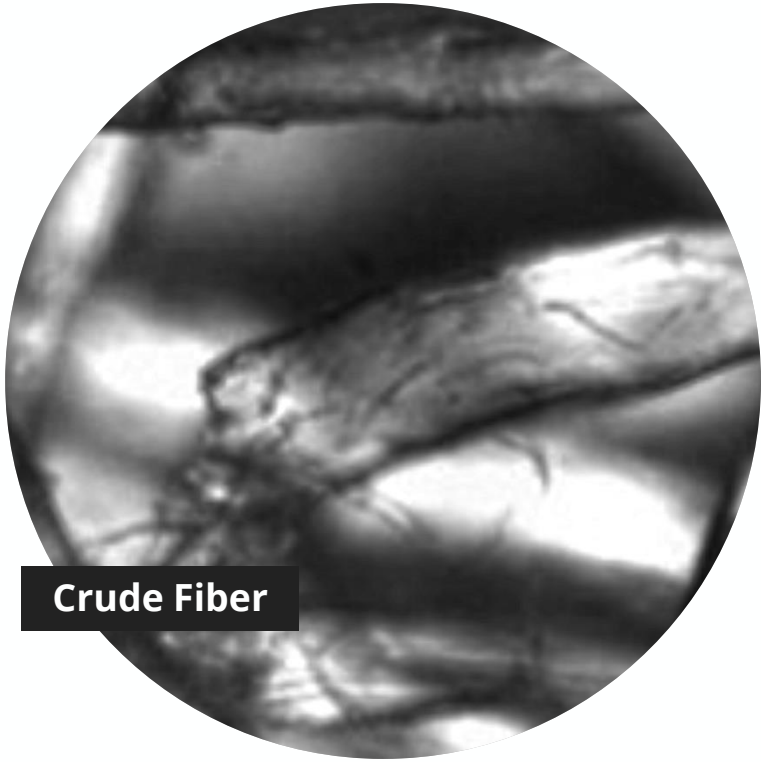
LB-Guar™
LBG Replacement



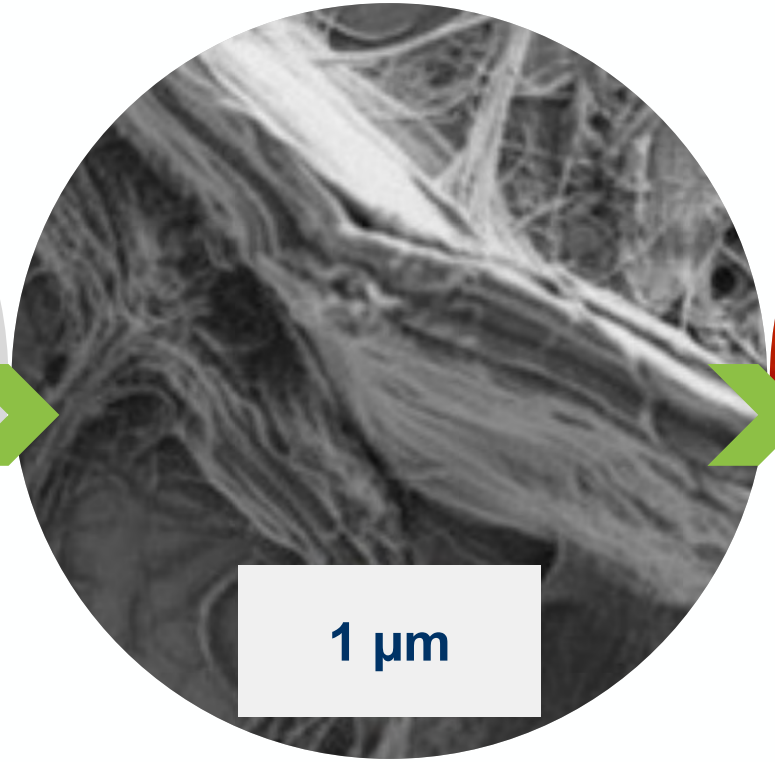
Functional Plant Fibers

What is SenseFi?

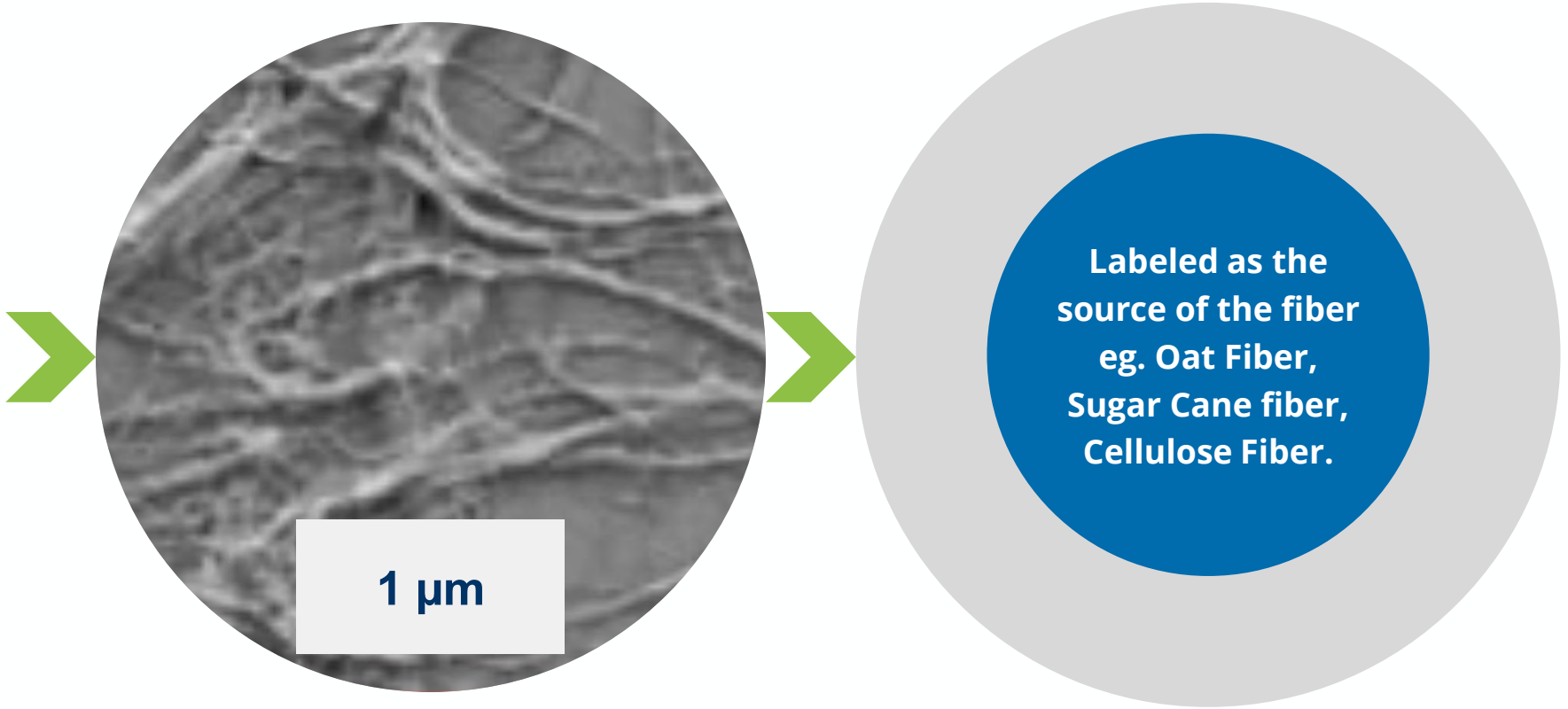
SenseFi uses micro fibrillation technology to functionalize crude plant fibers



The micro fibrillation process results in a dramatically increased surface area available to bind water






1 µm
Labeled as the source of the fiber eg. Oat Fiber, Sugar Cane fiber, Cellulose Fiber.

