



FOODS & FUNCTIONALS

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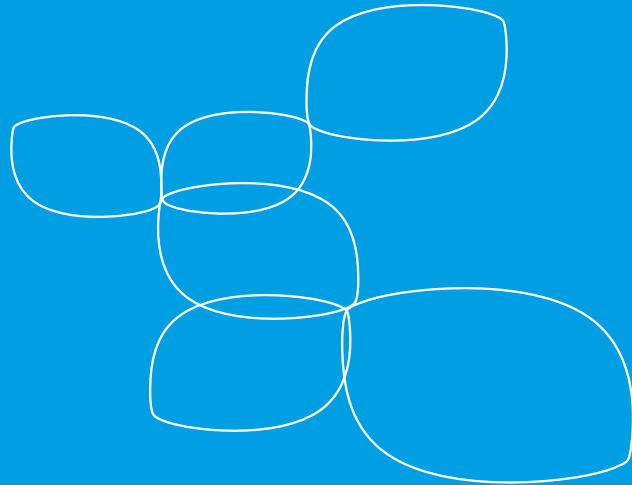


VALIO GEFILUS 20 YEARS

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Filling of whey drink cartons continues. Terhi Nyqvist and Kalle Leporanta at Valio's production plant in Pitäjänmäki, Helsinki.



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What made Valio Gefilus a success

We are delighted and proud to celebrate the 20th anniversary of probiotics in Europe. Why did these products become successful? 20 years ago barely anyone had heard the word probiotic though the idea was not altogether new. Yoghurt with beneficial lactic acid bacteria has been marketed as a health food since the days of **Elie Metchnikoff** and **Isaac Carasso**. So there was something familiar and in the consumer's mind logical – products containing live micro-organisms can be beneficial to your health.

The vision to foresee and grasp an opportunity is crucial to success. I refer to Professor **Matti Ojala** who has said that a vision driven product strategy makes it possible to introduce timely new products, the risks are high and profits good, while a competition driven product strategy delivers me-too products, too late and lacking competitiveness. At Valio we have to thank the visionary Dr **Kari Salminen**, who headed up Valio R&D in the 1980s and 1990s and was able to see the opportunities presented by new lactic acid bacteria with documented health benefits. He was also able to bring together capable people to work on the new project, among them Mr **Veijo Meriläinen**, Dr **Seppo Salminen** and later Drs. **Maija Saxelin** and **Riitta Korpela**.

Research on health benefits is crucial in the world of probiotics. Without proper documentation on the health effect a probiotic has no right to be defined as such. Valio's Lactobacillus GG has the widest scientific documentation of any probiotic

with more than 500 published studies. That does not in itself make a consumer product successful as we cannot and do not sell science to consumers. But it does provide a solid backdrop and helps marketing build a reason why the product is better than others. And naturally in marketing to healthcare professionals and key opinion leaders science is crucial.

Branding and marketing are needed to convey the message to consumers – how does the product benefit me. Without successful marketing, which should be part of the development process from the outset identifying to whom and how the product will be targeted, nobody would ever hear about a product in the first place.

Valio Gefilus® has been a great success story for Valio in Finland and neighbouring countries. Since we started early enough we were also in pole position to license our technology and the probiotic ingredient when markets started to develop, first in Europe and South America. Today there are products with Lactobacillus GG available in more than 50 markets. So many thanks to our licensees and partners for leveraging success in our region to the global markets!

Kalle Leporanta
Editor-in-Chief



Breaking News

A survey published in April 2010 canvassed more than 3,000 consumers in Finland asking them to name the five brands that contribute most to their daily well-being. Valio Gefilus® was ranked 4th out of 50, the number 1 food brand on a list containing many of the world's biggest household names, and twenty places above any other food brand.

(Source: Terve Media and 15/30 Research)

VALIO GEFILUS 20 YEARS

A chronological history of Valio GEFILUS development



1985: Patent application in the US for the *Lactobacillus rhamnosus* GG strain (professors Sherwood Gorbach (right) and Barry Goldin).

1987: Valio license agreement concluded with professors Gorbach and Goldin

1987–1992: Development phase at Valio R&D and Marketing. Culture production and consumer product manufacturing.



