

# TALKING POINT

The Arla Foods Ingredients newsletter  
Issue 25 · June 2008



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**Arla Foods Ingredients**  
The essence of quality

## The good feel of progress

Investing energy in performance improvements is always a top priority for us at Arla Foods Ingredients. Over the past months, the benefits of our latest efforts have started filtering through to our customers. We hope many will have experienced our improved ability to supply and supply on time.

Following a strategic review of our business, we have defined ambitious plans for our future growth – and not just in terms of volume growth. More important to us is the drive to create more value for our customers. Here, as ever, innovation will be a cornerstone in our work to improve customer profitability.

We are already on our way. The proactive and highly creative approach of our application specialists ensures a steady flow of inspirational ideas that our customers can draw on when shaping their response to consumer trends. In the area of sports nutrition, highlighted in this issue of Talking Point, we can demonstrate many ways to meet the nutritional requirements of top sports folk in appealing foods and beverages.

Our strategy sets the scene – for more quality solutions, more creative concepts and more value for our global customers. We are positioning ourselves to remain the leading supplier of milk-based ingredients.

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*Text: Cath Mersb*

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*Pictures: Imageclub • Jakob Mark • Tuala Hjarno*

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[www.arlafoodsingredients.com](http://www.arlafoodsingredients.com)

# New gels join the team

Protein-containing gels are starting to catch on in the sports world. Arla Foods Ingredients has the whey proteins to satisfy sports nutrition needs

Many athletes enjoy the convenience of sports gels when their bodies need extra energy during training. But, while most gels today give a shot of fast-acting carbohydrates, a new trend in protein-carbohydrate gels is emerging – and, for that, Arla Foods Ingredients has the ideal whey protein isolate.

LACPRODAN® DI-9213 is one of an extensive range of whey protein products developed by Arla Foods Ingredients for the sports nutrition sector. Used in gels, the whey protein isolate secures a clear, refreshing quality and a protein content of up to 8%.

### Performance-boosting gels

The inclusion of whey protein in sports gel products has several nutritional advantages. Primary is whey protein's content of all the amino acids necessary for muscle synthesis, promoting efficient muscle recovery and endurance. At the same time, whey increases the insulin response and, thereby, muscle metabolism.

Through the combination of protein and carbohydrate in gels, athletes can increase their muscles' work capacity and resistance to fatigue. Just what they need when facing a major competitive event like the Olympic Games. Arla Foods Ingredients today has considerable experience in developing whey protein isolates and hydrolysates for the sports nutrition market and in providing manufacturers with the necessary application support.

### High-clarity beverages

Whey proteins for beverages are among the areas of expertise. Here, LACPRODAN® DI-9213 whey protein isolate (WPI) is a particularly popular choice as, due to

the absence of milk fat, it secures high-clarity beverages similar to juice. The WPI's high calcium content represents another nutritional gain.

For those who depend on high-speed protein absorption, Arla Foods Ingredients offers LACPRODAN® DI-3065 whey hydrolysate. The optimal combination of amino acids is proven to stimulate an insulin response four times higher than that of intact proteins – and can be used in a range of sports nutrition applications.

### Chewy protein bars

Most important in developing a successful high-protein product is taste and texture. As in all Arla Foods Ingredients' work with sports nutrition, this was a major consideration in the development of the protein bar compounds MULTILAC® 8620 and NUTRILAC® 8420.

Today these compounds provide the flexible basis for customised protein bar concepts that allow easy incorporation of other functional ingredients, such as vitamins and minerals, and a broad assortment of flavourings. The final protein bar has a great taste and a satisfying chewy texture that does not dry out during storage.

Protein-packed nutrition in the form of gels, beverages and bars will be all part of the equipment when the world's top sportsmen and women pack their bags and head for Beijing this summer. One thing is sure – some of them are bound to contain whey proteins from Arla Foods Ingredients.

**For more information: [anser@arlafoods.com](mailto:anser@arlafoods.com)**

Need	Application	Ingredients
Long-term endurance, recovery and muscle synthesis	Gels, beverages and bars	LACPRODAN® DI-9213 NUTRILAC® DI-8420
High-speed absorption	Beverages	LACPRODAN® DI-3065



# Power behind the javelin



For Danish Olympic athlete Christina Scherwin, a protein drink is all part of the training programme

A protein drink immediately after training is all part of the daily diet for Christina Scherwin – holder of the Danish javelin throw record and one of Denmark’s medal hopes at this year’s Olympic Games in Beijing.