SENSEFI®

Links & Resources:

https://www.youtube.com/watch?v=TOAMp2x7Vec





RTD Beverages

Drinks that are ready for consumption right off the shelf

Convenient

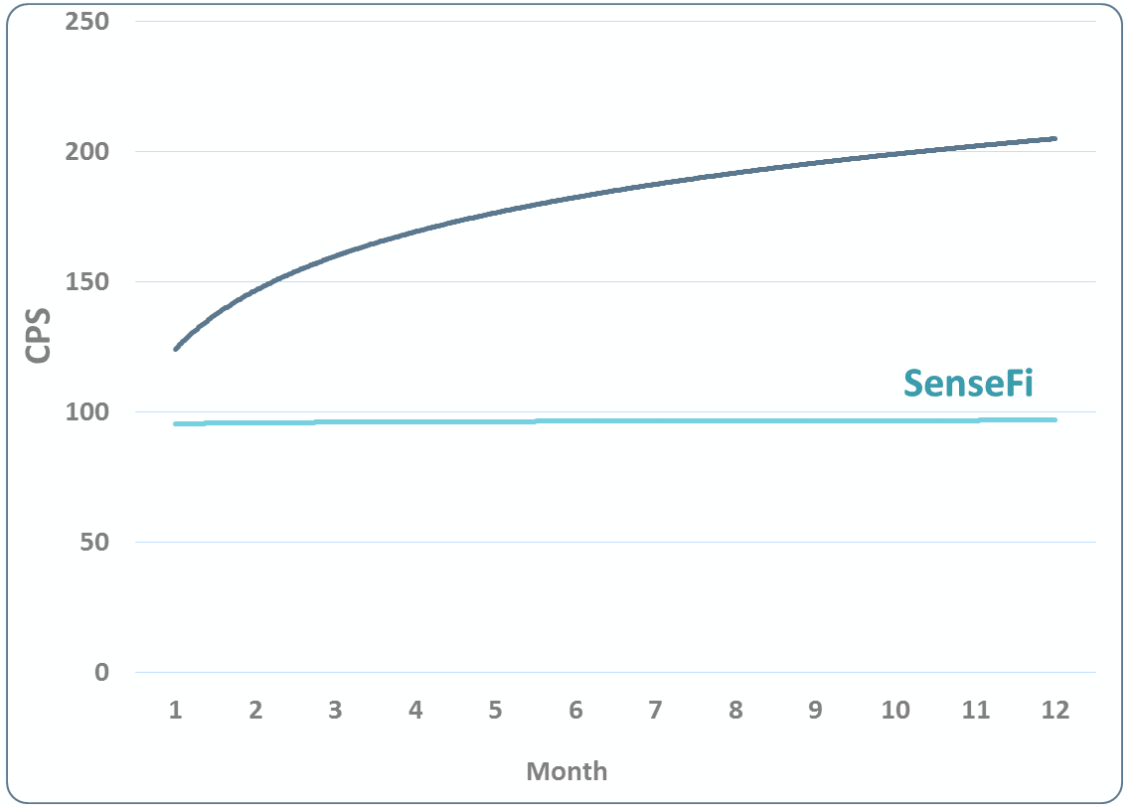
Extended Shelf Life (ESL)
UHT Processing

Nutritious alternative to soc



SenseFi v MCC : Comparison in Commercial High Protein RTD

Viscosity over shelf life, samples held at room temperature



Data statistically smoothed to illustrate trend

Coffee Beverages



SenseFi Stability

No Depletion Flocculation occurred at any doses tested

- No Color change
- No Sedimentation
- No Phase separation



Pectin Stability Challenges

Depletion Flocculation occurred at all doses tested

- Color change
- Sedimentation
- Phase separation
- U-Shaped Compatibility Curve

Re-suspendable with a quick shake



Fruit Preps & Bakery Fillings

Advantages

Clean label
- Oat Fiber or Sugar Cane Fiber

Natural appearance
- Not gelatinous or jelly-like

Excellent stability
- No pectin-like “hockey-puck”
- No retrogradation
- Constant viscosity over shelf-life

Superior body, mouthfeel and water binding
- Adds creaminess to yogurt once stirred in

No formulation constraints
- No Brix requirement
  - No added-sugar required
  - Low-Cal
- No pH requirement
- No Ca2+ requirement



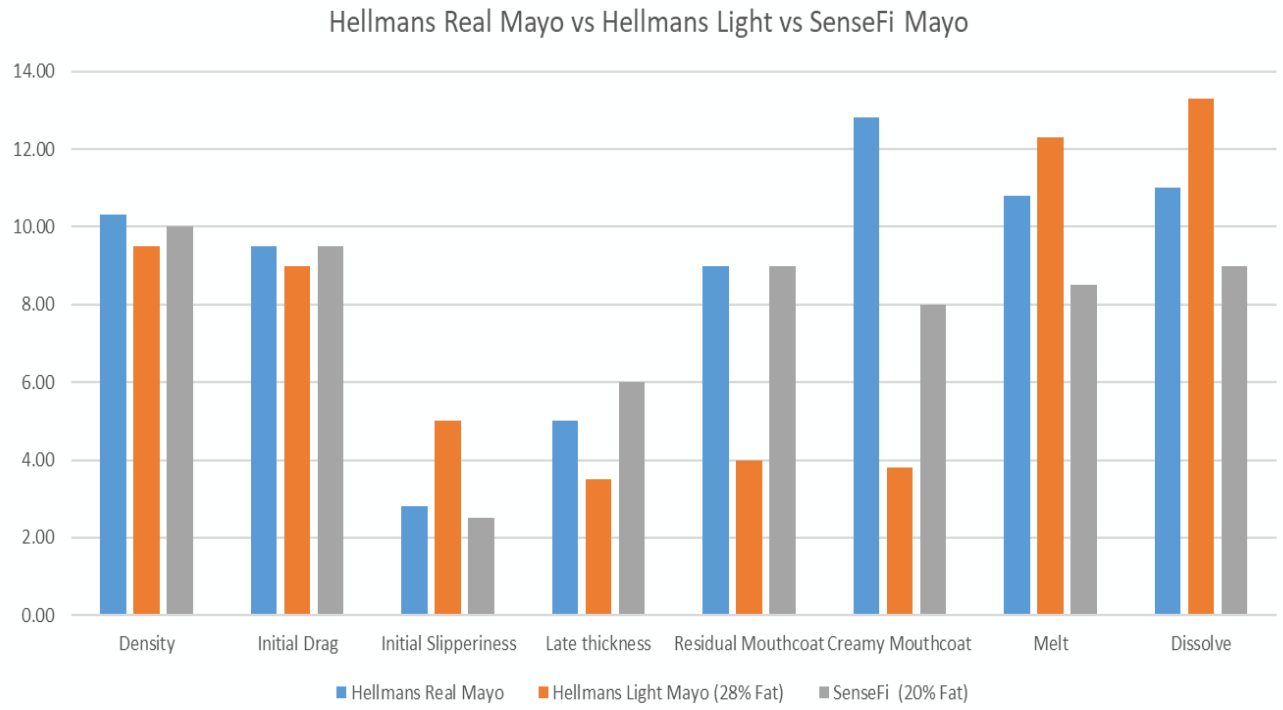




Reduced Fat Mayo & Sauces

- Fat reduction with rich, creamy and short texture
- Clean flavour
- Delivers formula cost savings
- Suitable for hot and cold process
- Improves the shelf-life stability
- Replace one or more stabilizers





