



FOODS & FUNCTIONALS

RESEARCH • RESULTS • PARTNERSHIP • PROGRESS • 2/2010

VALIO ZERO LACTOSE™
Taste and expertise

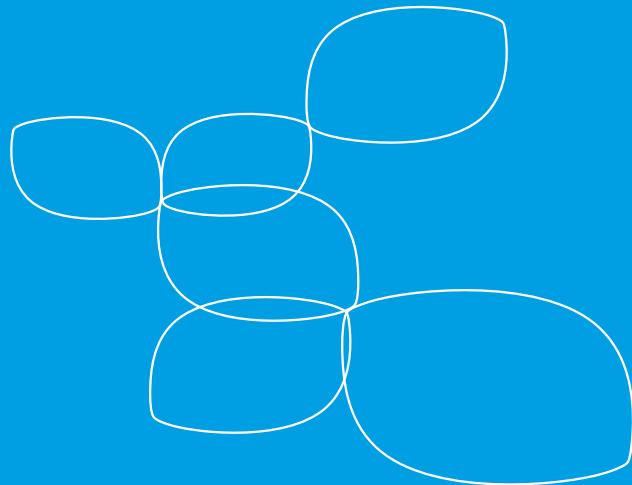
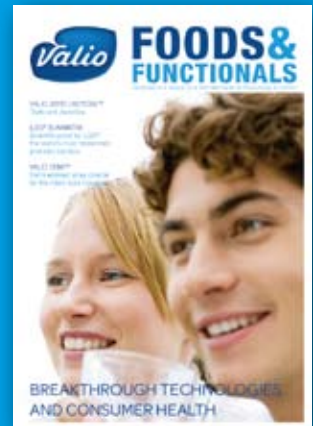
LGG® SUMMATIM
Scientific proof for LGG®
the world's most researched
probiotic bacteria

VALIO DEMI™
Demineralised whey powder
for the infant food industry



BREAKTHROUGH TECHNOLOGIES
AND CONSUMER HEALTH

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Valio Zero Lactose is all taste

Valio Zero Lactose™ offers consumers a wide choice of dairy products that are entirely lactose free and do not compromise on taste. These are now available in a number of European countries and in the USA, added to which several partner companies employ this Valio technology and know-how to produce lactose free milk as far afield as South Korea.

In Europe, Valio has become a clear market leader in the space of just 10 years. We built a strong Lactose Free category in Finland, Sweden and Belgium and are entering new markets such as the Baltic States, Russia and France. Valio Zero Lactose™ brand sales continue to grow strongly wherever Valio is active, so every day more consumers are freely able to and happily opt to enjoy tasty dairy products again without constraint.

Worldwide around two-thirds of adults suffer from genetically determined hypolactasia* making lactose intolerance the overriding reason why people had to avoid drinking milk. Limiting dairy intake was in fact the only solution until Valio developed its patented technology to completely remove the lactose from milk and then pioneered the products that consumers need.

Dairy products and technology that make life easier for consumers

Since Valio Zero Lactose™ products are suitable for all the family and the taste and other quality parameters are the same as for regular dairy products, there's no need to worry about catering separately for the special requirements of one or more members of your family.

Valio's understanding of the needs and feelings of lactose intolerant consumers is a

clear success factor when combined with our patented technology. Even though there are a great many similarities between the people in Europe who suffer from lactose intolerance, Valio's approach to each market differs significantly. While we Europeans may drive the same cars, use the same smartphones and so on, our eating habits, lifestyles and perceptions of health diverge from country to country. Valio relishes the challenge this presents and we are succeeding in delivering wellness every day to so many European consumers with Valio Zero Lactose™ that it encourages us to continue developing more new innovative dairy concepts for a healthy and enjoyable life.

I joined Valio two and a half years ago to boost the development of Valio Innovative Concepts in Europe. Thanks to a great combination of expertise in R&D, marketing and sales, both at headquarters and in the local subsidiaries, we have initiated an extraordinary dynamic for success that has already produced encouraging results.

In other parts of this edition of Foods&Functionals we report in more detail on Valio Zero Lactose™ in Europe, and there's a special feature on the past, present and future of whey processing and its positive impact on Valio's high quality Ingredients.

Antoine Meurisse
Director, Sales and Business Development, Consumer Products Europe



*Vesa, T.H, Marteau, P. and Korpela, R.: Lactose Intolerance. J. of the Amer. College of Nutrition, vol 19, No. 2. 165S-175S (2000).



Valio Innovative Concepts in Europe

Valio is the expert in lactose free and effectively the European market leader as our unique patented technology produces the only genuinely lactose free milk with the real milk taste, at the same time preserving nutritional values to increase well-being.

Rising consumer health concerns across Europe with regard to lactose intolerance are driving growth in the milk and dairy markets as thanks to Valio's innovation a larger number of consumers are able to enjoy and benefit from the goodness of dairy products.

