



WHEY INGREDIENTS AND APPLICATIONS

Mejeriteknisk selskab

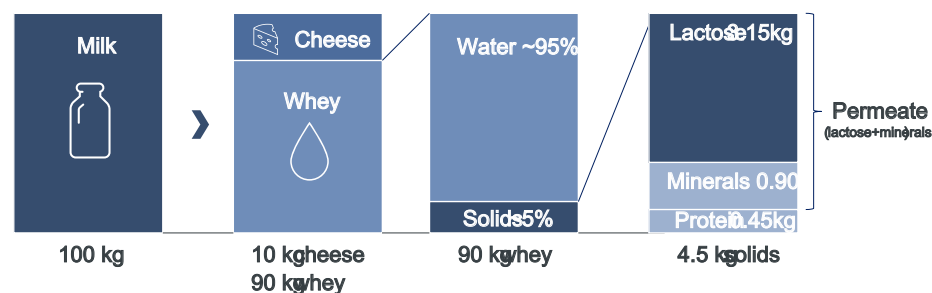
Povl Friis, Arla Foods Ingredients

Arla Foods Ingredients
Discovering the wonders of whey 

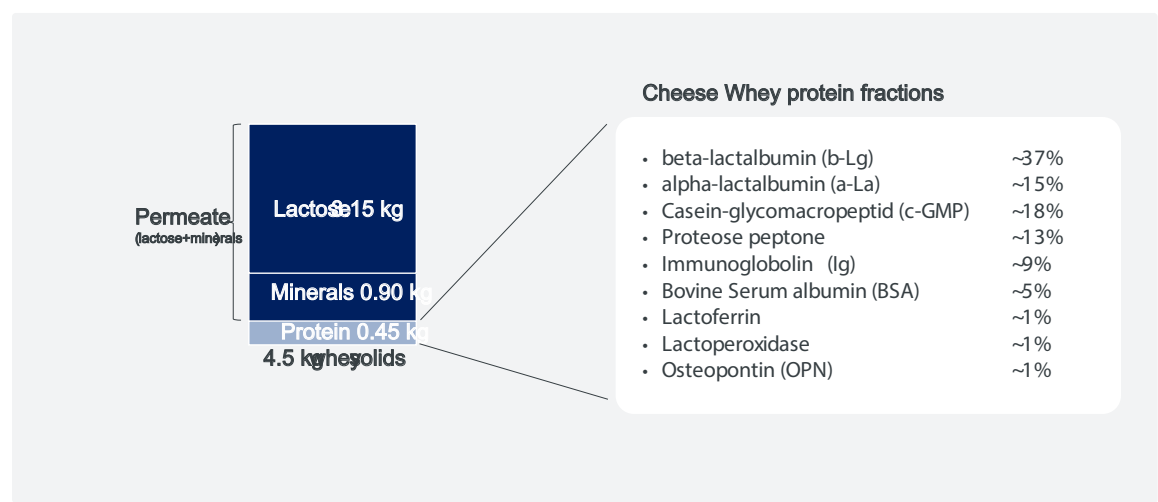
AGENDA

1. Whey and whey components
2. Transformation of whey
3. Evolution in the whey industry
4. The value of whey & lactose
5. The markets for whey ingredients
6. Moving forward – what is next?