Christina depends on a high quality protein to restore her muscles after a punishing training session. Just as important to her is that the protein supplement she uses has a good taste.

“I am one of those people who hates the taste of protein supplements. There is only one protein drink I use, and that it is because it has the right content and the right taste,” she says.

“To begin with, I needed a lot of protein to increase my weight. Now it helps me with weight training. Without protein afterwards, training does not have the same effect.”

## Refreshingly clear

Containing whey protein isolate, the protein drink Christina chooses has the clear, refreshing quality of juice – another key preference for the 31-year-old top athlete.

“It is important to me that it does not turn lumpy or sticky like many of the protein drinks on the market,” she adds. “I’m happy to pay more for a higher quality product.”

For Christina, 2008 will mark the second time she has represented Denmark in the Olympics. Four years ago she participated in the games held in Athens - gaining experience that she now draws on as she prepares for this summer’s big event.

“You have to throw the standard 59.5 metres to come to the Olympics – that means being among the top 30 javelin throwers in the world. When you stand there, you are realising a dream you have had all your life. I am very happy to have another chance to take part.”

## Careful diet

As the Olympics approach, Christina trains five hours a day. A careful diet is essential, both to give her body the nutrition it needs and to ensure she does not inadvertently eat a forbidden substance.

“I have to take care of what I eat because of doping,” explains Christina, who today lives with her husband in the USA. “The health food market is much more liberal over here, so health food may contain ingredients illegal for sports folk.”

Of course, Christina has also checked out her favourite protein drink. There is no room for any unpleasant surprises before entering the Olympic stadium in Beijing.

For more information: [dbj@arlafoods.com](mailto:dbj@arlafoods.com)

## About Christina Scherwin

- Current holder of the Danish javelin record – 64.83 metres
- 2005 World Championships in Helsinki – placed 4th
- 2006 European Athletics Championships in Gothenburg – placed 5th
- World ranking – 5th

# Protein makes the most of training



Whether elite or amateur, all sports folk need to support their muscles with a protein-rich diet

Performance-enhancing doping in sport is not only unethical and a risk to health – it is also largely a waste of time, says Klavs Madsen, head of the Institute for Sport at the University of Aarhus in Denmark and a specialist in muscle training. Research shows that virtually the same effect can be achieved ethically and without risk just by having the right diet.

Sports nutrition products that combine protein with carbohydrate have become increasingly recognised for their importance in muscle development. More recently, the organic acid creatine – naturally present, for example, in chicken meat – has been pinpointed for its role in transporting dietary protein to muscles.

**The right timing**

“For effective muscle building, diet is the key, both with regard to content and timing,” Klavs Madsen explains. “Training prepares muscles for growth, but this can only happen if muscles then receive the protein they need.”

Optimum gain is obtained by consuming protein-rich foods within the first three hours after physical exercise – including a “recovery” meal within the first half hour and a main meal a short while later.

This both promotes rapid recovery of the muscles and enables their further development. The type of training itself determines whether the individual’s muscles become honed to endurance sports, such as cycling or marathon running, or to sports, such as javelin throwing or weight lifting, that rely on explosive muscular power.

**Fast effect**

“The right training and diet will give an effect after four weeks. As a result, the number of mitochondria will increase in muscle cells. These cellular muscle sources improve energy production from oxygen, carbohydrates and fat – leading to a sense of fitness. Actin myosin filaments make the muscles bigger,” says Klavs Madsen.

Prior to events such as the Olympic Games, the participating athletes follow a precise diet plan and training programme. Training is typically less intensive in the final 14 days before a competition to ensure the body is in top form.

**A general need**

But the right nutrition is not just important for elite sports people. As fitness centres record a growing number of members and more consumers recognise the need for physical activity, they, too, should consider their diet.

“Those who exercise just for general fitness also need the right input to ensure they get the most out of their training,” Klavs Madsen states.

Many have already heeded the need – creating a new trend that has taken sports nutrition products out of a niche and into the mainstream market.

