

HIGH PROTEIN BISCUITS

Biscuit People Conference, Pula, Croatia.

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Arla Foods Ingredients
Discovering the wonders of whey 

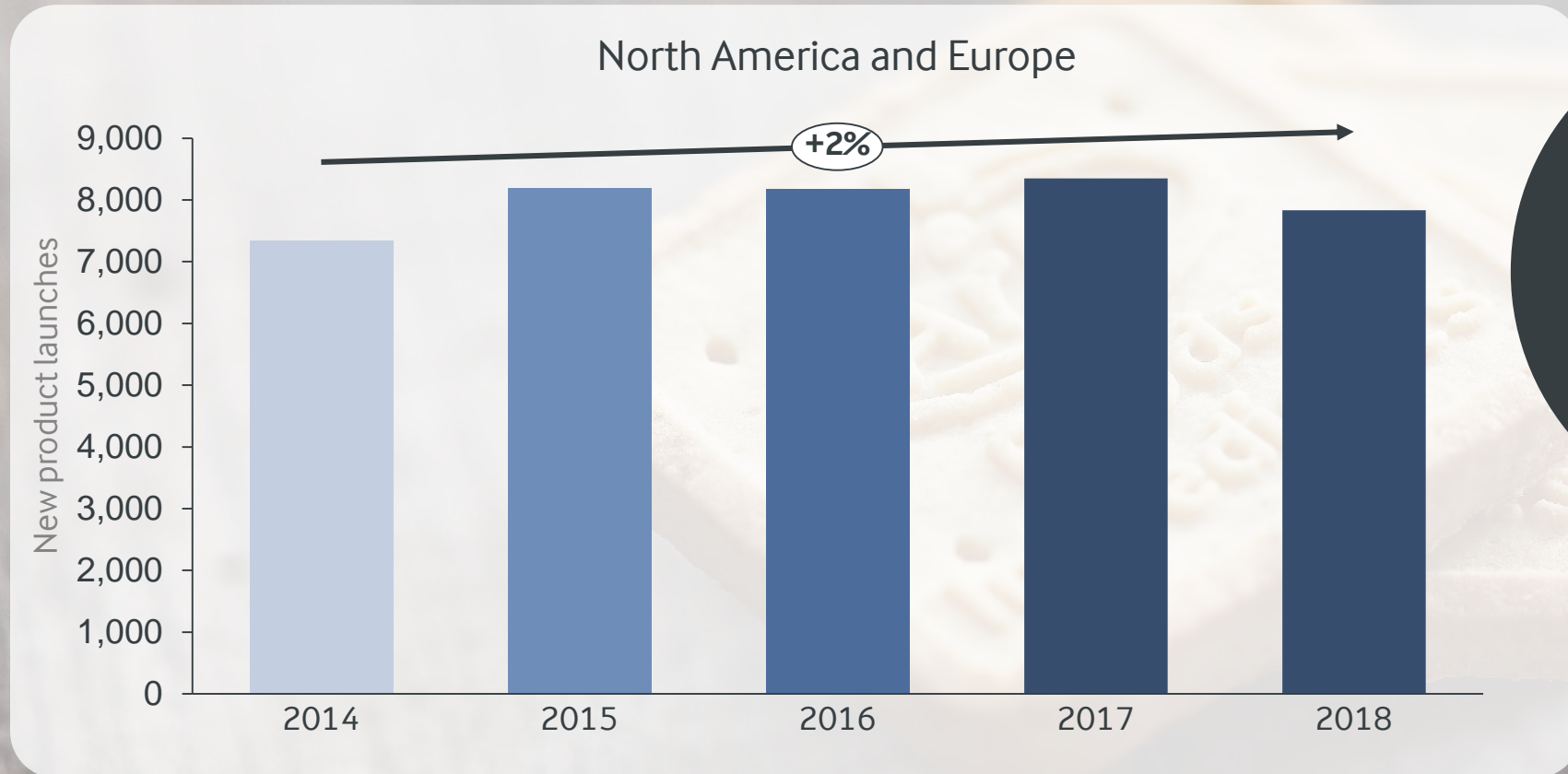