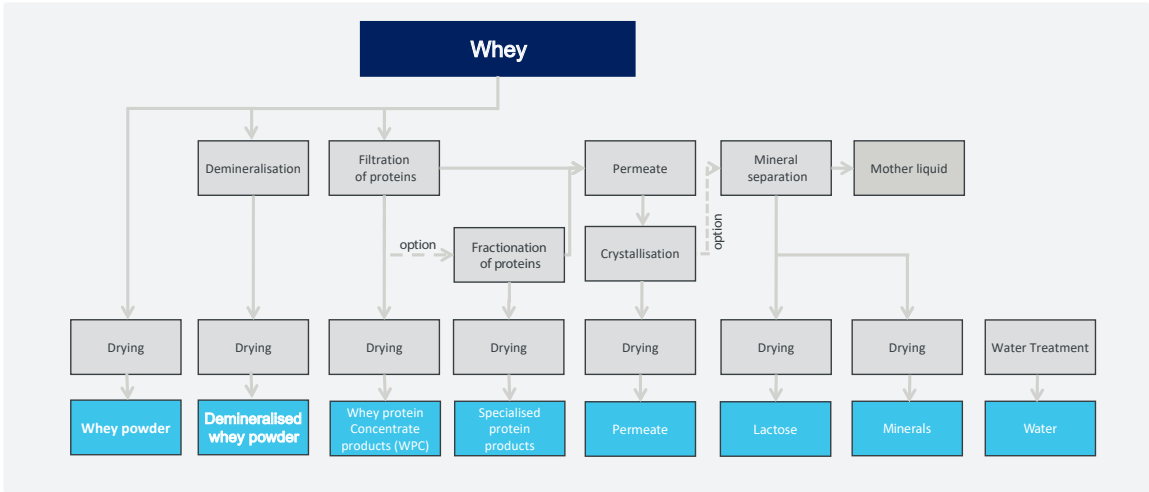
Whey is derived from the cheese process



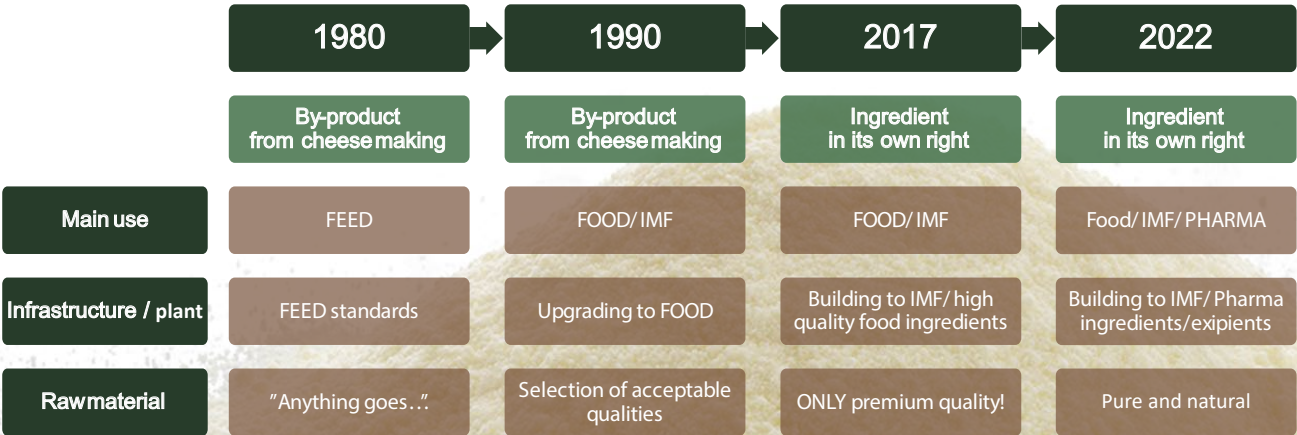
The whey proteins can be fractionated even further



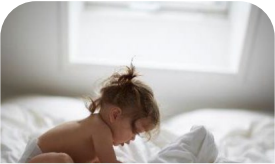
Transformation of whey it into products sold in the business-to business ingredient market



Our industry is entering a newphase



CARRIER-ORAL DRUGS



EARLY LIFE NUTRITION



CHILD NUTRITION
MANUFACTURING



MEDICAL NUTRITION



HEALTH FOODS



SPORTS NUTRITION



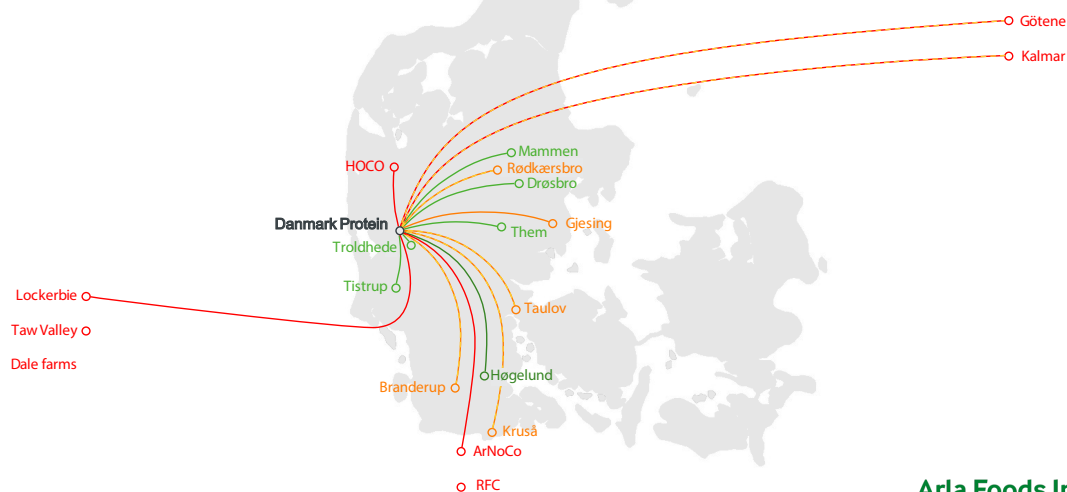
DAIRY



BAKERY

AFI DELIVERS PRODUCTS TO DIFFERENT SEGMENTS

Whey volumes transported to Danmark Protein



The price paid for liquid whey is most frequently based on a whey powder price model

No public 'market price' is set for liquid whey

- High water content limits the transportation of whey
- As a consequence most companies process their own whey



Price model based on whey powder price applied

- Companies buying whey powder use the whey powder market pricing minus a make allowance

Components in a Make Allowance

$$\text{Whey Powder Sales Value} - \text{Production Cost and profit (Make allowance)} = \text{Whey price}$$

Production Cost components

- ① Transport costs
- ② Process Cost
- ③ Plant Overhead
- ④ Sales Cost
- ⑤ Depreciation of Assets
- ⑥ Interest
- ⑦ Tax
- ⑧ Return on investment