Time elapsed after sports training (hours)	Protein synthesis
3	112%
24	65%
48	34%

Ref. Phillips, et al.

*In a study of young, moderately fit adults, the rate of protein synthesis in muscles was seen to be at its highest right after exercise. Maximum gain was obtained by consuming a protein-containing food or beverage product within the first three hours. Another study has found that, in the first four hours after exercise, protein synthesis is around 50% higher in trained individuals compared to untrained.*

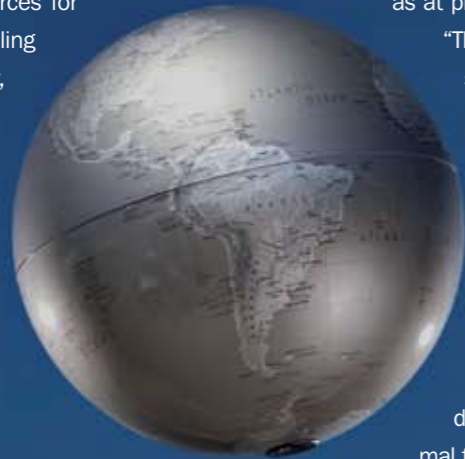
For more information: [gigr@arlafoods.com](mailto:gigr@arlafoods.com)

# New centre has global customers in view

The market for milk proteins is in growth. Arla Foods Ingredients invests in value creation

Arla Foods Ingredients' world-class expertise in milk proteins will create even more value for customers from 2009 when a new sales and application centre goes into operation in Denmark.

The centre will accommodate all Arla Foods Ingredients' specialist resources for developing, testing and selling milk proteins. In this way, the functional milk protein, nutrition and bakery business groups will be brought together under one roof. A major investment in sophisticated processing equipment will reinforce the focus on application development work.



## Focused resources

Henrik Andersen, executive director, sees the

new centre as an essential element in Arla Foods Ingredients' global strategy – focusing resources to create global growth. He expects valuable synergies to emerge from basing the three business groups at a common location – instead of at three separate sites, as at present.

“The centre will represent a significant upgrade of our facilities and will pool our expertise so we can respond to customer needs more effectively – for example, by developing the optimal functional and nutritional solution for a specific customer need,” Henrik Andersen explains.

Our ambition is to provide “best-in-class” milk protein knowledge and expertise, enabling us to give the food industry a service that is largely unrivalled. Our customer surveys indicate we are close to meeting this objective. Our new facility will take us further in this direction.”

## Competitive advantage

Arla Foods Ingredients' broad capability to improve the quality of food and beverage products while reducing processing costs has established the potential for high market growth. With the new centre in place, Arla Foods Ingredients will expand its capacity to draw on this potential and, at the same time, deliver a strong competitive advantage to customer businesses.

For more information: [hea@arlafoods.com](mailto:hea@arlafoods.com)



# China in the race for health

All eyes will be on China when the Olympic Games open on August 8. For the Arla Foods Ingredients' team in Beijing, the event underlines the vast possibilities of this dynamic market

A fast-developing middle class and a general rise in health awareness make China a land of great potential for Arla Foods Ingredients. Since the Beijing sales office opened in 2003, sales of speciality milk ingredients have risen rapidly. Now, as the Olympic Games approach, sport and nutrition have climbed even higher on consumer agendas, says Steve Guoji, head of the Beijing office.

“More people today are going to the gym, and there is a growing number of companies selling sports nutrition products in China. That means more consumers are becoming aware of what they should eat before and after sport,” he explains.

## Dairy focus

One of China's leading dairy companies, Yili, is an official sponsor of the 2008 Olympics – a fact that reflects the rapid growth of the nation's dairy market in recent years. By the same token, dairy products are a main focus sector for the four members of Arla Foods Ingredients' Beijing sales team.

“We supply the dairy industry with large volumes of our CAPOLAC® milk calcium and casein phosphopeptide, which enhances mineral absorption. We are also the country's leading supplier of alpha-lactalbumin, a whey protein fraction with the ability to raise the nutritional profile of infant formula,” Steve Guoji says.

## Premium trend

The rising disposable incomes of the Chinese middle class have sparked a trend towards more premium food and beverage products. This, too, has broadened the market interest in milk ingredients – creating significant potential for Arla Foods Ingredients to boost sales of its largely unrivalled range.