AGENDA

1. Market & consumer insights
2. Protein quality
3. Big idea
4. Documentation
5. Summary

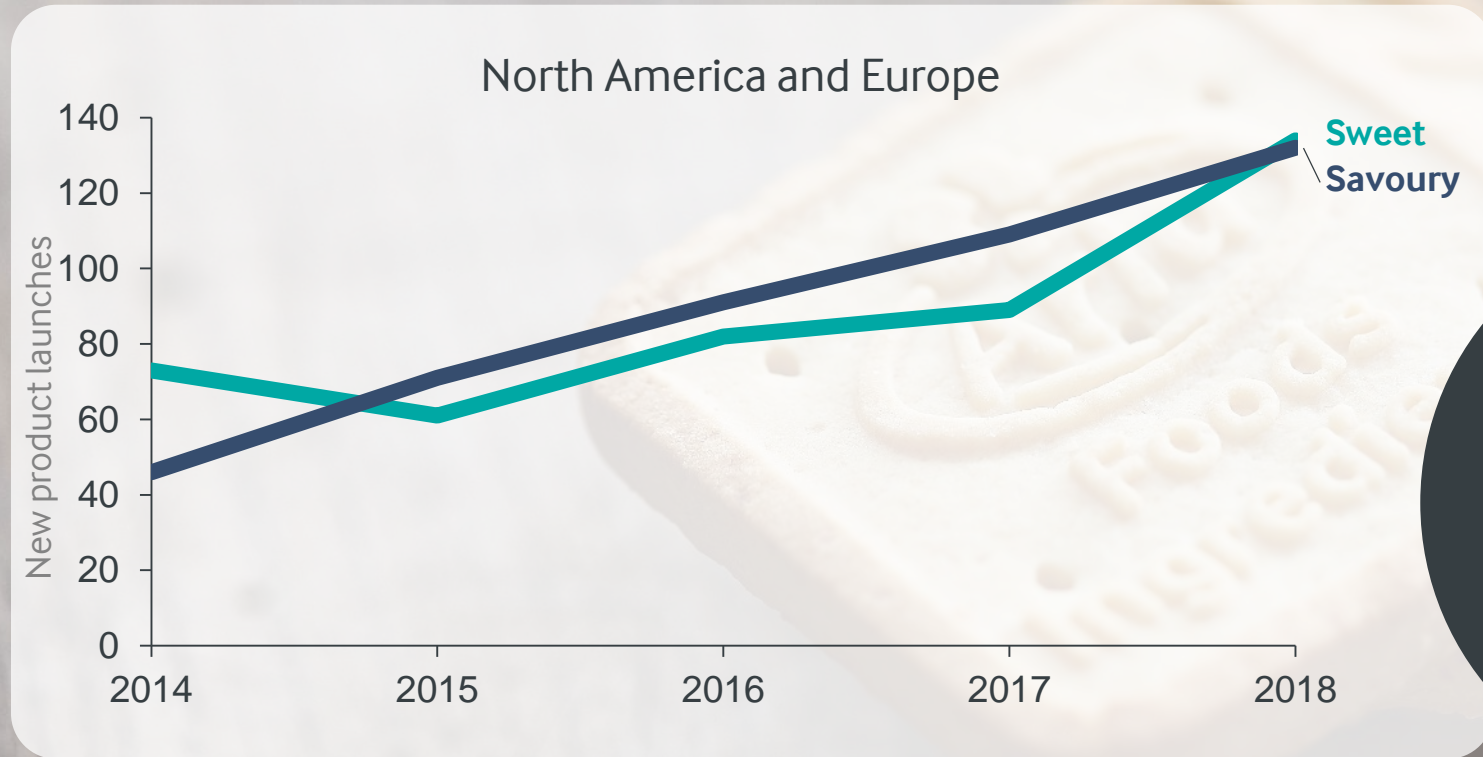


MORE THAN 7000 BISCUIT LAUNCHES YEARLY