1990: First Valio GEFILUS products launched in Finland. The fruit-whey drink is still popular with new fruit flavours.

1992: Valio GEFILUS cultured buttermilk launched, the most successful GEFILUS product yet

1993: First license agreements between Valio Ltd and foreign players

See back page for a translation of the ad from 1990.

BACTERIA TO THE RESCUE

A story of tenacious research, innovative thinking and marketing awareness

The Valio GEFILUS® brand made its consumer debut on 15th March 1990 in the form of a fermented apricot-peach whey drink, ushering in a new era of probiotic functional foods. Next up was cultured buttermilk in 1992 which remains to this day the Valio GEFILUS® bestseller.

Smart marketing is part of product development

The real breakthrough came in 1996 with Valio GEFILUS® milk and inspired marketing.

GEFILUS® products contain *Lactobacillus rhamnosus* GG (ATCC 53103) otherwise known as LGG®, the world's most researched lactic acid bacterium on which more than 500 studies have been published in scientific journals. Valio framed LGG® as the rescuer bacteria and communicated clearer health benefits emphasising GEFILUS® products' positive effects on immunity. The campaign saw Valio GEFILUS® fermented milk sales almost triple.

Valio GEFILUS® juices were launched a year later in 1997, followed by the first daily dose shot



1994: First licensed product on the market is Campina Vifit in the Netherlands

1995: Products with Lactobacillus GG available in Argentina, Norway, Italy and Chile

1996: Valio Gefilus milk and “Bacteria to the rescue” campaign in Finland

First LGG® seminar for licensees held in Finland



For more information:
www.valio.com

drinks in 1999, the same year that Valio Gefilus® kefir appeared in Estonia where it was and still is a local smash hit. Valio Kidius®Gefilus® products for children were launched in 2004, continuing the strategy of focused development on local market fit and targeting unique consumer groups.

Licensing ingredients and technology

In 1987, Valio licensed the global rights to the Lactobacillus GG (ATCC 53103) strain isolated by American professors Sherwood Gorbach and Barry

Goldin who had identified beneficial health effects in laboratory testing.

After intensive work at Valio R&D supported by the strength of scientific research evidence on the effects of LGG® lactic acid bacteria, Valio had branded the proven health effects and in 1993 began to sell and market its probiotic component and related know-how under the LGG® trademark to selected customers through licensing agreements.

The first beneficiary was Royal FrieslandCampina which launched its Vifit yoghurt range in



1996: Japan – FOSHU approval for a product containing Lactobacillus GG

1997: Non-dairy products: Valio GEFILUS Fruit drinks and capsules



1999: Valio GEFILUS in Estonia: Valio GEFILUS abroad. First edition of LGG® Summatim Report published by Valio Ltd

2000: Valio GEFILUS sells more than 30 mill. litres in Finland – that's 6 litres per capita in just one year



2001: March 2001 sees products containing Lactobacillus GG available in 27 countries



2003: First Infant Foods with Lactobacillus GG

the Netherlands in 1994 just weeks after the European launch of Yakult functional fermented milk, first developed by Dr Minoru Shirota in 1930s Japan.

LGG® goes global

International demand for Lactobacillus rhamnosus GG bacteria has led to the availability of products containing LGG® in more than 50 countries. 23 companies have licensed LGG® from Valio and nearly all use the exclusive LGG® license logo

introduced in 2008.

Valio had meanwhile broken with tradition in 2007 and licensed the GEFILUS® brand itself to leading pharmaceutical distributor Oriola for the marketing, sales and distribution of GEFILUS® capsules in Valio's nearby markets (see page 8) as well as farther afield.

Past, present and future

Valio GEFILUS®, the most venerable probiotic brand in Europe, paved the way not only for other probiotic



2007: GEFILUS capsules licensed to Oriola (Finland, Estonia, Latvia, Lithuania)



2004: Valio Kidius®GEFILUS® range for children launched in Finland



2008: New LGG® by Valio license logo introduced

2009: Lactobacillus rhamnosus GG genome published. The number of published studies on LGG® reaches 500.