Record high price levels for Whey Protein Concentrate and Skim Milk Powder



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Discovering the wonders of whey


Lactose market is taking two different roads in the US and Europe in terms of price development



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Discovering the wonders of whey


Global mega trends and demographic developments are driving the demand for whey

POPULATION GROWTH



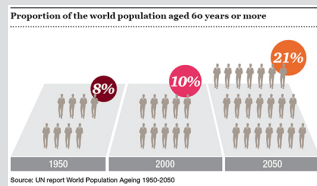
- Growing demand for protein
- Increasing birth rates → increasing demand for Infant Formula

GROWING MIDDLE CLASS



- Increasing disposable income → protein rich diets
- More women in the workforce → growing need for Infant Formula

AGEING POPULATION



- Increasing demand for high protein food fortification and clinical food

09 June 2022

Arla Foods Ingredients
Discovering the wonders of whey 

There are four dominant end-consumer segments that drive demand for whey ingredients

CHILD NUTRITION



SPORTS NUTRITION



CLINICAL NUTRITION



FOOD

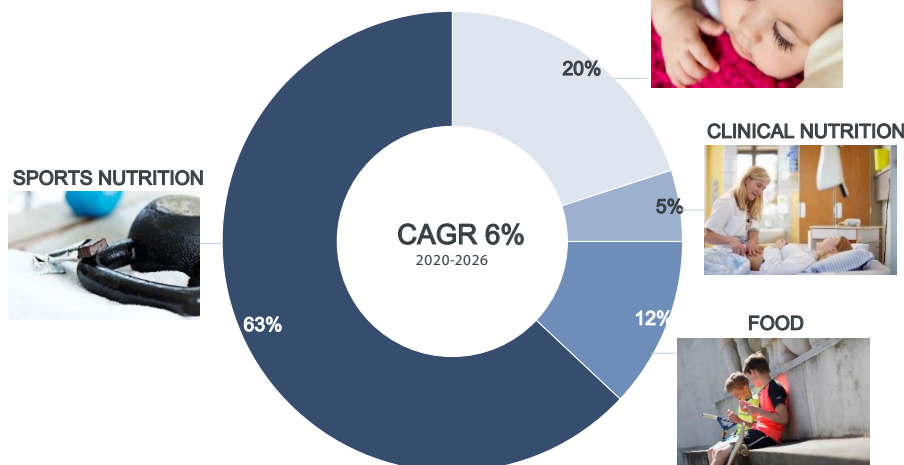


14 09 June 2022

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Discovering the wonders of whey 

Sports and Early Life Nutrition are the biggest whey protein consumers in a fast growing industry

High protein whey market segments



Early Life Nutrition is an attractive market for high value whey ingredients delivering solid premiums



A growing Clinical Nutrition market driven by the ageing population and improved healthcare as countries develop

CLINICAL NUTRITION

AMBITION:
Explore the benefits of whey as a natural ingredients in Clinical Nutrition

MAJOR PRODUCT CATEGORIES FOR HIGH VALUE WHEY PROTEINS

Powders

UHT liquids

Bars

Distribution

Hospitals

Home Care

Pharmacies

AFI's COMPETITIVE PLATFORM IS BASED ON;

HYDROLYSATES FOR BETTER ABSORPTION

WPI FOR CONVENIENCE FORMATS AND SUPERIOR TASTE

DEVELOPMENT PARTNER WITH POWERFUL APPLICATION SUPPORT

17 09 June 2022

Arla Foods Ingredients
Discovering the wonders of whey

Sports Nutrition market going mainstream driving demand for new product formats

SPORTS NUTRITION

AMBITION:
To provide innovative whey solutions to a growing health & sports market

MAJOR PRODUCT CATEGORIES FOR WHEY PROTEINS

Powders

RTD

Bars

AFI's COMPETITIVE PLATFORM IS BASED ON;

SPECIALISED WPIs TAPPING INTO CONVENIENCE TREND

HYDROLYSATES FOR PERFORMANCE

18 09 June 2022

Arla Foods Ingredients
Discovering the wonders of whey

Whey ingredients are applicable in a wide range of Food categories

FOODS



AMBITION:
Adding value to customers' recipes and process optimisations – focus on functionality & costs

MAJOR PRODUCT CATEGORIES FOR WHEY PROTEINS

Dairy	Bakery	Beverage	Confectionary
			

AFI's COMPETITIVE PLATFORM IS BASED ON;

INNOVATIVE SOLUTIONS FOR PRODUCT IMPROVEMENTS

STRONG APPLICATION KNOWLEDGE AND ATTRACTIVE PARTNER TO OUR CUSTOMERS

What does the future hold for whey based ingredients?

- Use potential in milk fractionation technology
- Commercialise Beta-Lactalbumin
- Bring new whey fractions to the market
- Lactose for very specialised applications



Milk fractionation - from milk -to-can in one flow

A patented technology, capturing the exciting potential of premium organic infant formula



Looking closer at the Milk Fractionation process

~1 day of production