DEMONSTRATION: ALFREDO SAUCE

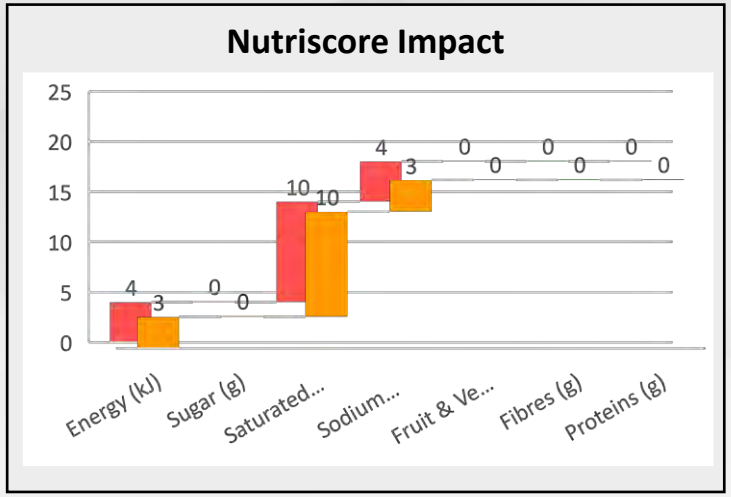
ALFREDO SAUCE

- SenseFi to help fat reduction
  - 34% reduction
- Ajirex NH – to help with creaminess
- (Saltwell used to help)
- Empure KJEL 130
  - Clean label functional potato starch
- Still so high in saturates that struggles to reduce HFSS score

Ingredient Declaration: Double Cream (**Milk**), Parmesan Cheese, (**Milk**, Salt), Water, Butter, Potato Starch, Garlic Puree, Salt, Rowan Extract, Black Pepper, Dried Marjoram, Dried Rosemary

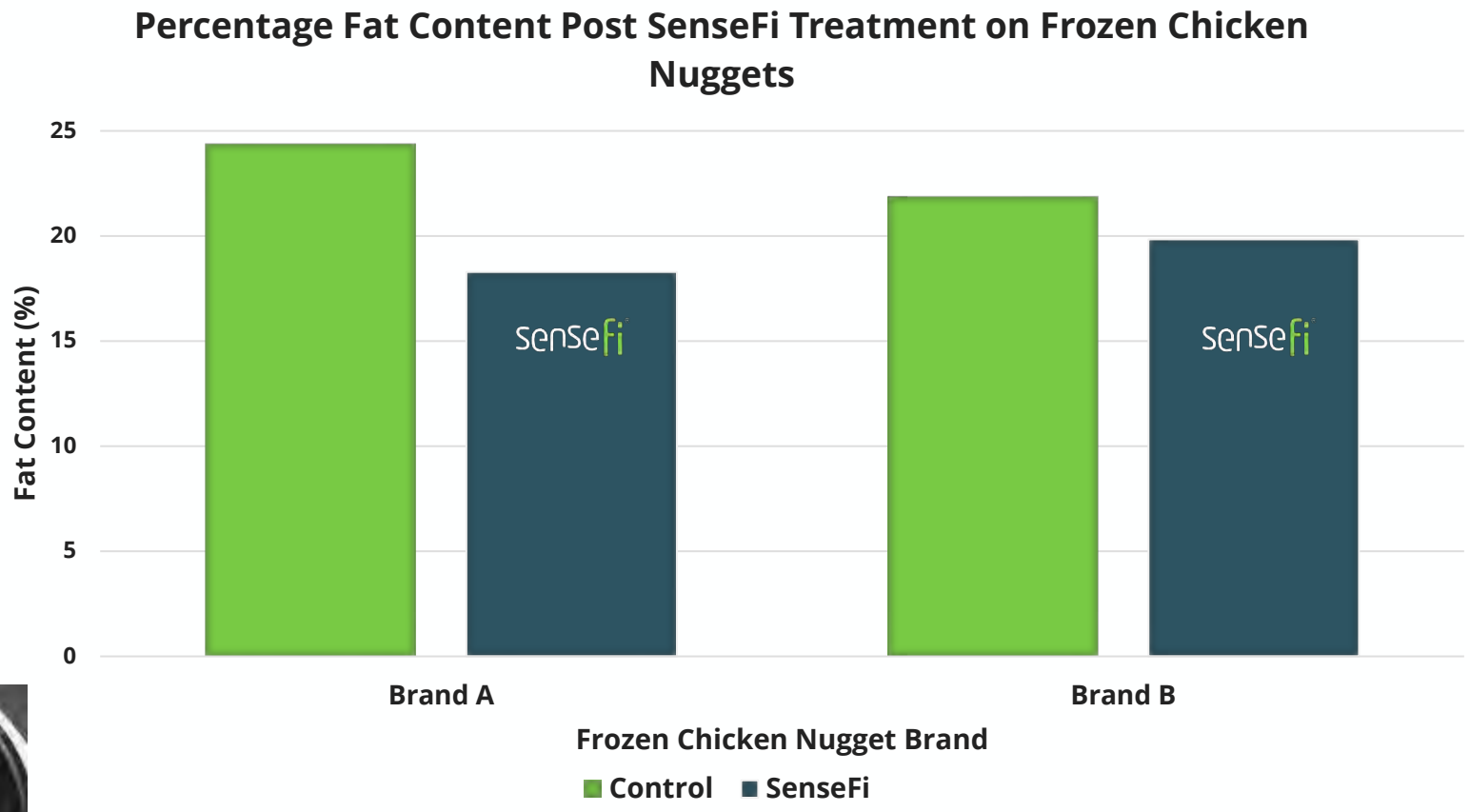
Ingredient Declaration: Double Cream (**Milk**), Parmesan Cheese, (**Milk**, Salt), Water, Potato Starch, Garlic Puree, Oat Fibre, Rowan Extract, Sea Salt or Salt, Natural Flavour, Black Pepper, Dried Marjoram, Dried Rosemary

Notes:



Nutritional Data: /100g	Control / Standard	SenseFi
Energy kJ	1,555	1,101
Energy k Cal	377	266
Fat	35.9	23.8
Of which saturates	22.4	14.8
Carbohydrates	5.8	5.6
Of which Sugar	0.8	0.6
Fibre	0.1	0.8
Protein	7.0	6.9
Sodium	0.368	0.286
Equivalent as Salt	0.944	0.734
NUTRISCORE	D	D
	[18]	[16]