Building on the remarkable success of Valio Zero Lactose™ in Belgium, Valio-Vache Bleue conducted a positive market test in northern France and has marked 2010 by rolling out Valio Zero Lactose™ products throughout the country, says Antoine Meurisse, Director, Sales and Business Development, Consumer Products Europe.

We are now developing our business and broadening our distribution in France. Added retail chain customers are enabling us to deliver the unique solution that offers uncontested health benefits to the one in three French consumers who spontaneously declare that they sometimes experience digestive problems as a result of drinking milk or consuming other dairy products. While we have been selling highly prized bakery ingredients for some time in France, the development of Valio Zero Lactose™ there is allowing Valio to create consumer brand awareness and pave the way for even more health oriented Valio products.

Valio has successfully pioneered its lactose free concept developing the technology in Finland and going on to create the category in Sweden and become the market leader there as in Finland. Also in Belgium we have succeeded within just three years to become the outright market leader with the Valio Zero Lactose™ brand. ■

A shelf full of Valio Zero Lactose™



Independent expert opinion on lactose intolerance

Ever ready to collaborate with the science and academic communities, Valio recently sought out the opinion of a nutrition specialist in France who highlighted the medical and lifestyle implications for people suffering from lactose intolerance, and the risks involved in alleviating the symptoms by choosing not to consume dairy products.

Professor of Nutrition Stéphane Schneider, Hepato-gastroenterologist at Centre Hospitalier Universitaire Nice, explained that lactose consumption definitely impairs bowel health in people suffering from lactose intolerance.

Since milk is the principal source of lactose, they cope with the problem by ceasing its consumption altogether, along with that of some or most dairy products, which impairs quality of life as well as

health in general, as they may have a diet that is different from that of the family.

And at this time, lactose intolerant patients in France have little understanding of what is causing their symptoms (often believing e.g. they are allergic to milk) and even our healthcare professionals' knowledge of lactose intolerance and food allergy is as yet rather sparse.

So most lactose intolerant patients will avoid dairy products, which results in a severely unbalanced diet, Professor Schneider concludes.



Professor Stéphane Schneider
Centre Hospitalier Universitaire Nice

Valio Zero Lactose™ technology is used in manufacturing the following brands listed here as they appear in each country.

Belgium	Valio Zero Lactose™	Norway	Tine Laktosefri
Estonia	Valio Zero Lactose™	Russia	Valio Zero Lactose™
Finland	Valio Laktoositon™	Spain	Kaiku Sin Lactosa
France	Valio Zero Lactose™	Sweden	Valio Laktosfri™
South Korea	Maeil Lactose Free	Switzerland	Emmi Milch Laktosefrei
Latvia	Valio Zero Lactose™	USA	Valio Real Goodness™
Lithuania	Valio Zero Lactose™		



Valio Zero Lactose™ technology

Four companies have already licensed Valio Zero Lactose™ technology and know-how from Valio. Emmi Schweiz AG in Switzerland, Kaiku Corporación Alimentaria in Spain, Maeil Dairies Co., Ltd. in South Korea and Tine BA in Norway have all successfully launched lactose free milk products enabling lactose intolerant consumers to enjoy all the benefits of milk with none of the digestion problems that would otherwise

follow. The fact that the products taste just like regular milk products means they are attracting a great deal of positive consumer feedback.

Lactose intolerance is highly prevalent in markets across the world and consumer awareness is growing fast. The ability to serve lactose free alternatives or indeed to satisfy all the household's dairy needs with lactose free products will become ever more important. ■



THE WORLD'S MOST RESEARCHED PROBIOTIC BACTERIA

– a scientific proof



Valio's expertise in probiotics has always been based on science. Ever since Valio licensed the rights to the *Lactobacillus rhamnosus* GG strain back in 1987, we have invested extensively in research on its properties and health benefits, in studies initiated and conducted by Valio R&D. At the same time, Valio has opened the door to other researchers and research institutes in studying the strain. Today we are delighted to report that there are more than 530 original articles published in peer reviewed scientific journals, many times more than for any other probiotic strain, and their number is growing at a rate of more than 50 a year.

In today's world of real time information it's easy for anybody to search the Internet for the number of published articles, using the PubMed database which records all research in the field of medical science. In mid-August 2010, a search on the keyword "Lactobacillus GG" returned 518 hits, significantly more than for any other probiotic strain.

Research on the *Lactobacillus rhamnosus* GG probiotic strain can be classified e.g. into those on

the genome and properties of the strain itself, safety studies, mechanistic studies, and examinations of the health benefits. There are more than 160 clinical studies published on *Lactobacillus rhamnosus* GG and these clearly show the benefits of the strain in the prevention and treatment of diarrhoea, improving immunity, decreasing respiratory infections, and many other factors. *Lactobacillus rhamnosus* GG is the most extensively studied probiotic and in many cases has also pioneered further avenues for research.