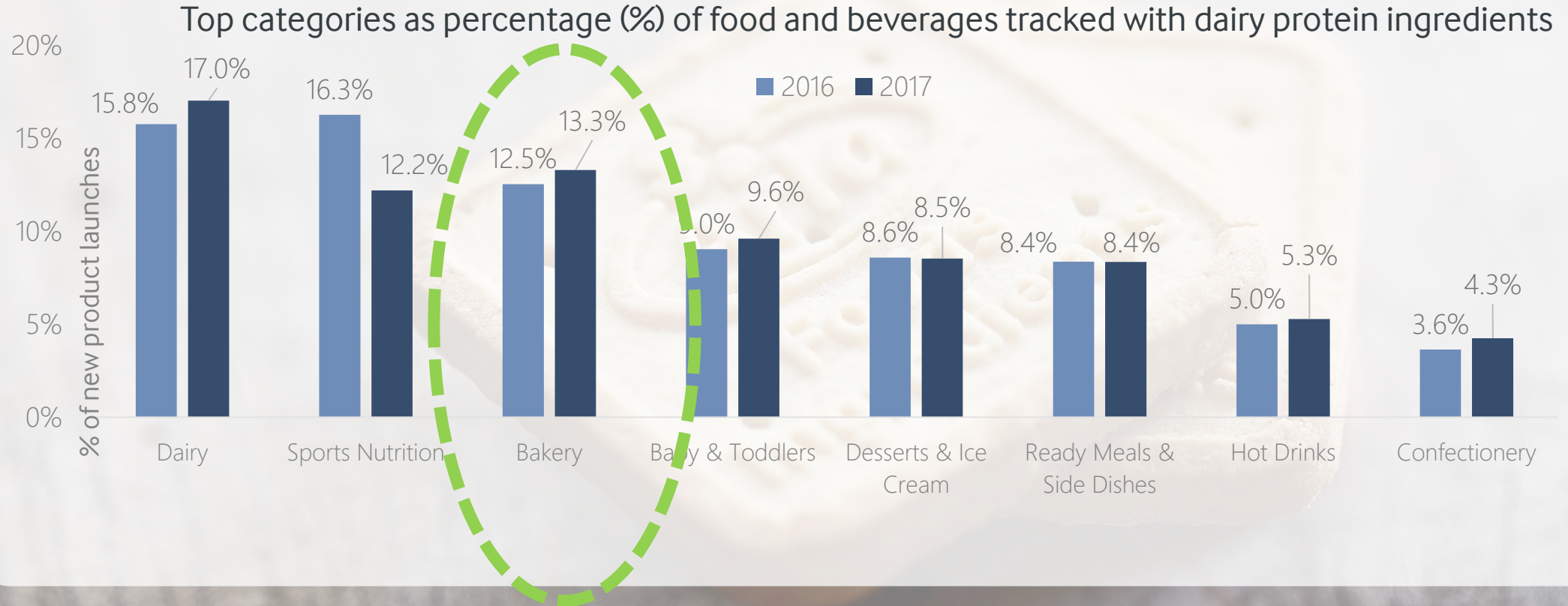
75%
are sweet
biscuits

BISCUIT LAUNCHES FEATURING PROTEIN CLAIMS: DOUBLE DIGIT GROWTH

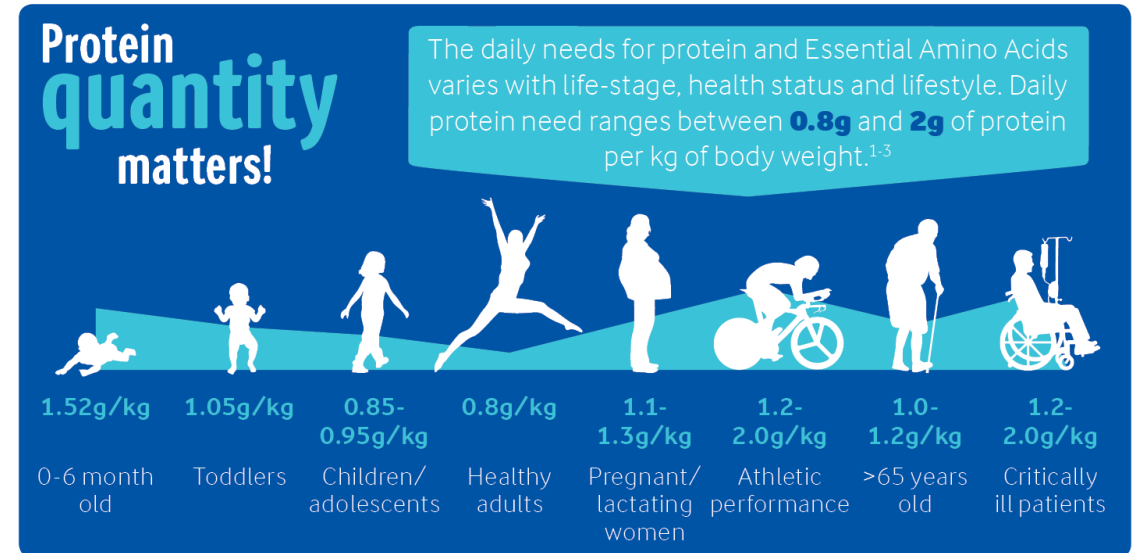
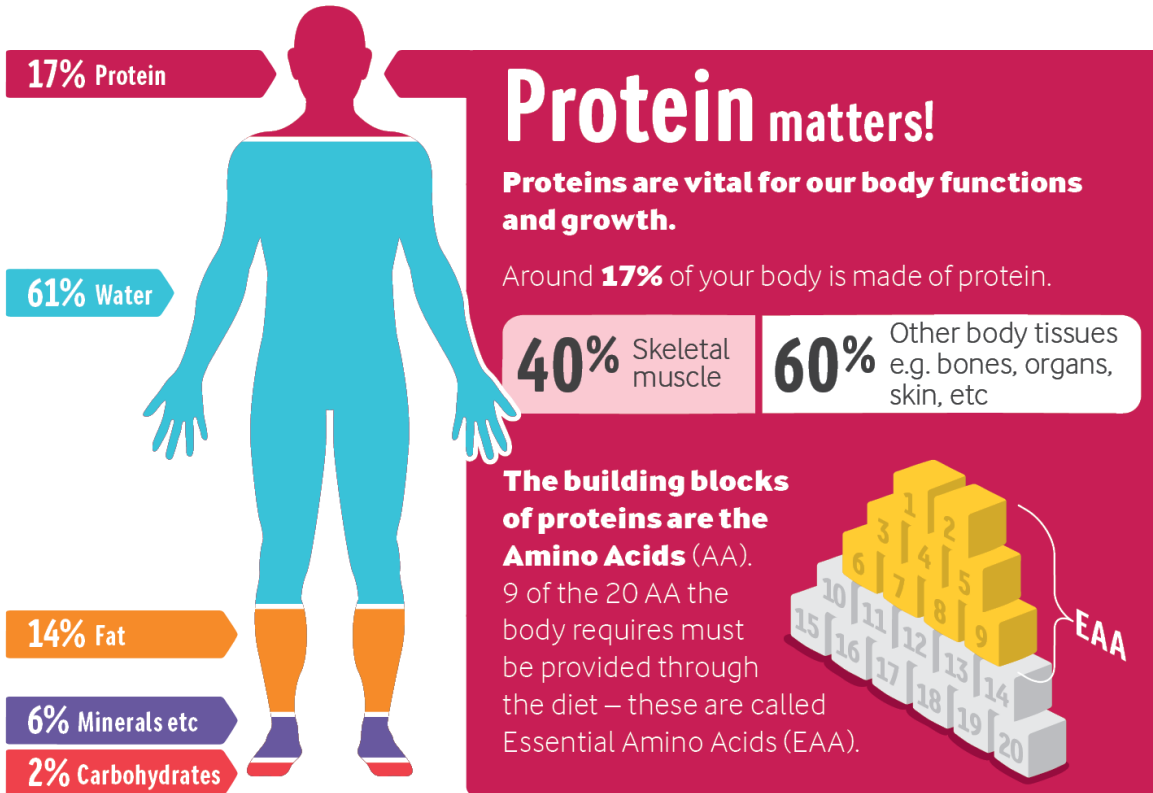