Reduced fat uptake during deep frying





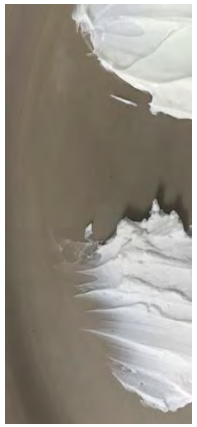


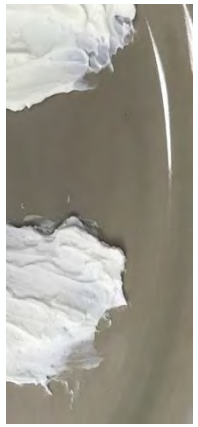
Plant Based Cream Cheese











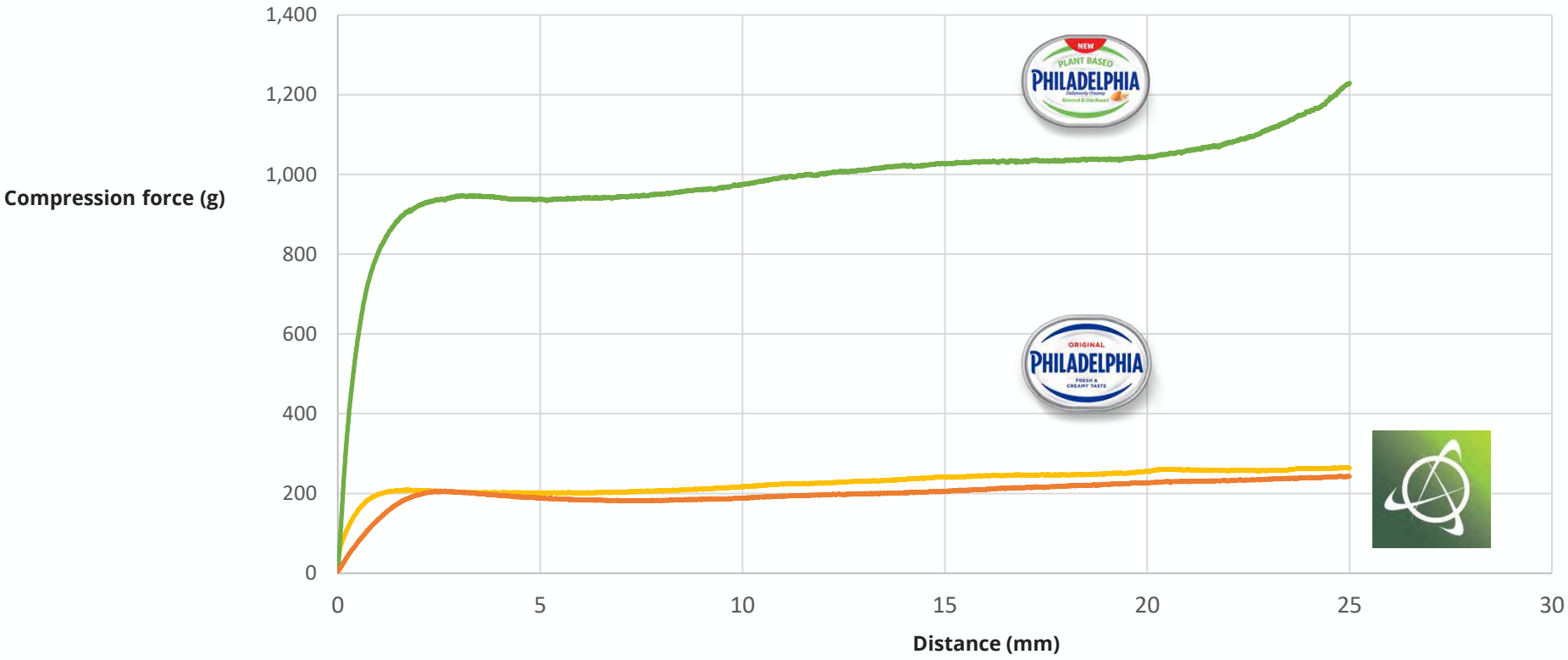


The Socius prototype was 5 days old at the time of testing.

Texture Analysis

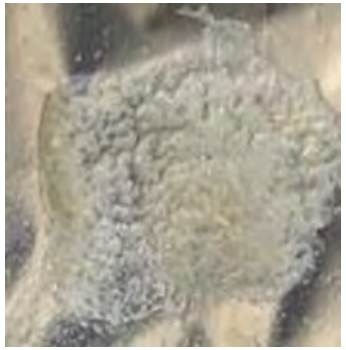
Cream Cheese Texture

Socius prototype was 5 days old at time of testing. Testing was carried out at refrigeration temperature (4-6°C).



Bake Stability

Functional Fiber (Sensefi) versus Modified Food Starch (MFS)

	Before Baking		After Baking
Sensefi®		›	
MFS		›	

Cheesecake Evaluation

40 minutes at 350°F













Poor, Melted, Separated

VCC32







= Dairy

VCC76







VCC79







The Socius prototype was 5 days old at the time of testing.

Ice Cream



- Produce creamier, smoother ice creams and frozen yogurts
- Resembles the mouth coat of full fat cream
- Clean flavour
- Increased profitability
- Can replace one or more stabilizers
- Inhibit ice-crystal growth



DEMONSTRATION: ICE CREAM

ICE CREAM - REDUCED

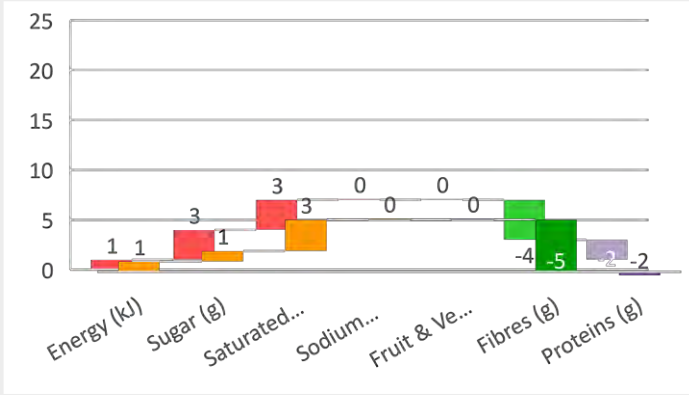
- SenseFi to help fat reduction
  - 26% reduction
- Added protein
- Use of Isomalt to also offer a sugar reduced product

Ingredient Declaration (Control): Water, Sugar, Skim **Milk** Powder, **Cream**, Oligofructose, Natural Vanilla Extract, Emulsifier (Mono- and Diglycerides of Fatty Acids)

Ingredient Declaration (Sugar Reduced): Water, Isomalt, Skim **Milk** Powder, **Cream**, Oligofructose, Natural Vanilla Extract, Whey Protein (**Milk**), Emulsifier (Mono- and Diglycerides of Fatty Acids), Oat Fibre

Notes:

Nutriscore Impact



Nutritional Data: /100g	Control	Fat / Sugar Reduced
Energy kJ	647	483
Energy k Cal	155	116
Fat	7.8	5.8
Of which saturates	3.7	3.0
Carbohydrates	16.8	12.7
Of which Sugar	16.7	4.6
Fibre	4.5	6.2
Protein	3.8	4.6
Sodium	0.046	0.047
Equivalent as Salt	0.119	0.121
NUTRISCORE	B	A
	[1]	[-2]

DEMONSTRATION: WAFFLE - FAT & SUGAR REDUCED

WAFFLE

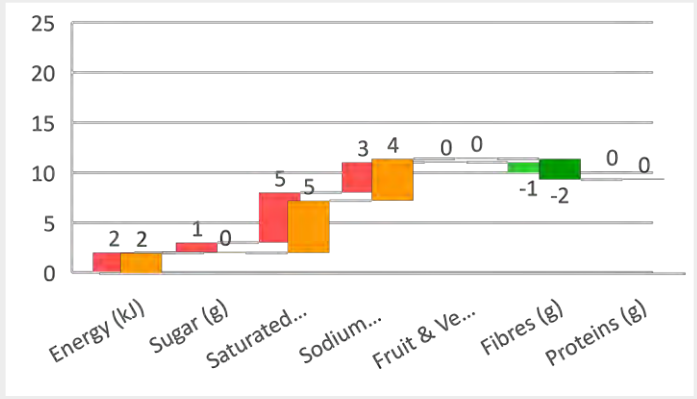
- Use of chicory root fibre – Orafti HSI to reduce sugar
- Compliment the fat reduced ice cream

Ingredient Declaration (Control): Skimmed **Milk**, Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Whole **Egg**, Butter (Milk), Sugar, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501)), Salt

Ingredient Declaration (Sugar Reduced): Skimmed **Milk**, Wheat Flour (**Wheat** Flour, Calcium Carbonate, Iron, Niacin, Thiamin), Whole **Egg**, Butter (Milk), Chicory Root Fibre / Inulin, Baking Powder: (Diphosphate (E450), Potassium Hydrogen Carbonate (E501)), Sugar, Salt

Notes:

Nutriscore Impact



Nutritional Data: /100g	Control / Standard	Sugar Reduced
Energy kJ	936	923
Energy k Cal	223	220
Fat	9.9	9.9
Of which saturates	5.6	5.6
Carbohydrates	28.9	27.2
Of which Sugar	5.1	3.5
Fibre	1.2	2.7
Protein	6.1	6.1
Sodium	0.356	0.360
Equivalent as Salt	0.913	0.924
NUTRISCORE	C	C
	[10]	[9]