In order to assist our licensees and partners, Valio has prepared several types of summary concerning research on *Lactobacillus rhamnosus* GG, which are naturally available to our licensees on request. The most significant of these is a book entitled LGG Summatim, a fully revised edition of which was published recently. Earlier versions of the book are available on our website at www.valio.com and have also been produced in Spanish.

There is no doubt that *Lactobacillus rhamnosus* GG is and will continue to be the most researched probiotic strain going forward. ■

Dr. Riina Kekkonen is one of the authors contributing to LGG Summatim, a newly abridged book summarising the key health benefits and research supporting *Lactobacillus rhamnosus* GG. Riina is currently Development Manager for Fermented Dairy Products at Valio R&D.



Valio was one of the very first companies to demineralise whey. Today we offer a wide range of demineralised whey powders sold around the world under the Valio DEMI™ brand. Due to its high degree of demineralisation, Valio DEMI™ 90 has a very mild taste making it a perfect and nutritious ingredient for infant formulas.



The expert ingredients manufacturer

Valio DEMI™ for the infant food industry

Valio possesses inherent R&D expertise in whey processing and the production of demineralised whey powder, serving the infant food industry with especially high quality ingredients.

In order to streamline its cheese-making, Valio is looking to modify the milk from which the cheese is produced, to help eliminate seasonal variations in milk composition and increase yield and process efficiency. At the same time, given that Valio is a significant supplier worldwide of demineralised whey powders to e.g. the infant food industry, this presents a unique opportunity to impact the qualities of its DEMI™ brand products.

Amino acid composition not a limiting factor

In studying the milk pre-treatments involved, such as the positive effects of milk microfiltration and ultrafiltration on whey quality, Drs Marko Outinen and Antti Heino examined the amino acid composition not only of current Valio DEMI™ powders to ensure continuing quality, but also of a powder using polymeric microfiltration that should allow a reduction of the protein concentration in infant formula with no necessity for amino acid supplementation.

Ultrafiltration and microfiltration standardise the protein concentration of milk, and using protein standardised milk in cheese processes inevitably leads to protein standardised whey, Marko explains.

Today's infant formulae contain too much protein, which strains the metabolism of the baby. A high protein concentration is generally the only way to ensure that the product fulfils the amino acid criteria set by the EU Commission Directive on infant formulae and follow-on formulae. There is normally too little tryptophan in sweet whey, which makes it the limiting amino acid. But the new Valio DEMI™ powder increases the relative concentration of tryptophan enabling customers to use a lower measure of the powder itself in manufacturing.

Learning from its early experience as a baby food producer, manufacturing all the ingredients,



Marko joined Valio in 1990 to study clinical whey protein hydrolysates. He then focused on process development for protein fractions, whey protein concentrates, lactose and DEMI™ powders. He is now set to add a new dimension to Valio R&D in whey processing, looking into new cheese processes and powder products.

notable milestones included the first UHT ready-to-feed product in 1973, baby food powders and later hypoallergenic infant formula powders. In this sector, Valio then began exporting ingredients for high quality infant formulae powders. As well over 90% of Valio DEMI™ powders are exported, the company has amassed a great depth of experience in dealing with the most demanding infant formula and other food ingredients' players all around the world. ■



Valio Gefilus®

20 years of probiotic
dairy products in
Europe

Read more in the previous issue of Valio Foods & Functionals
<http://www.asiakaslehti.com/foodsandfunctionals/node/43>



New lactose free products employing Valio technology

SWEDEN

Country: Sweden
Company: Valio Sweden
Product Brand: Valio Laktosfri™
Product type: Greek type yoghurt, 10% fat
Package: 400 g



Country: Sweden
Company: Valio Sweden
Product Brand: Valio Laktosfri™
Product type: Crème fraîche, 23% fat
Package: 200 g
Note: New variant with higher percentage fat



USA

Country: USA
Company: Valio USA
Product Brand: Valio Real Goodness™
Product type: Lactose free milk with 1% milk fat
Package: Half gallon (1.89 litres)
Note: New variant with 1% milk fat



Country: USA
Company: Valio USA
Product Brand: Valio Real Goodness™
Product type: Lactose free whole milk
Package: Half gallon (1.89 litres)
Note: New variant, 5% fat



New products with LGG®

ARGENTINA

Country: Argentina
Company: Mastellone
Product Brand: La Serenisima
Product type: Cheeses with LGG® – Port Salut, Reduced Fat Port Salut, Cremoso and Reduced Fat & Sodium Saint Paulin
Package: 500 g and 1 kg blocks
Note: Mastellone was the first company in South America to use LGG®, in the mid-1990's; now launching probiotic cheeses with LGG®