2.8x
growth in
savoury
biscuits

TOP CATEGORIES FOR DAIRY PROTEIN APPLICATION

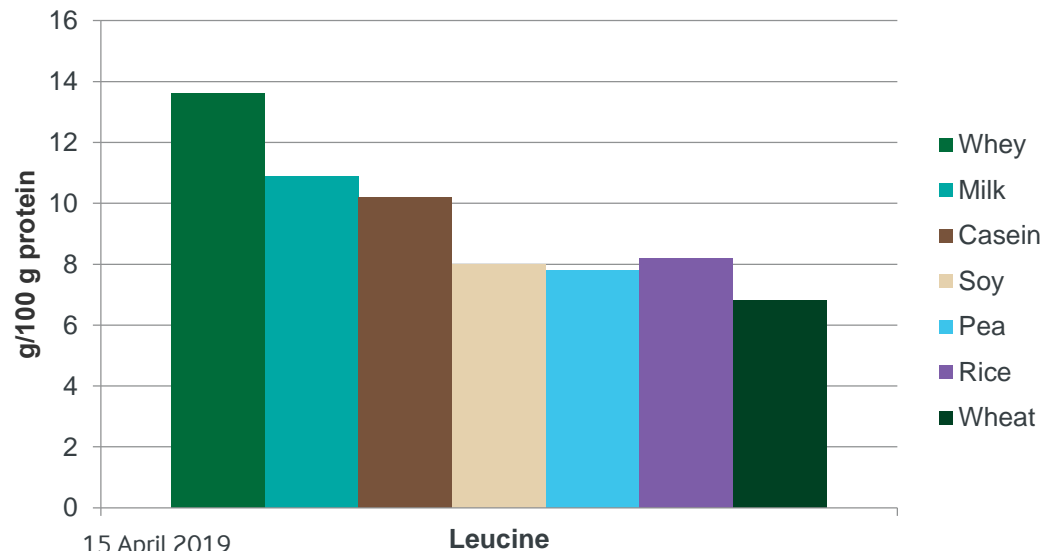
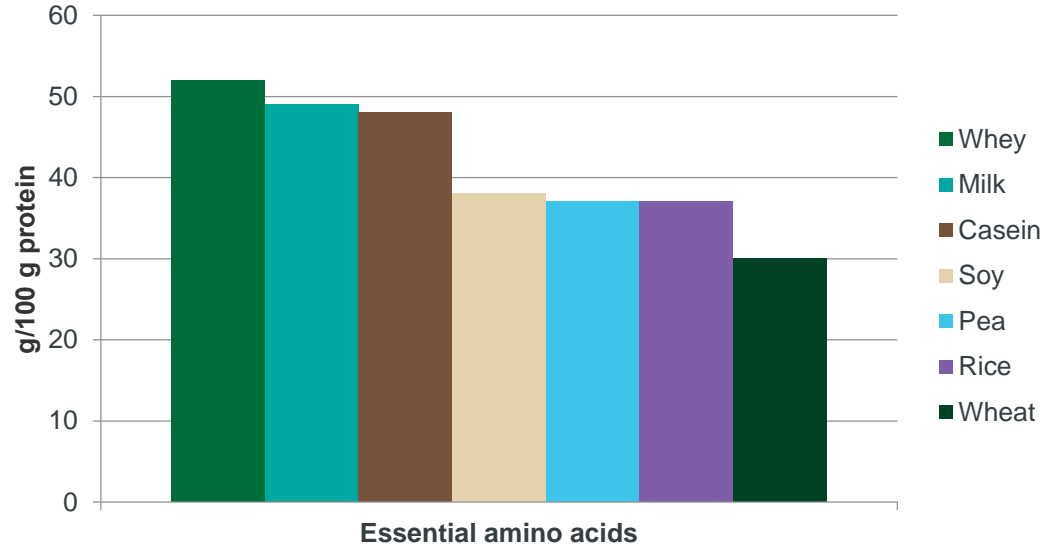


WHY PROTEIN?



WHY WHEY ?