Mix Stability Day 10

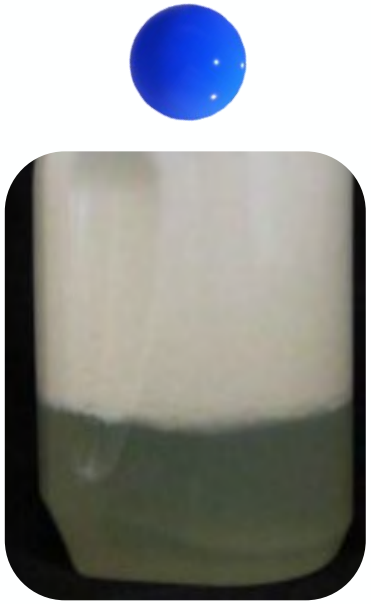


Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Mix Stability Day 10



Control
10% fat, SMP









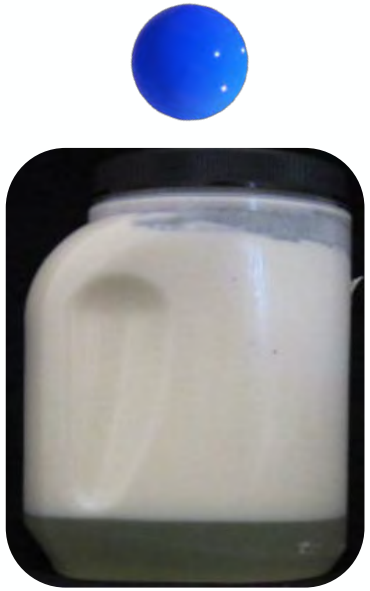
Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Mix Stability Day 10





Trial 1
10% fat, SMP & SO-LAC







Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Mix Stability Day 10



Trial 2
10% fat,
SO-LAC

Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Mix Stability Day 10



Trial 3
5% fat, SMP & SO-LAC, 0.4% SenseFi

Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Mix Stability Day 10



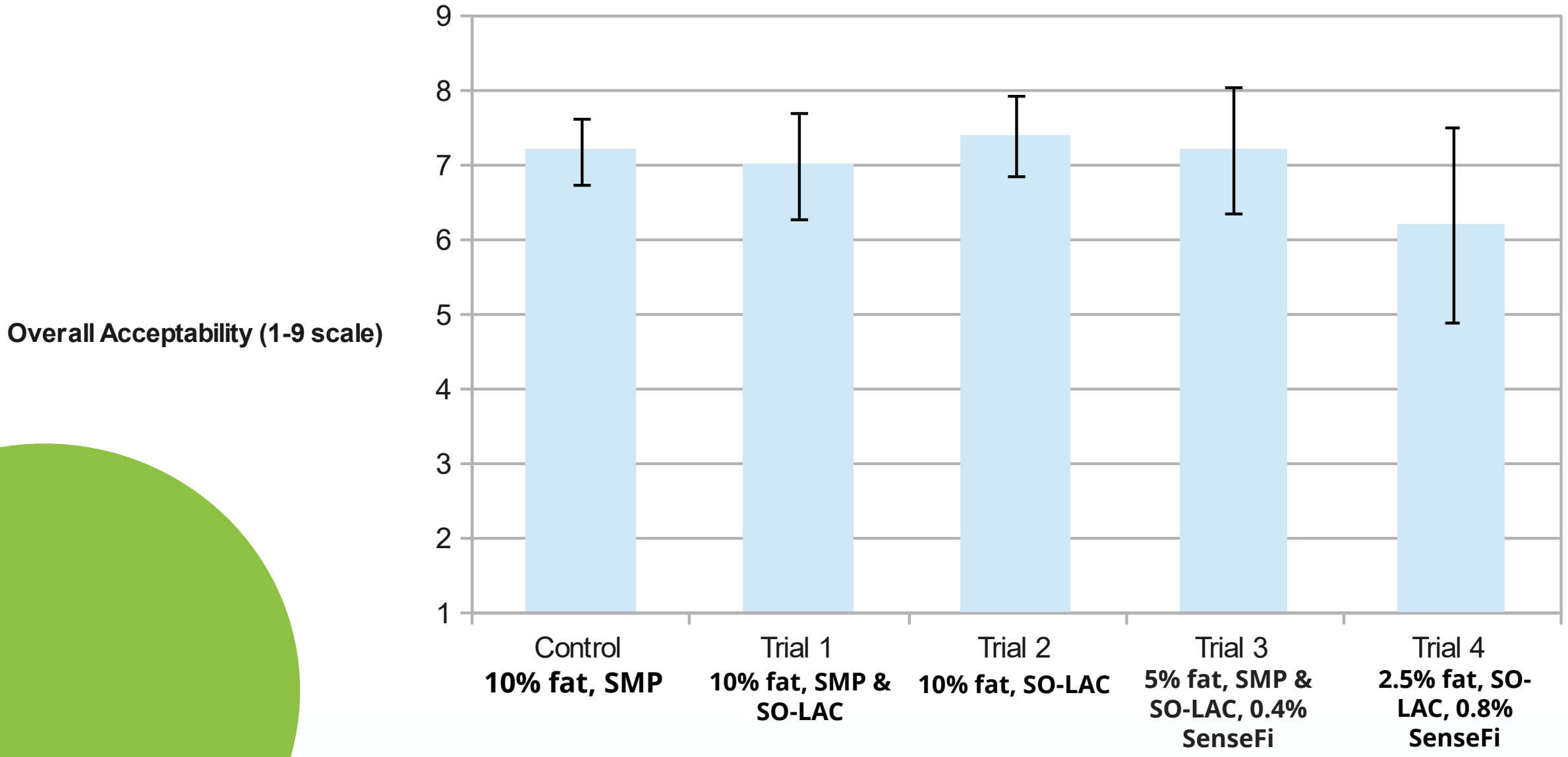
Trial 4
2.5% fat, SO-LAC, 0.8% SenseFi

Plant Fiber Functionality

- Entangled 3-D network of fiber
- Long term suspension

- Stable to depletion flocculation
- Clean label soft-serve formulation

Sensory – Overall Acceptability



Summary in Ice Cream

- Clean label plant fibers
- MCC replacement
- Carrageenan removal
- Next gen fat-mimetic

sensefi®

FUNCTIONAL PLANT FIBERS

Summary SenseFi®

01 Application Highlights

- Replaces all other stabilizers in RTD's, chocolate milk or plant-based milks
- Replaces MCC at lower cost-in-use with a cleaner label in Ice Cream, low fat cream, Beverages etc.
- Replaces Pectin and LBG in Bakery filling, Fruit preps and coffee beverages
- Delivers rich dairy like texture in plant-based products
- Can improve crispiness and reduce oil uptake in fried products