2010: Valio GEFILUS strong in Finland and nearby markets. Products now available in more than 50 countries

products but also for other functional dairy foods. And Valio's pioneering stance as a dairy industry innovator has parlayed a strategy to promote health and well-being into scientific research and leading expertise that delivers value added products and technologies.

The Lactobacillus rhamnosus GG genome was published in 2009 which opens up a whole range of fascinating possibilities for GEFILUS® next 20 years (see page 9). The story is just beginning, so watch this space!





Gefilus® supplements IN A SAFE PAIR OF HANDS

Valio and Oriola undertake exceptional joint development of a Gefilus® brand application



Oriola is part of Oriola-KD Group, a leading pharmaceutical retail & wholesale and healthcare trade player.

Oriola delivers products and services covering all areas of the healthcare sector and the company's Consumer Health unit is a marketing and sales organisation for e.g. pharmacies, retail chains, health food and sports nutrition outlets, distributing its own and partners' products. Oriola is also one of Finland's leading nutritional supplement suppliers and Oriola KD Group owns a significant number of pharmacies in Sweden and Russia.

Partner perspectives

Valio's Kalle Leporanta, Export Manager, Technology Sales

Valio started its Gefilus® capsules business in 1997 providing the effective ingredient and working with a contract manufacturer to create the end product. Oriola felt they would be even better placed to get this important product to consumers via their food supplement business and approached us.

We had the product and technology, Oriola has the resources in the sector so it's a natural partnership. And a new departure for Valio as we don't make a practice of licensing our brands but this has proven to be an exception well worth making. And of course in the hands of a trusted partner it can only strengthen the Gefilus® brand.

Oriola's Jarkko Kiuru, Director, Consumer Health

We are seeking to expand our health and wellbeing business and leverage direct retailing through pharmacies. The sector tends to focus on e.g. food supplements such as Omega-3 products, but probiotics are fast gaining ground and with lactic acid applications growing we need to be involved.

So we were looking for an innovative solution and recognised Gefilus® brand capsules' broader

potential as a pharmacy product. The opportunity to combine Oriola's pharmacy and food supplement expertise with Valio's probiotics know-how came at just the right time.

Combining strengths and know-how

We were already familiar with Valio's R&D expertise and are now more convinced than ever of its power as an engine for growth for Valio partners, too, Jarkko explains. The market wants products with verifiable health effects and the extensive published documentation on LGG® produced by the scientific community worldwide gives us just that. Valio's well established Gefilus® brand is arguably stronger than LGG® itself and represents real value added.

We also felt that working with Valio would help generate portfolio innovation and our new Gefilus® drops with added vitamin D are an early example. They are an ideal delivery medium for infants and children, as well as for adults who simply don't like capsules. The effective dose to build your resistance is just 5 drops a day.

Shared marketing experience, incidental brand promotion

Aside from standard advertising and conducting consumer group analysis, we work with e.g. mother and child clinics in developing communications channels to spread the word among medical professionals, Jarkko continues. Valio's marketing experience and support in this area is remarkable and the authoritative weight carried by published studies gets the medical establishment onside.

More to come

Oriola is now selling Gefilus® brand capsules in Finland and the Baltics and studying the potential to launch them also in other nearby areas. And in sending the message about drops and capsules you are indirectly promoting e.g. Valio Gefilus® shots, so it's win-win, Kalle adds.

See page 15 for more on the latest launches of Gefilus supplements

www.oriola.com

LACTOBACILLUS GG

– future food for thought

Dr Tuomas Salusjärvi talks here about potential outcomes stemming from the sequenced genome of *Lactobacillus* GG and their impact on future GEFILUS® applications.



Dr Salusjärvi has earned a PhD in biochemistry and spent his entire career working in the food industry. He joined Valio in 2007, attracted by its inventive approach to innovation evidenced for instance by the many pioneering and published studies on e.g. *Lactobacillus* GG.

