



**Ingredients for the
next generation**





Using infant formulas is second to breast feeding, a fact supported by WHO. The following information is for professional use only.

Infant nutrition for the next generation

Dedicated paediatric nutrition from a leading global dairy company

Arla Foods Ingredients is a specialist provider of advanced innovative solutions within the milk-based ingredients industry.

We are part of Arla Foods, one of the key players in the international dairy industry and we can trace our beginnings back more than 100 years.

In Team Paediatrics, our overriding goal is to help you provide beneficial and healthy nourishment for your customers' infants and young children.

We work towards developing ingredients that resemble the nutrients found naturally in human milk – ingredients that make infant formula meet infant's

nutritional and developmental needs even more closely.

A team of specialists

Our dedicated infant nutrition and product development teams draw on a broad base of specialists from within human nutrition, molecular biology, dairy engineering, food technology, production engineering and marketing.

As well as offering extensive support, both teams work towards a common goal: to help you meet the current and future needs of both your business and your customers.



Our areas of interest...

Gastro-intestinal health

Specific proteins and components in cow's milk whey protect the infant gut by promoting the growth of beneficial bacteria as well as inhibiting colonisation and infection by pathogens.

Whey ingredients such as Arla's Lacprodan®ALPHA-10, Lacprodan®ALPHA-20, Lacprodan®CGMP-20 and Lacprodan®MFGM-10 also support the guts' physiological development on various levels.

Allergy treatment and prevention

We have a broad range of partial and extensively hydrolysed caseins and whey proteins for use in your products designed for both allergy treatment and prevention.

These products are designed and tested for important quality descriptors such as antigenicity, molecular weight distribution and hydrolysis degree to ensure a consistent quality to this sensitive consumer group.

Low protein formula

The reduction of protein content in infant formula is a key objective for many producers. An increasing number of studies point to the relationship between a high intake of protein early in life and the onset of obesity and other adverse effects connected to the metabolic syndrome later on in life.

Whey protein fractions make it possible to advance infant formulas in the direction of human milk. Lacprodan®ALPHA-10 and Lacprodan®ALPHA-20 enriched infant formulas allow for a lower protein content due to higher levels of essential amino acids.

Immunity

Maturation of the immune system, referred to as the cell-mediated immune response (T_H1), is of great importance during infancy.

A T_H1 response is essential for the clearance of intra cellular pathogens such as viruses and certain bacteria. In studies on knockout mice, Osteopontin has shown to possess a key role in the development of T_H1 immunity as well as to enhance host resistance to infections.

Cognitive development and performance

Sialic acid is gaining increasing interest as a component of significant importance in infant cognitive development and performance. Research has demonstrated that brain tissue in breast-fed infants had a higher content of lipid and protein bound sialic acid compared to formula fed infants.

A recent piglet study has confirmed that dietary sialic acid improves learning and memory during early development.

The best alternative to human milk

Helping parents make the right choice

When breast-feeding is not an option, every parent looks for the best alternative.

The selection of infant formula is one of the most important decisions a guardian will make on their child's behalf.

The knowledge that your product contains market-leading ingredients, scientifically supported to enhance growth and development will be a factor that weighs heavily in their decision.

This will contribute to successful differentiation of your product in a huge and very competitive market.

Bringing you closer to nature

We are committed to bringing you closer to providing the best alternative to human milk. Our driving force is

our dedication to meeting your business needs and so we are continuously striving to improve our portfolio.

Leaders in innovative solutions

It is our dedication to the continuous development of new fractions of milk proteins that has enabled us to be first to market with a number of milk-based innovative ingredients.

We were the first company to produce Alpha-lactalbumin and hold the patent on Osteopontin, both important components of breast milk.

The next generation of products

When it comes to the future development of ingredients for infant nutrition, we have an exciting product pipeline.



Ingredients for the next generation

We have a market-leading range of ingredients that are scientifically documented to add important nutritional value to your infant formula.

Osteopontin

Osteopontin is a heavily phosphorylated and acidic glycoprotein with strong calcium-binding properties. Studies suggest that it plays a role in the development of immune functions in infants. At Arla, we hold the intellectual property rights to the processing and application of osteopontin.