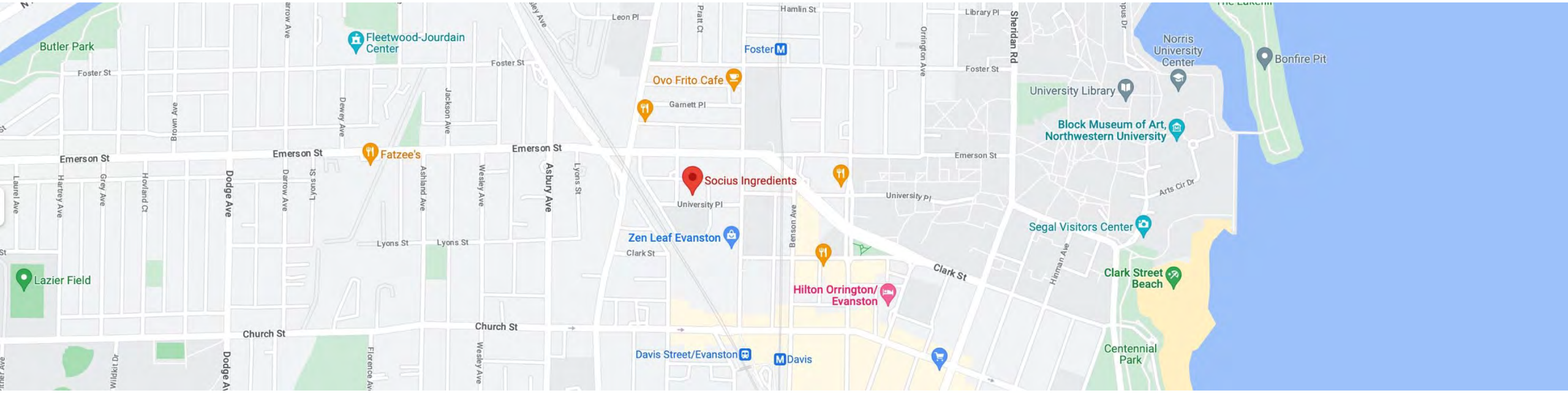
02 Product Characteristics

- Delivers a smooth creamy mouthfeel
- Remains functional at a wide range of pH, temperatures, shear force and sugar and salt contents
- Clean, bland flavor
- Very high-water holding capacity
- Thickening, stabilizing and suspending

03 Compliance

- Meets Kosher requirements
- Non-GMO
- Vegan

Say hello...



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Suite 110, Evanston, IL 60201

Socius Technical Center

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Staff Contact

Conor Buckley
312 315 5923
Tim Missell - Sales
678 977 6003

HFSS: WHAT DOES IT MEAN?

HFSS

- Objective is to reduce these in our diets
- Overall score is based on Nutriscore
- If cannot meet this then restrictions on selling and promoting

NUTRISCORE

- An A-B-C-D-E scoring system to highlight areas for improvement
- Reduce bad and increase good
- Above 10 cannot include protein score

UK TR. LIGHTS

- Traffic lights give information on individual components but not an overall score
- Red-Amber-Green for Fat, Saturated Fat, Sugar & Salt

1. Work out total 'A' points

A maximum of ten points can be awarded for each nutrient.
Total 'A' points = (points for energy) + (points for saturated fat) + (points for sugars) + (points for sodium)
The following table indicates the points scored, depending on the amount of each nutrient in 100g of the food or drink:

Points	Energy (kJ)	Sat Fat (g)	Total Sugar (g)	Sodium (mg)
0	≤ 335	≤ 1	≤ 4.5	≤ 90
1	>335	>1	>4.5	>90
2	>670	>2	>9	>180
3	>1005	>3	>13.5	>270
4	>1340	>4	>18	>360
5	>1675	>5	>22.5	>450
6	>2010	>6	>27	>540
7	>2345	>7	>31	>630
8	>2680	>8	>36	>720
9	>3015	>9	>40	>810
10	>3350	>10	>45	>900

If a food or drink scores 11 or more 'A' points then it cannot score points for protein unless it also scores 5 points for fruit, vegetables and nuts.

A maximum of five points can be awarded for each nutrient/food component.
Total 'C' points = (points for % fruit, vegetable & nut content) + (points for fibre [either NSP or AOAC]) + (points for protein)
The following table indicates the points scored, depending on the amount of each nutrient/food component in 100g of the food or drink:

Points	Fruit, Veg & Nuts (%)	NSP Fibre ' (g)	Or AOAC Fibre ' (g)	Protein (g)
0	≤ 40	≤ 0.7	≤ 0.9	≤ 1.6
1	>40	>0.7	>0.9	>1.6
2	>60	>1.4	>1.9	>3.2
3	-	>2.1	>2.8	>4.8
4	-	>2.8	>3.7	>6.4
5*	>80	>3.5	>4.7	>8.0

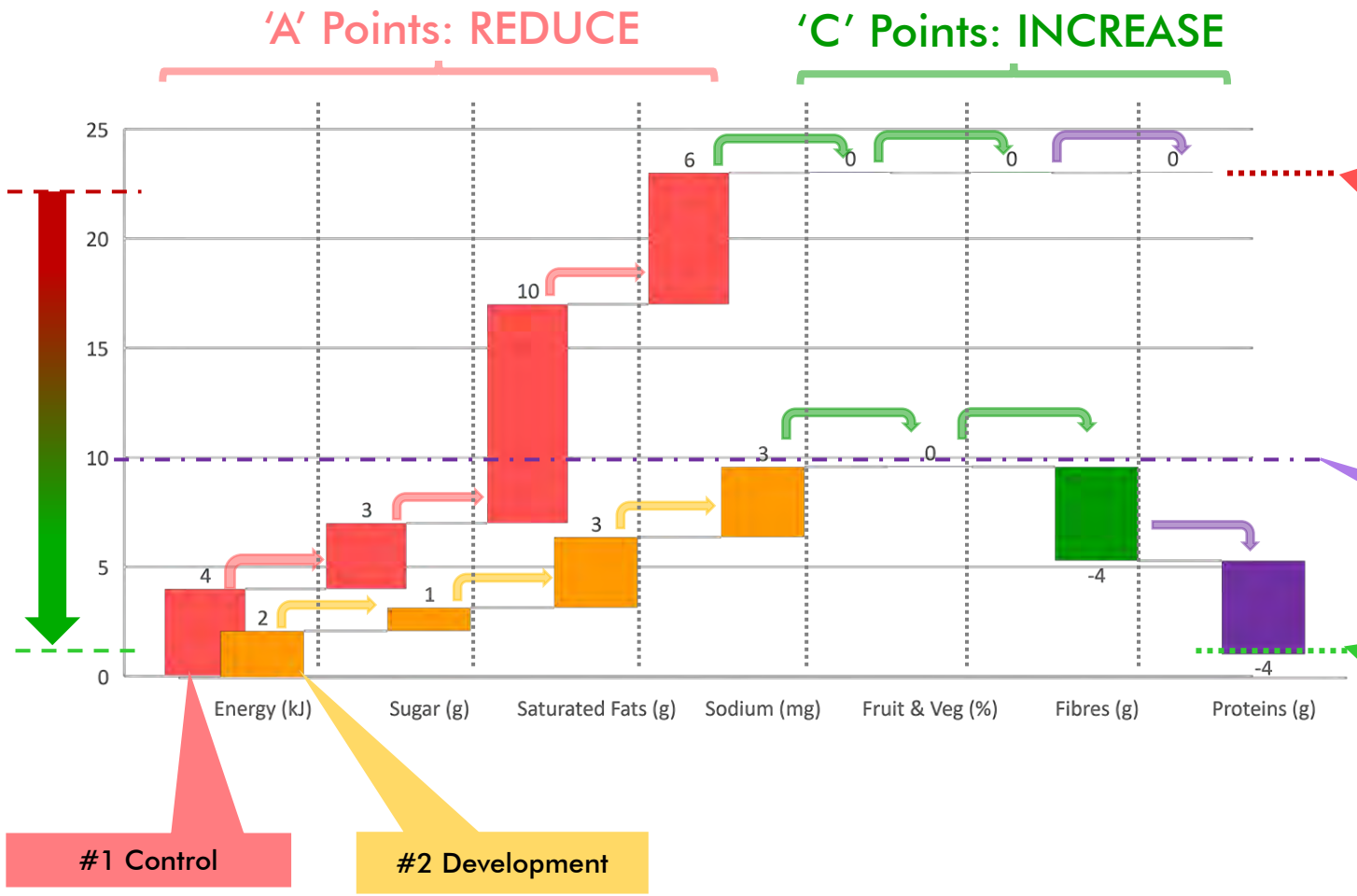


Solid Foods	
Min to 1	A
0-2	B
3-10	C
11-18	D
19 - Max	E

NB. A food is classified as "less healthy" where it scores 4 points or more.