The genome map of *Lactobacillus* GG has given us a better understanding of how the *Lactobacillus* interacts with the human host, Tuomas explains. We've already compared the *Lactobacillus rhamnosus* GG (ATCC 53103) genome with that of the non-probiotic *Lactobacillus rhamnosus* LC705 strain. And by overlapping the bacterial genomes we can see the areas that are identical and produce no effect, and those that are different of which some do. There are around 3,000 overlapping genes and fewer than 100 are of real interest.

Going forward, we'll employ bioinformatics to convert the genes to proteins in the form of computer models and compare those to other known proteins and molecules. The body doesn't perceive *Lactobacillus* GG as harmful; it stimulates the immune system which is then ready to attack pathogens. *Lactobacillus* GG contains compounds that are almost pharmaceutical in nature and encoded by the genes. So a functional food could be used as a substitute for a pharmaceutical product.

Tackling pharmaceutical side effects

We already understand the clinical outcome of *Lactobacillus* GG e.g. on infant diarrhoea, where immunity towards the relevant pathogens increases, but that's just a fraction of what *Lactobacillus* GG can do as 20% of *Lactobacillus* GG genes are unknown per their action.

Professor Jeremy K. Nicholson, Chair in Biological Chemistry at Imperial College London has described how the super-organism concept may change the medicine of the future. 10% of

a human being's cells are human and 90% are bacteria located in the gut. Many of the side effects of medicines stem from bacterial metabolites. So, looking to the future of probiotics, first a doctor would take a bacterial fingerprint of your gut microbes, showing those that would convert components of a prescribed medicine into something toxic that produces side effects, then direct you to a probiotic treatment to eliminate them. *Lactobacillus* GG is already proven to decrease diarrhoea resulting from a course of antibiotics.

We still have a lot to learn about the microbiota. There are over 1,000 different species of known gut microbes. We all have a different balance of bacteria in our gut and it's hard to say what constitutes a normal balance but we can help the individual strike a better balance which is significant since the gut is the body's most important immunity organ.

In the mood to feel well

The gut is not just a tube in your body with a specific purpose but is well connected to the endocrine and central nervous systems and so acts through the gut-brain axis. Irritable bowel syndrome (IBS), for instance, is considered to be a half gut half psychological problem.

Given that LGG[®] MAX is a sound treatment for IBS and its effect is proven in published studies, it might be the case that *Lactobacillus* GG acts on the axis. We could therefore produce mood foods i.e. a probiotic could be designed e.g. to calm you or work as a pick-me-up, or something with a more

significant medical application. There is already evidence of a probiotic strain that is able to bind to the opioid and cannabinoid receptors located in the gut, mimicking the effects of morphine and so acting as a local anaesthetic. Probiotics could even be used to improve e.g. cognitive abilities and Valio is following these developments in its work with the scientific communities.

Specialising in *Lactobacillus* GG

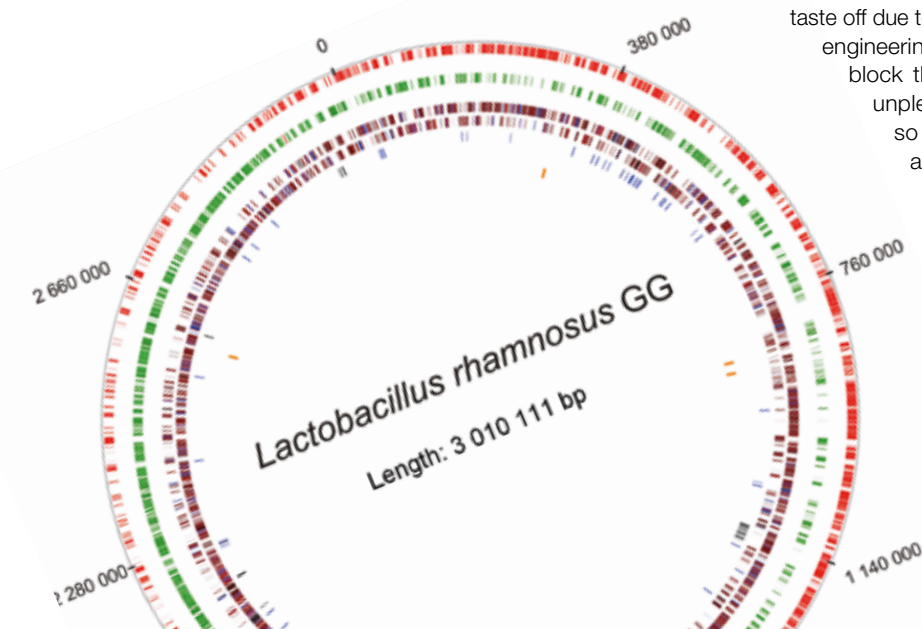
Lactobacillus GG in itself has massive unexploited potential e.g. there is already sufficient evidence to suggest that mothers and their babies could take *Lactobacillus* GG to prevent the formation of allergies. And *Lactobacillus* GG could well act in other areas such as relieving headaches.