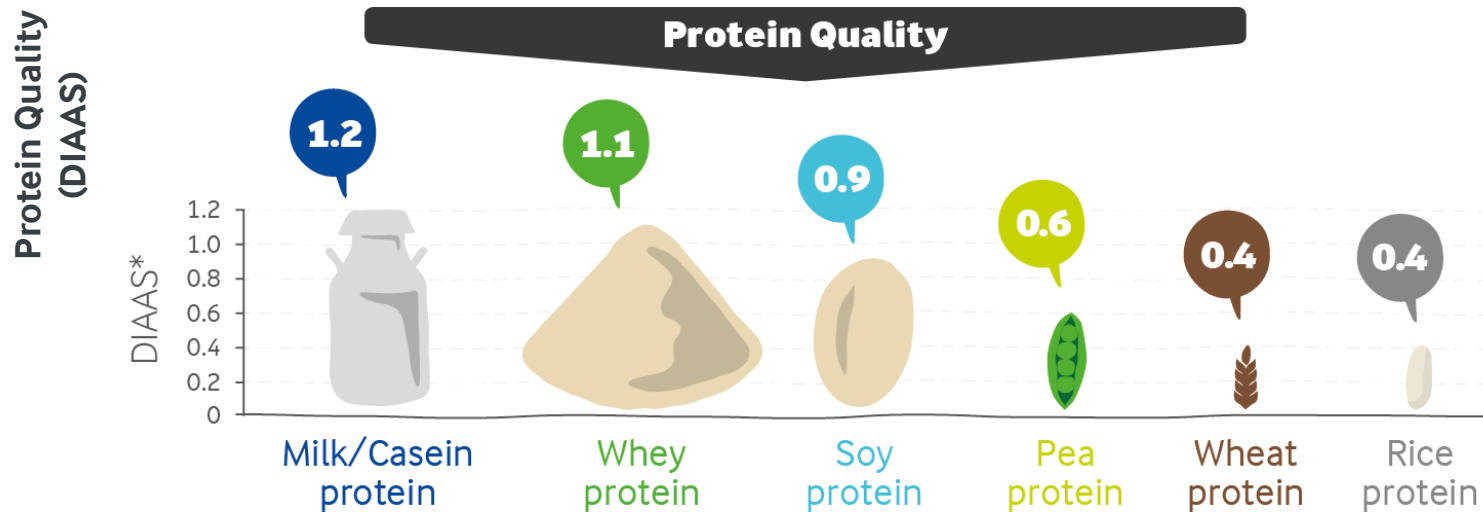
Optimal support to muscle synthesis



FACT BOX - Advantage of WHEY

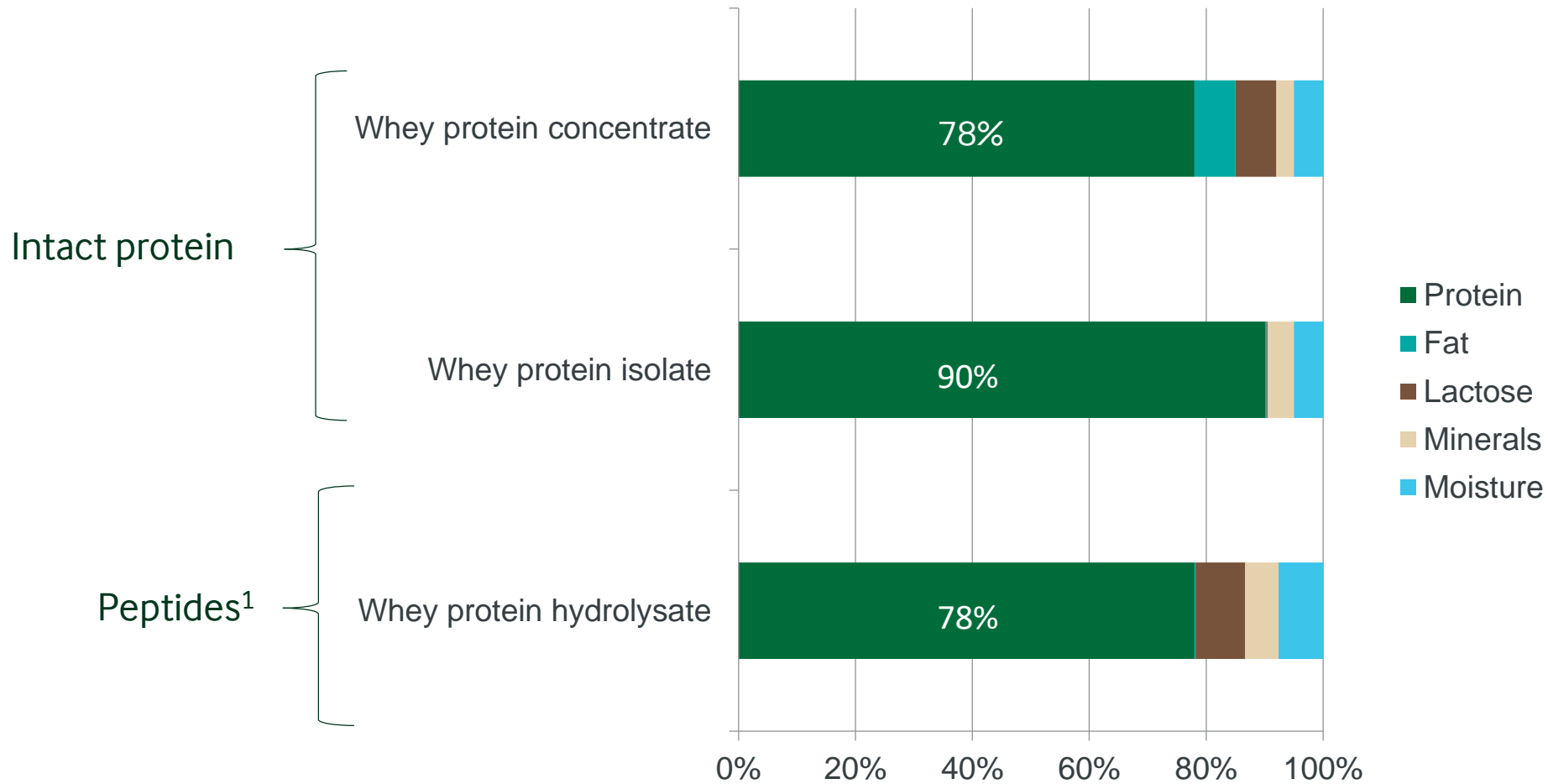
- ✓ High content of all nine **essential amino acids** (EAA)
- ✓ High content of the **leucine** a AA that can directly stimulate muscle growth
- ✓ For comparison – a whey protein supply 65-75% more LEUCINE per gram of protein consumed compared to respectively Soy, Pea and Rice and 100% more compared to Wheat

PROTEIN QUALITY MATTERS



- Protein quality depends largely on its amino acid composition and its digestibility
- Animal protein are generally of high quality and represent a *complete protein* source i.e. contain all essential amino acids in the proportion needed
- Vegetable protein are generally of lower quality and represent *incomplete protein sources* – however by combining different types in ones diet one can “*complete*” the picture

WHEY PROTEIN PRODUCTS ARE HIGHLY PURIFIED



1: High amount of short peptides and free amino acids (58% of 1 – 6 amino acids chain length)

THE BIG IDEA

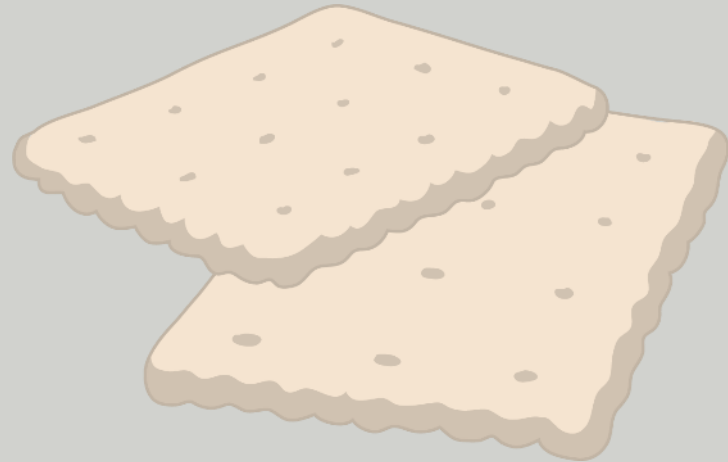
Memorable high-protein moments

Whey-Pro biscuits

- ✓ 20% protein - EU high protein claim*
- ✓ Indulgent taste and texture
- ✓ Optimal processing efficiency