SOUTH KOREA



Country: South Korea
Company: Maeil Dairy
Product Brand: Pure
Product type: Drinking yoghurt with fruit
Package: 130 ml bottle (4 x 130 ml)
Note: All natural, no additives, no colourings, no flavourings



New products with LGG®

Country: Finland
Company: Valio Ltd
Product Brand: Valio Viillis® Gefilus®
Product type: Fermented milk viilli with LGG®
Package: 150 g cup
Note: Viilli containing probiotic and fruit



FINLAND

Country: Finland
Company: Valio Ltd
Product Brand: Valio Gefilus®
Product type: Fruit daily dose drink with LGG®
Package: 4 x 100 ml
Note: Fruit based probiotic (non-dairy)



Country: Russia
Company: Unimilk
Product Brand: Bio Balans
Product type: Greek and Bulgarian type yoghurts
Package: 150 g cup
Note: Natural yoghurts with LGG®

RUSSIA



AUSTRALIA

Country: Australia
Company: Parmalat
Product Brand: Vaalia
Product type: Low fat, probiotic yoghurt
Package: 160 g single serving



Country: Japan
Company: Takanashi
Product Brand: LGG® Prune
Product type: Yoghurt with added LGG® and iron
Package: 100 g
Note: Combining probiotic with iron

JAPAN



Country: Australia
Company: Parmalat
Product Brand: Vaalia Kids Yoghurt
Product type: Yoghurt for children
Package: 140 g squeezable pouch
Note: Yoghurt snack which can also be frozen



Country: Japan
Company: Takanashi
Product Brand: LGG® Prune
Product type: Yoghurt drink with added LGG® and iron
Package: 100 ml
Note: Combining probiotic with iron



ITALY

Country: Italy
Company: Granarolo
Product Brand: Yomo Rinforzo
Product type: Drinking yoghurt with fruit
Package: 90 g bottle (6 x 90 g)
Note: Relaunch, now all natural, no additives.





VALIO ZERO LACTOSE™ – LACTOSE FREE DAIRY PRODUCTS, GENUINE DAIRY TASTE

Valio has developed methods to separate lactose from milk totally. Patented Valio Zero Lactose™ technology makes it possible to manufacture a milk drink that contains no lactose but still tastes exactly like normal milk. The technology is based on membrane processing and enzymatic hydrolysis.

Valio released its lactose free milk drink in Finland in 2001 and has since launched the Laktosfri™ brand in Sweden, Valio Zero Lactose™ products in Belgium, France, the Baltic States and Russia, and Valio Real Goodness™ brand milk in the USA. Further launches are planned. The first licensed product was launched in Switzerland at the end of 2003. Licensed products are also available in Spain, South Korea and Norway.



LGG® – THE WORLD'S BEST DOCUMENTED PROBIOTIC

Lactobacillus rhamnosus GG – Valio trademark LGG® – is the world's best documented probiotic strain. Proven to survive in and colonise the human gastrointestinal tract, this remarkable bacterium protects the body against infections and imbalances.

Lactobacillus GG was isolated in 1983 by professors Gorbach and Goldin and is now one of the world's most researched probiotics. Valio acquired an exclusive worldwide license to the strain in 1987 and launched the world's first LGG® products in 1990. Valio has used LGG® in its Valio GEFILUS® range of products since 1990 and now offers a wide variety of LGG® buttermilks, yoghurts, milk, fruit drinks, cheeses, shot drinks and fermented whey-based drinks.

Valio grants LGG® rights to other dairy companies and the network presently covers almost 40 markets and territories.

LGG®, the LGG® logo and Valio GEFILUS® are registered trademarks of Valio Ltd.



LGG® EXTRA – THE PROBIOTIC COMBINATION THAT CALMS A STRESSED STOMACH

LGG® Extra is a new patented development from Valio. It contains a unique combination of probiotics that calms a stressed stomach. LGG® is the most studied probiotic strain worldwide and LGG® Extra comprises three other beneficial strains to expand its health benefits into novel areas.



EVOLUS® FOR CARDIOVASCULAR HEALTH

Evolus® was developed by Valio as a unique fermented milk drink that helps to control blood pressure and was launched in Finland in 2000. The health effect is based on bioactive peptides formed during fermentation. Several clinical studies show the product's efficacy in controlling blood pressure. In 2004, Valio launched Evolus® shot drinks in 100 ml daily-dose bottles. Valio Evolus® Double Effect which both controls blood pressure and lowers cholesterol was released in 2008.

Valio has licensed Evolus® technology to its European partners and a licensed product is available in Spain. Valio continues to develop and license Evolus® peptides that are proven to help control blood pressure.



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Licensing Valio technologies

www.valio.com => Valio worldwide => Innovative concepts and Technologies

Valio LGG® research

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