Steve Guoji expects the market for milk-based specialities to continue expanding, just as the Chinese economy will continue to develop and grow. The Olympics are the perfect opportunity to show the world what China has become – and to show the Chinese industry what Arla Foods Ingredients can offer.

“This kind of historic, international event is important for China. It is an opportunity for people from around the globe to see our capital city and gain a better understanding of what China is really like,” he says.

For more information: [shgou@arlafoods.com](mailto:shgou@arlafoods.com)

IWC  
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5th International Whey Conference



## Unique protein in production

### Arla Foods Ingredients is ready to deliver osteopontin to infant formula formulations

Osteopontin (OPN), a key protein in human milk, is now available from Arla Foods Ingredients for commercial-scale processing in customers' applications. Called LACPRODAN® OPN-10, it is the first product of its kind on the market.

Arla Foods Ingredients has worked closely with the University of Aarhus in Denmark to study and document the nutritional effects of OPN, which was first identified in bone tissue in 1985. Among the discoveries of the joint research is that human milk contains significantly more OPN than the bovine milk on which infant formula is typically based.

"It has been suggested that OPN could be a significant missing link in producing infant formula with the ability to deliver similar immune protection to human milk," says Anders Steen Jørgensen, Arla Foods Ingredients nutrition manager.

In addition to infant formula applications, OPN may strengthen the immune system of other consumer groups and protect teeth against caries. It has also been tested in applications aimed at wound healing.

### Patented process

Since its initial launch, Arla Foods Ingredients' LACPRODAN® OPN-10 has only been available in laboratory-size units for customer application trials. Today a significant expansion in production capacity means that business partners can order OPN for use on commercial processing lines. A patented purification process means the small quantity of OPN in bovine milk can be refined to 95% purity.

"It is still too early really to understand the market potential of OPN. Due to its versatility in a number of potential applications, a total production counted in only thousands of kilos and the low occurrence of OPN in milk may be the limiting factor," Anders Steen Jørgensen comments.

"Initially OPN has been incorporated in infant formulas. As the bulk of documentation grows, this market alone could provide the basis for a further capacity expansion."

Arla Foods Ingredients will make a presentation on osteopontin at the 5th International Whey Conference – WheyVolution – to be held in Paris from 7-9 September.

## A supply chain for all weathers

Arla Foods Ingredients shapes up to meet global customer demands – no matter what

A new supply chain structure is slotting into place at Arla Foods Ingredients to enable a faster, more flexible response to customer needs in the future – despite ongoing fluctuations in raw material supplies due to the global milk shortage.

The introduction of the new structure follows the recent years' rationalisation of the ingredients business. Tying the corporate functions, business groups and production sites more closely together, it aims to create valuable synergies and ensure a more uniform response to customer requests. At the same time, a series of central support functions are now positioned to optimise operations.

"This is the final process in establishing the common culture that will make us one global ingredients business," says Jens Ingvar Jensen. "We know that future challenges will be more global. It is important for us to have an organisation that can support that – enabling us to react faster."

### Strong support

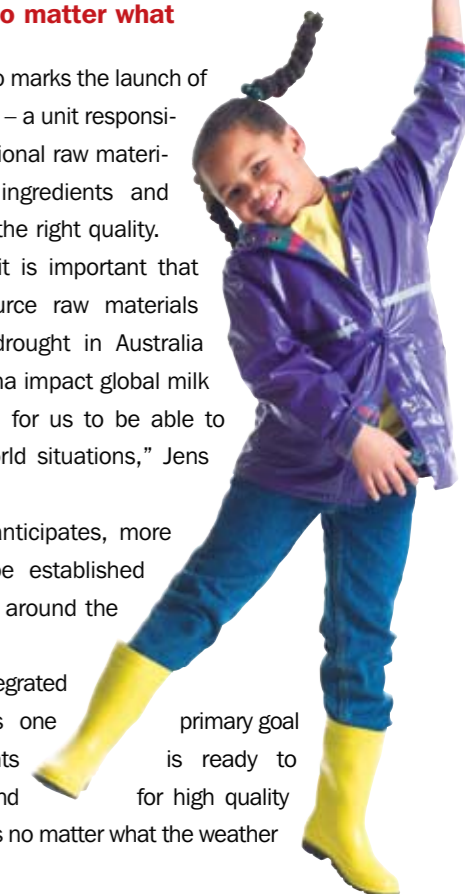
One of the support functions is quality assurance, which has been expanded to include environment and health & safety with the goal of achieving uniform systems and documentation at all plants. In addition, a new supply chain development function will optimise production operations and structure, focusing on, for example, best practices to develop more in-house skills.