DOCUMENTATION

Whey-Pro biscuits



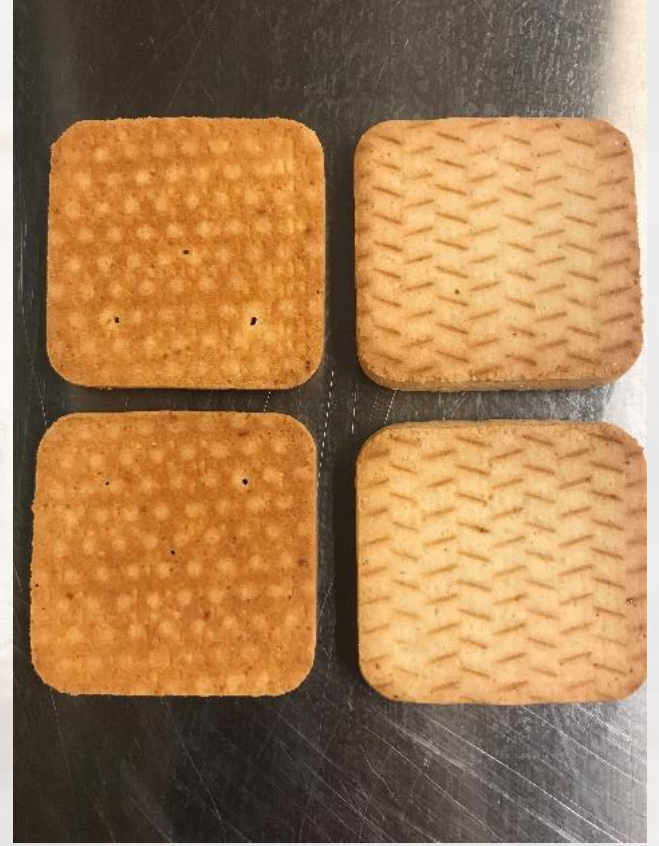
Sweet biscuits



Savoury shortbread

WHEY-PRO BISCUITS

Pilot testing



WHEY-PRO BISCUITS

Deciding the target – EU regulations

SOURCE OF PROTEIN

- A claim that a food is a source of protein, and any claim likely to have the same meaning for the consumer. May only be made where at least **12% of the energy value** of the food is provided by protein