Sialyllactose

Sialyllactose is an oligosaccharide source of sialic acid, which benefits cognitive development. Human and cow's milk differ significantly in their concentration of sialic acid, which is reflected in the sialic acid profile of infant formula based on cow's milk. Mature human milk contains approximately 150mg of sialic acid per litre, while infant formula contains less than 25 percent of this.

Studies carried out on brain material from infants that suffered SIDS found that those which had been breast-fed had a higher content of lipid and protein-bound sialic acid compared to formula-fed infants. This research adds further to speculation regarding the influence of sialic acid on cognitive development and performance.

Caseinoglycomacropeptide (CGMP)

CGMP is a rich source of sialic acid that is a conditionally essential nutrient for brain development and cognition.

A recent study on piglets has demonstrated CGMP's ability to enhance learning and memory. CGMP is also capable of supporting healthy microflora and reducing the effects of intestinal pathogens. Due to its low content of phenylalanine, CGMP is also suitable for a phenylketonuria (PKU) diet.

Milk Phospholipids

Both phospholipids and gangliosides are important for the development of the central nervous system, cognitive performance and the intestinal system. We have developed a unique source of phospholipids with a similar profile to human milk, thus enabling you to mimic the phospholipid profile of human milk in infant formula.

Hydrolysates

Partially and extensively hydrolysed casein and whey proteins are increasingly being added to infant formulas to prevent allergy or to aid protein digestion. We have a wide range of partial and extensive hydrolysates based on different raw materials, enzyme mixes and production processes.

Alpha-Lactalbumin (Alpha)

Alpha is rich in essential and conditionally essential amino acids and is a dominant protein in human milk. Alpha is high in cysteine, which is valuable in boosting the immune system, and tryptophan, which may benefit mood, sleep and cognitive performance.

Milk Fat Globule Membrane (MFGM)

The MFGM in cow's milk that surrounds the fat globule triglyceride, contains phospholipids (such as sphingomyelin and gangliosides). These components are recognised as nutritional and bioactive milk constituents and are present only scarcely in bovine milk compared to human milk. We have developed a production process that allows the gentle separation of MFGM from cow's milk. The MFGM concentrate is suitable for the fortification of infant formula with bioactive ingredients.

Quality is our top priority

Putting safety first in everything we do

In the development of ingredients for infants, it is crucial to maintain impeccable standards of hygiene throughout the production process. There is no room for compromise.

At Arla, we control the entire supply chain from the sourcing of raw materials to the packaging of finished product. The highest standards of quality and hygiene are maintained throughout the chain.

Our assurance of quality

All of our manufacturing facilities are fully compliant with EC regulations and have HACCP (Hazard Analysis and Critical Control Points) systems in place to help ensure documentation and the full traceability of products through the production process.

Each of our ingredients is produced to a consistent

formulation, ensuring that your products can offer completely constant levels of nutritional benefits.

Our high quality standards permit us to utilise advanced process conditions which result in lower protein denaturation. This ensures the optimisation of the products' bioactivity.

Finally, as babies are also vulnerable to even the smallest change, we have strict processes in place to ensure that every one of our ingredients is produced to a consistent formulation.

Satisfying regulatory demands

Infant nutrition is subject to rigorous regulation – and we do everything we can to help you keep up with the latest legislative standards.



Discovering the future together

Sharing knowledge to ensure innovative solutions

Precise replication of human milk is not yet possible but, every day, global research takes us one step closer.

For this reason, we maintain strong ties with the scientific community and are focused on investigating new trends in infant nutrition.

Together we investigate milk-based ingredients that can emulate key components in human milk. Scientific discoveries equip us further to meet the current and future demands of the infant nutrition market.

Scientifically documented nutritional benefits

Thorough documentation is your guarantee of our ingredients' functional effects. *In vitro* testing is a natural part of our ongoing product development,

paving the way for clinical studies of specific applications. Only by comprehensive testing can we be sure to provide infants with the best possible substitute for human milk.

Create with us

In order to produce an ingredient that meets your specific requirements, we invite you to work with us in the creative process of developing new solutions that will either fit into the specific requirements of your product, or help enhance the profile and nutritional efficacy of your range.

To discuss more about how to develop your product range with ingredients for the next generation, speak to your Arla Foods Ingredients contact, or logon to our website at www.arlafoodsingredients.com for more inspiration.





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Closer to Nature