The new structure also marks the launch of Functional Production – a unit responsible for sourcing additional raw materials for milk-based ingredients and ensuring they are of the right quality. "As a global player, it is important that we are able to source raw materials elsewhere when a drought in Australia and floods in Argentina impact global milk supplies. It is critical for us to be able to respond to these world situations," Jens Ingvar Jensen says.

As part of this, he anticipates, more joint ventures will be established at strategic locations around the world.

More global, more integrated and working towards one primary goal – Arla Foods Ingredients is ready to meet the world's demand for high quality milk-based ingredients no matter what the weather brings.

For more information: [jsi@arlafoods.com](mailto:jsi@arlafoods.com)



## Food for thought at Hi Europe

Milk protein fractions that play a documented role in cognitive performance and development will be the main highlight of the Arla Foods Ingredients stand at this year's Health Ingredients Europe exhibition.

From 4-6 November in Paris, the Arla Foods Ingredients' nutrition team will present its hydrolysates for infant formula and milk fat globular membrane (MFGM) for adult food products aimed at stress relief and improved concentration.

Hydrolysates – comprising pre-digested milk or whey protein – are an important means of controlling cow milk allergy in newborn babies who

are not breast-fed and, consequently, are entirely dependent on infant formula.

Largely made up of phospholipids, MFGM has a documented ability to improve memory and cognitive capabilities, particularly in the elderly, and reduce the sensation of stress.

Arla Foods Ingredients looks forward to meeting existing and potential customers at Hi Europe – a key trade show for all involved in the health ingredients business.

For more information: [dbj@arlafoods.com](mailto:dbj@arlafoods.com)



# Yoghurt of the gods

Home of the Olympics, birthplace of democracy and Western philosophy, Greece has given many things to the world. One of them is its mythical thick and creamy yoghurt – today often with functional milk proteins from Arla Foods Ingredients

Greek yoghurt needs no introduction. Part of the Greek staple diet and enjoyed for its rich creaminess by consumers around the world, it is one of the main reasons for Arla Foods Ingredients' sales success in the south-east European nation.

Local dairies still dominate the yoghurt market in Greece, despite the relatively recent arrival of strong international players on the scene. Since Arla Foods Ingredients set up a sales office in Athens in 1995, many have discovered the benefits of using functional milk proteins in their products.

## High protein need

Andreas Andreou, Arla Foods Ingredients' Greek account manager, has followed the development.

"Greek yoghurt needs a much higher level of functional milk proteins than other European yoghurts in order to gain its creaminess, thickness and mouthfeel. In low-fat versions, functional milk proteins play an even more major role," he says.

This need has brought Arla Foods Ingredients considerable business. Undoubtedly the most innovative area within the Greek food industry as a whole, the dairy sector has gone from strength to strength in recent years.

## Nutritional wave

Following the introduction of low-fat yoghurts, the health awareness trend has brought more news to the market in the form of functional yoghurts with added nutritional benefits.

"Functional yoghurts have increased their market share over the past two years, including calcium enrichment, prebiotics, vitamins and anti-cholesterol claims. There is also interest in ingredients that have an anti-stress effect or promote weight management," says Andreas Andreou. "Here we have some protein fractions that can contribute."

From the Athens office, Arla Foods Ingredients also sells cost-saving skimmed milk powder replacement solutions to the bakery industry and, to the meat industry, functional milk proteins that improve the yield, juiciness and succulence of, for example, ham.

But it is quite clearly the dairy industry in general and yoghurt in particular that have paved the way to Arla Foods Ingredients' solid market share in Greece.

"We are one of the key suppliers of milk proteins on the Greek market," states Andreas Andreou. "We have really what the dairies need in terms of product quality and technical backup."