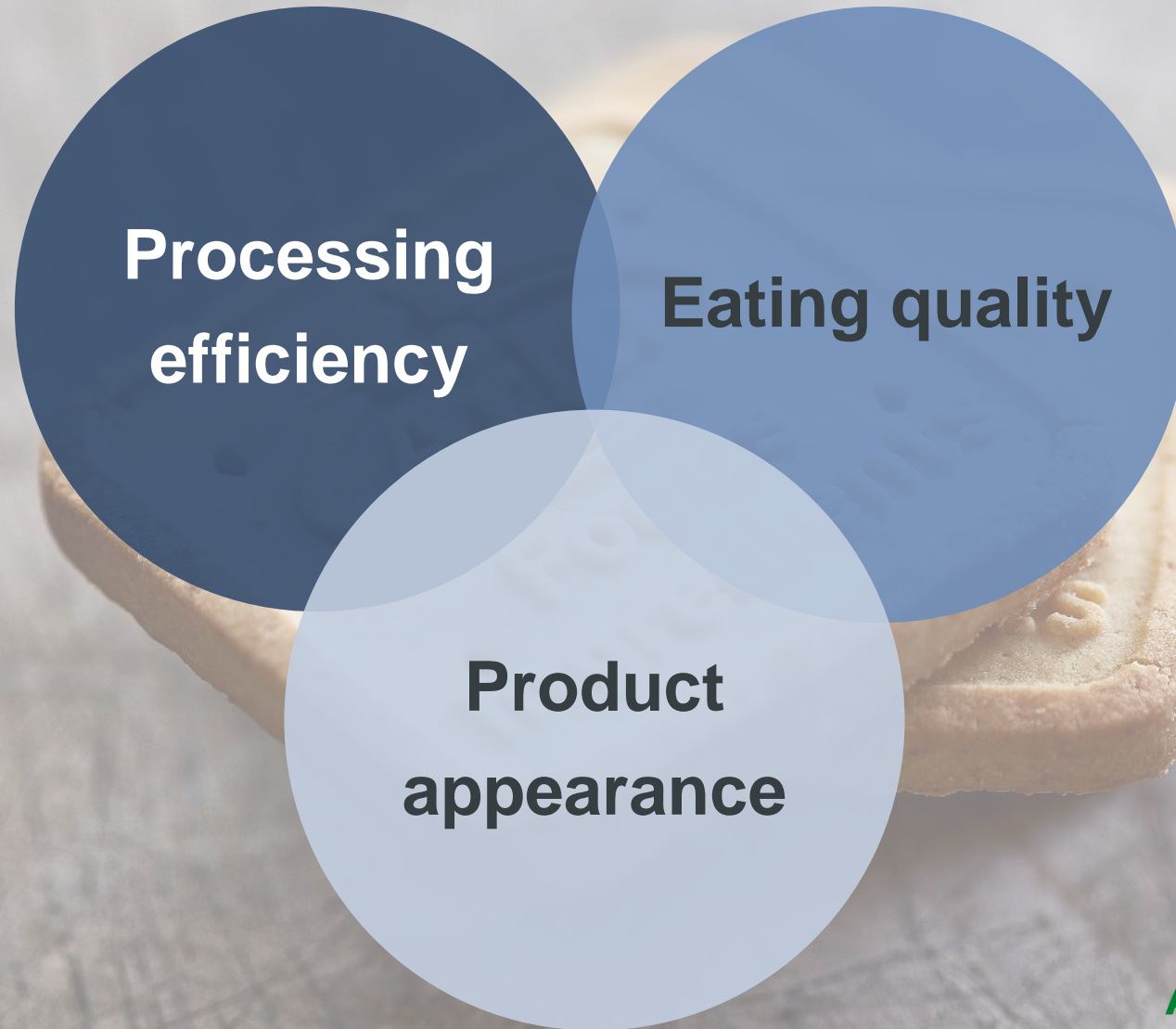


HIGH PROTEIN

- A claim that a food is high in protein, and any claim likely to have the same meaning for the consumer, may only be made where at least **20% of the energy value** of the food is provided by protein

WHEY-PRO BISCUITS

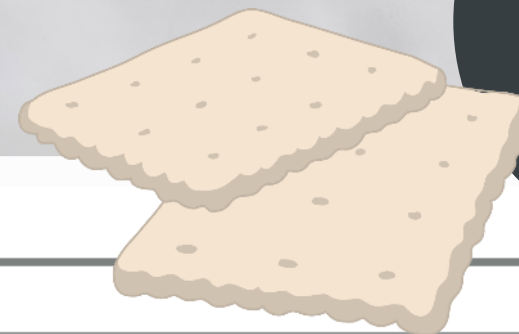
Challenges



WHEY-PRO BISCUITS

Recipe - Sweet biscuits

**Nutrillac®
PB-8420**



Recipe

NUTRILAC® PB-8420	18.50%
Wheat flour, soft type	42.00%
Shortening	14.00%
Sugar	11.92%
Water	10.10%
Glucose (84%)	1.92%
Salt	0.58%
Vanilla flavour	0.48%
Liquid emulsifier (E472e)	0.23%
Baking soda	0.19%
Ammonium bicarbonate	0.10%

Nutritional values*

Protein	21.7%
Carbohydrates	49.4%
Fat	17.2%
Total solids	68.2%
Energy KJ	1,844/100g
Energy kcal	395/100g
Protein as a percentage of total energy (PE)	20.0%

*Values take into account a 10% baking loss

WHEY-PRO BISCUITS

Sweet biscuits featuring Nutrilac[®] PB-8420

- Right ratio of ingredients in terms of different functionalities, that makes extreme high protein levels possible.
- Dough rheology doesn't change, remains crumbly and dry rather than wet oily texture
- “Oiling off” is not an issue with PB-8420



Nutrilac[®]
PB-8420

WHEY-PRO BISCUITS

Sweet biscuits - Dough properties



WPC 80

Nutrilac® PB-8420



WPC 80

Nutrilac® PB-8420



WHEY-PRO BISCUITS

Sweet biscuits - Dough properties



WPC 80



Nutrilac® PB-8420

WHEY-PRO BISCUITS

Sweet biscuits – First impression counts

Nutrillac®



WPC 80



WPC 80

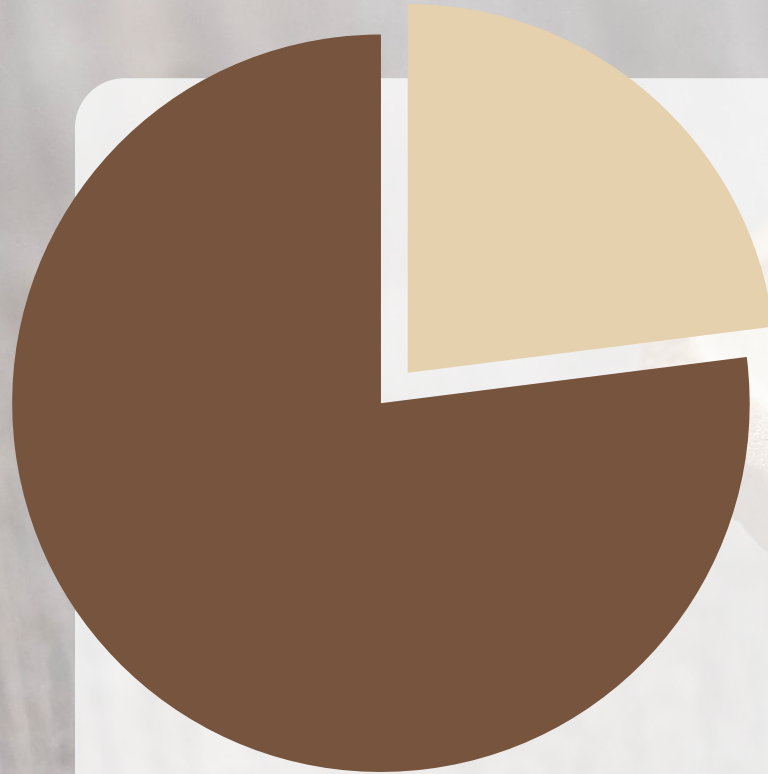


Nutrillac® PB-8420

- Nutrilac® is much more uniform, has more volume and more even surface
- WPC80 had traces of fat on the surface and had a significant harder bite