A drink is classified as "less healthy" where it scores 1 point or more.

VISUAL CALCULATIONS FOR HFSS



#1 Control E [23]

Higher Energy
Sat Fat / Sugar
Sodium
No protein contribution

'A' Points must be below 10 to use protein score

#2 Development B [1]

Higher fibre
Contribution from protein

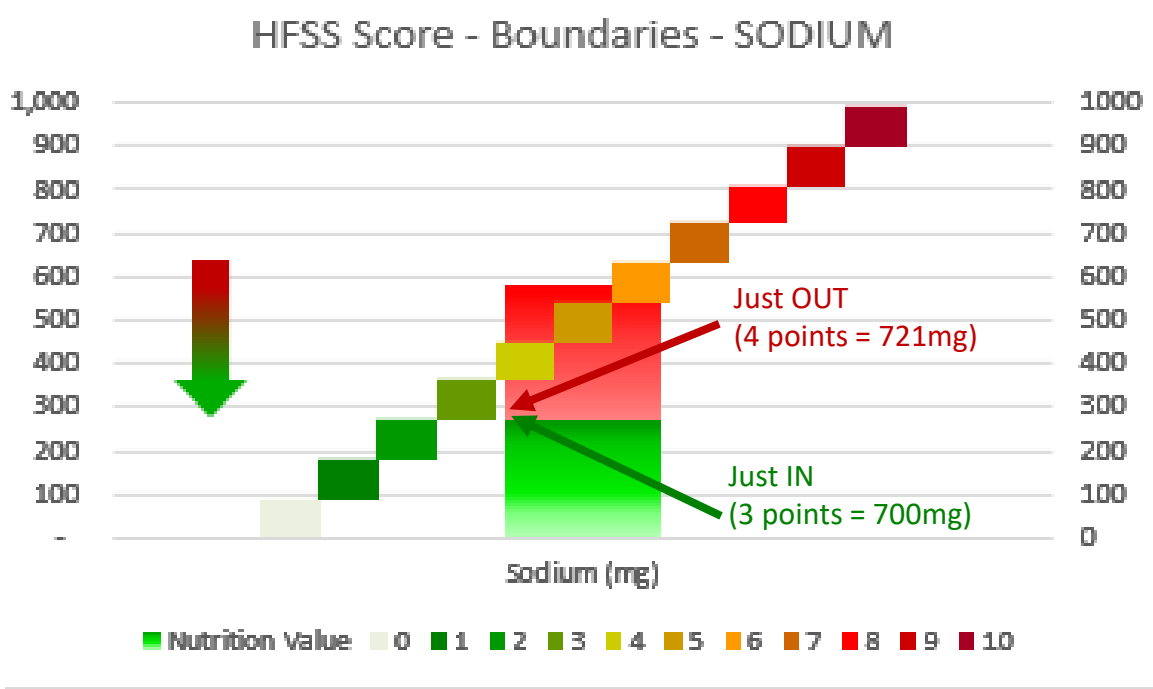
#1	#2
	B [1]
E [23]	

Nutritional Data: /100g	Control / Standard	Development
Energy kJ	1,409	1,004
Energy k Cal	340	239
Fat	25.6	17.6
Of which saturates	21.7	3.6
Carbohydrates	20.6	11.6
Of which Sugar	15.0	5.2
Fibre	0.7	4.0
Protein	7.1	7.5
Sodium	0.584	0.273
Equivalent as Salt	1.496	0.700

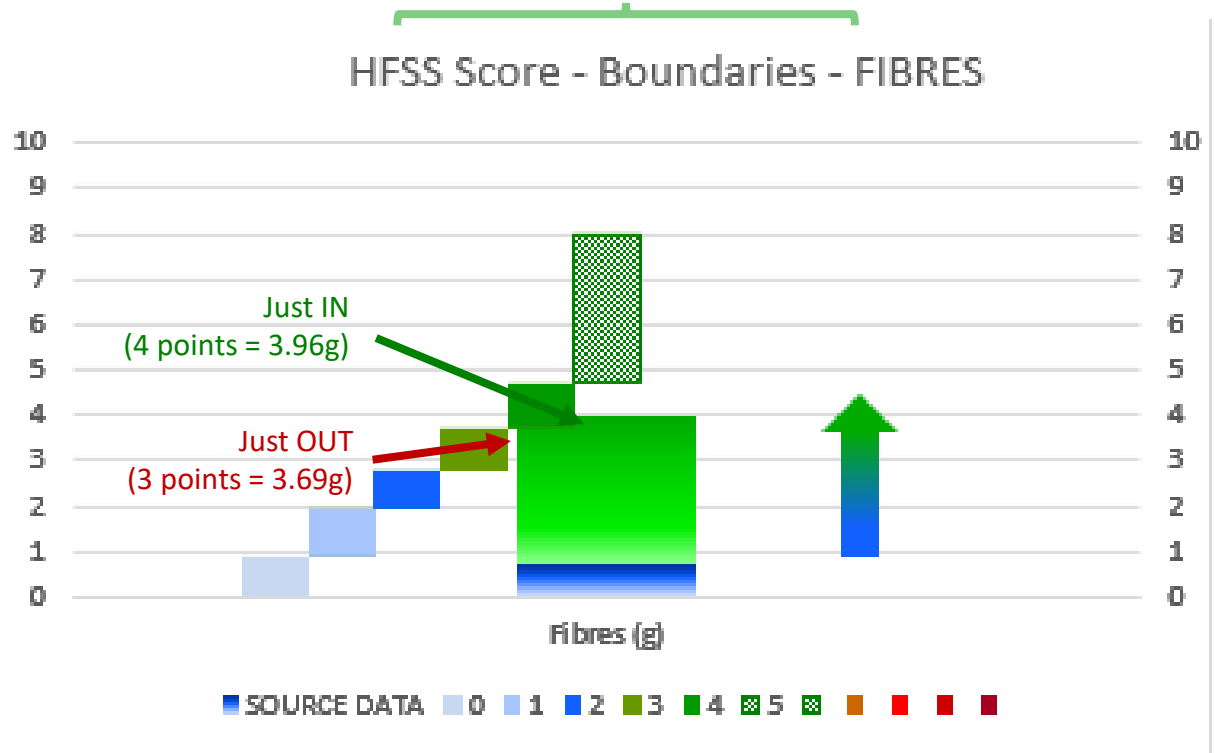
NUTRISCORE	E	B
	[23]	[1]