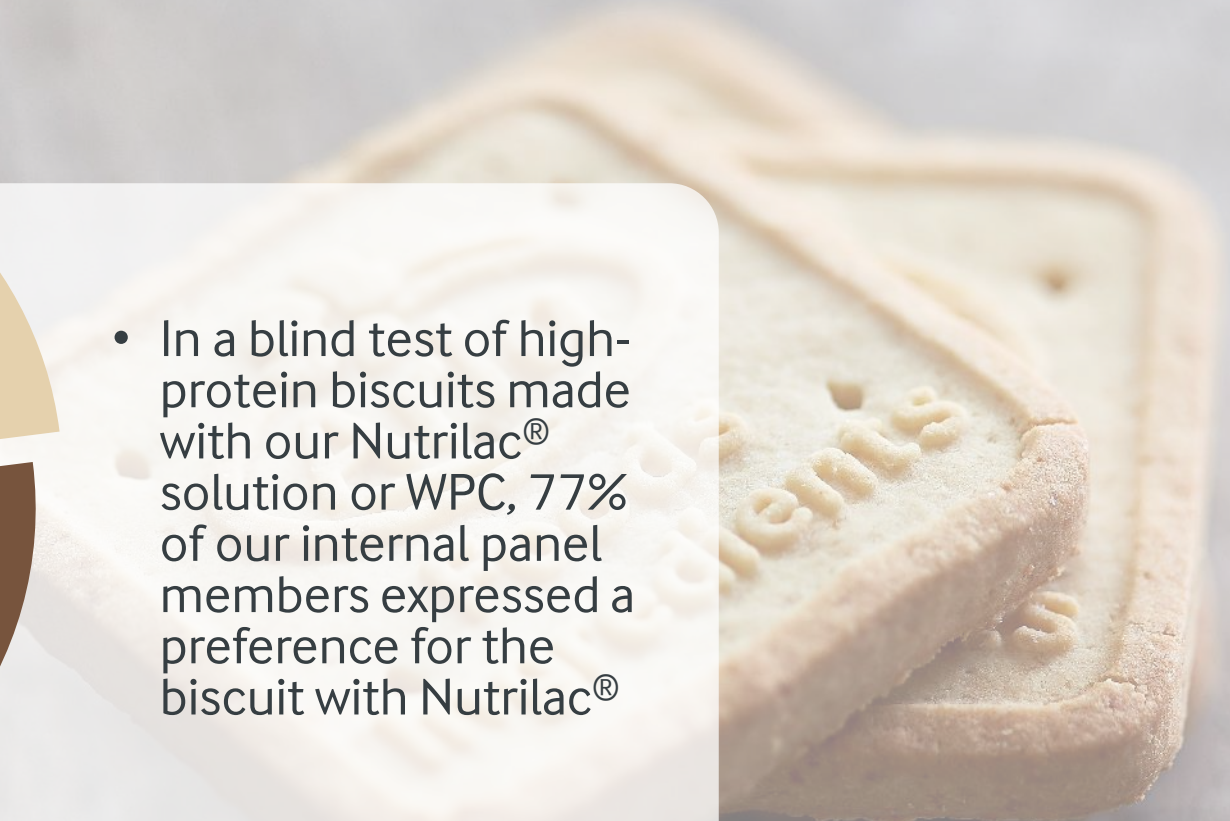
WHEY-PRO BISCUITS

Sweet biscuits - Blind preference test



■ Standard WPC ■ Nutrilac®

- In a blind test of high-protein biscuits made with our Nutrilac® solution or WPC, 77% of our internal panel members expressed a preference for the biscuit with Nutrilac®



WHEY-PRO BISCUITS

Recipe - Savoury shortbread with parmesan and herbs

Nutrillac®
BK-8501



Recipe

NUTRILAC® BK-8501	12.00 %
Wheat flour, bread type	34.77 %
Butter	26.60 %
Cheese, hard dehydrated, grated	21.45 %
Water	4.54 %
Salt	2.50 %
Black pepper	2.10 %
Oregano	1.80 %

Nutritional values*

Protein	26.47%
Carbohydrates	23.95%
Fat	30.41%
Total solids	83.04%
Energy KJ	2,153/100g
Energy kcal	517/100g
Protein as a percentage of total energy (PE)	20.90%

*Values take into account a 10% baking loss

WHEY-PRO BISCUITS

Savoury shortbread with parmesan and herbs

- Nutrilac[®] BK-8501 has shown good “flour-like” properties in terms of water absorption in dough phase and dough elasticity
- 22% of the flour has been substituted with Nutrilac[®] BK-8501 in the shortbreads and this actually **improved** the texture that was too fragile in the reference
- Deposited wire-cut process

Nutrilac[®]
BK-8501



WHEY-PRO BISCUITS

Savoury shortbread with parmesan and herbs

- Nutrilac[®] can work in laminated types like crispbread, crackers etc. where dough elasticity is crucial
- Excellent enrichment solution, when strength is needed too


**Nutrilac[®]
BK-8501**

	Nutrilac [®] BK-8501	Reference
Fat %	30.418	30.290
Carbohydrates %	23.953	31.581
E kcal /100g	516.518	509.622
E kj /100g	2152.956	2123.825
Protein %	26.471	16.589
Protein of energy %	20.902	13.279

**Values take into account a 10% baking loss*



Arla Foods Ingredients

Discovering the wonders of whey 

SUMMARY

What's in it for you?

YOUR BUSINESS	YOUR PRODUCT	OUR INGREDIENTS
<p>Meet growing consumer demand for high-protein biscuits</p> <hr/> <p>Optimal processing efficiency</p> <hr/> <p>Opportunity to grow market share</p>	<p>Indulgent taste and texture</p> <hr/> <p>High in protein claim*</p> <hr/> <p>Appealing look and snap</p>	<p>Nutrillac® PB 8420</p> <hr/> <p>Nutrillac® BK 8501</p>

THANK YOU!