BOUNDARIES

'A' Points: REDUCE

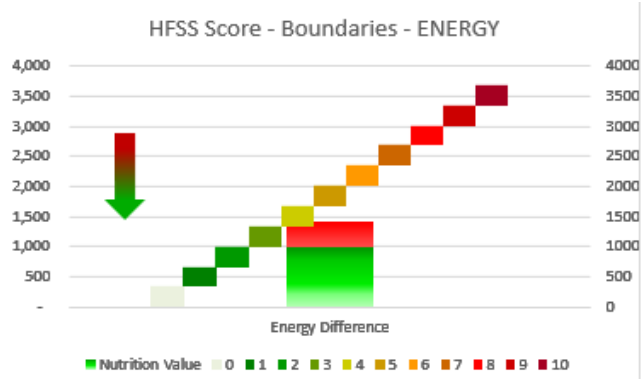


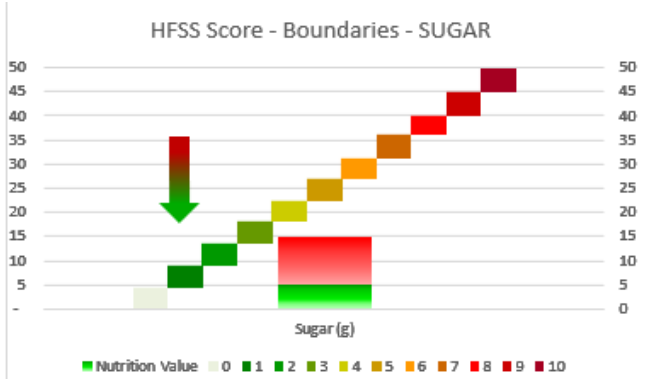
'C' Points: INCREASE

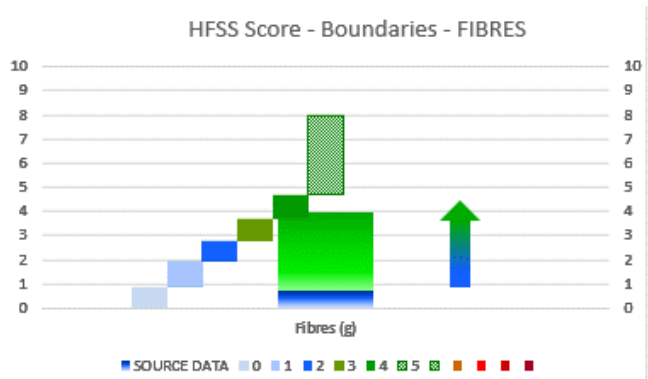


Being just under or just over a boundary can make a difference with only a small recipe change

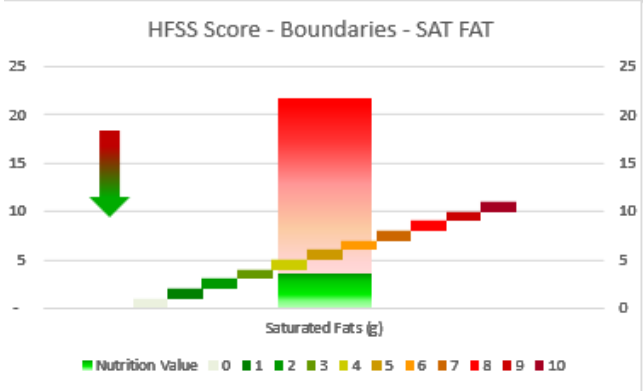
BOUNDARIES

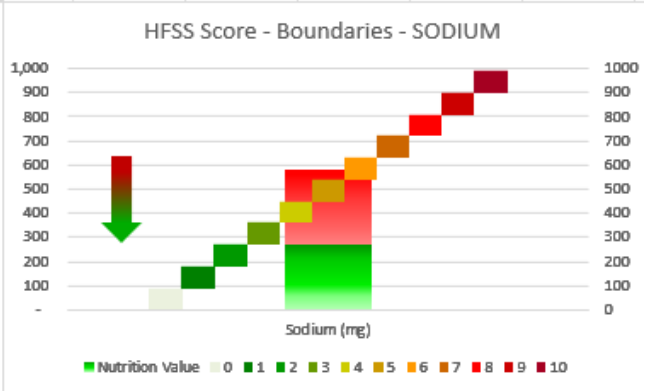


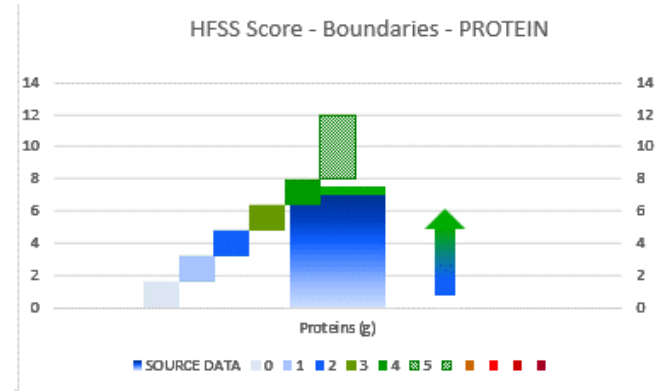












Nutritional Data: /100g	Control / Standard	Development
Energy kJ	1,409	1,004
Energy k Cal	340	239
Fat	25.6	17.6
Of which saturates	21.7	3.6
Carbohydrates	20.6	11.6
Of which Sugar	15.0	5.2
Fibre	0.7	4.0
Protein	7.1	7.5
Sodium	0.584	0.273
Equivalent as Salt	1.496	0.700

NUTRISCORE	E	B
	[23]	[1]



PRIMAFI COCOA

What is it?

A micronised cocoa fibre from upcycled cocoa husks that would usually go to waste

How does it work?

Micronisation provides soluble fibre properties allowing for sugar reduction as well as fibre enrichment from insoluble fibre

Applications

- Chocolate
- Cakes
- Biscuits
- Dairy (e.g. ice cream, cream-based desserts)

PRIMAFI COCOA

Links & Resources

https://primaingredients.ie/primafi-cocoa/



DEMONSTRATION: CHOCOLATE -SUGAR REDUCTION

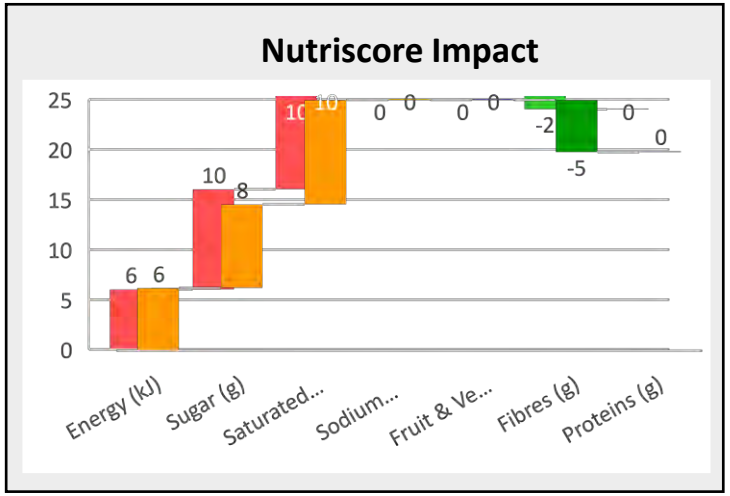
CHOCOLATE - SUGAR REDUCTION

- PrimaFi Cocoa can be used in chocolate to help reduce sugar
- Cocoa fibre upcycled by-product of the cocoa industry
  - Sustainable crop, clean label
  - Allergen free / hypoallergenic
- Micronised for smoother mouthfeel
- Sugar Reduction
  - Effective way to reduce the sugar in a chocolate etc.
- Dosage / processing
  - Used at the same level as sugar that is replaced
  - No changes need to make chocolate

Ingredient Declaration (Control): Sugar, Cocoa Nibs, Cocoa Butter, Skim **Milk** Powder, Sunflower Lecithin

Ingredient Declaration (Sugar Reduced): Sugar, Cocoa Nibs, Cocoa Butter, Skim **Milk** Powder, Cocoa Fibre, Sunflower Lecithin

Notes:



Nutritional Data: /100g	Control / Standard	Sugar Reduced
Energy kJ	2,166	2,080
Energy k Cal	520	501
Fat	28.7	29.3
Of which saturates	17.1	17.3
Carbohydrates	56.7	43.0
Of which Sugar	53.1	38.2
Fibre	2.3	10.9
Protein	8.9	11.6
Sodium	0.090	0.089
Equivalent as Salt	0.230	0.227

NUTRISCORE	E	E
	[24]	[19]

RECAP

Salt Reduction

Saltwell
- Natural Solution
- 35% Sodium Reduction

Sugar Reduction

BENEO
- Chicory Root Fibres
- Isomalt

Fat Reduction

SenseFi
- Mircofibrillated Ingredient
- Clean Labrl

Ingredients & HFSS

- Supporting ingredients e.g. MCLS, Millbio
- Calculations for HFSS



ANY QUESTIONS?

HEALY GROUP

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