We have been working with *Lactobacillus* GG for 25 years as our area of probiotic excellence, know more about it than anyone else and continue to collaborate with all the top researchers. The science of *Lactobacillus* GG has virtually unlimited long term potential and Valio is at this point simply exploring the short and medium terms to make the base as solid as possible. While we are currently concentrating mostly on *Lactobacillus* GG, we might take an interest in other probiotics that perform a particular purpose that *Lactobacillus* GG doesn't.

Probiotics in other media

Lactic acid bacteria remain active in fresh dairy products that have a relatively short shelf-life and are kept in a refrigerated environment, but it's much harder to get live bacteria to act properly even in long-life milk because at room temperature the probiotic bacteria either die progressively in what amount to harsh conditions, or make the milk taste off due to their overactivity in it. Genetic engineering would enable scientists to block the genes responsible for the unpleasant flavours or instability, so that probiotics could then be added to other food matrices first before being incorporated into e.g. beverages, frozen foods and cereals, and survive. Functional beverages are just one example of a huge area for development.

We have the technology to do this now but public perception is tilted against the idea of GM probiotic





Dr Tuomas Salusjärvi explains that lactic acid bacteria remain active in fresh dairy products.

bacteria even though most of the new medicines are produced that way. GM probiotic strains are nevertheless being explored that produce medical compounds when colonising the gut, a kind of cell factory in your gut producing medicines.

Probiotics and prebiotics

Prebiotics act as food for microbes and come in the form of fibres, vegetable components, such as polymeric carbohydrates. They may target a specific group of bacteria that can utilise them, in effect feeding e.g. friendly bacteria such as bifidobacteria. In nature, we can see this where babies' bifidobacteria is targeted by prebiotics in mother's milk to increase the bacteria's volume. In the same way we can add prebiotics to foods which is arguably more effective than supplementing a food with e.g. bifidobacteria.

Prebiotics can also be added to a probiotic to create a symbiotic in which the prebiotic would act as food for e.g. *Lactobacillus* GG and thus enhance its effect.

Public health savings

Western diseases, such as diabetes type 1 & 2 which like metabolic syndrome is set to explode in the next 20–30 years, other auto immune diseases such as

multiple sclerosis, and all the allergies, are connected with disturbed microbiota and gut functions. Microbes affect the permeability of the gut which is essentially too leaky fed on a western diet so antigens from food can pass through to a greater extent than they should. It is considered that this gut leakage is linked to the increase of e.g. allergies and auto-immune diseases. *Lactobacillus* GG survives the hostile environment of the gut and adheres to it, and so gives us a route to affect some of the unfavourable conditions caused by the western diet and tackle severe conditions that are otherwise incurable.

We can speculate that *Lactobacillus* GG or other probiotics could actually impact these conditions. Some evidence already exists to the effect that *Lactobacillus* GG works on allergy formation and if the mechanism were clearer then perhaps we could prevent the formation of e.g. adult onset diabetes. The science is not there yet but it may only be a matter of time. Reductions in the order of just a few percent would save a fortune in public health costs.

Another potential is that since the gut is in effect a pathway that secretes a great many hormones, we could make foods that through the endocrine system would enable you to eat as much as you want but not get fat! This would make rich world countries the main target for licensees.

A decade of Valio Gefilus® in the Baltics

Estonia has become Valio's key nearby market for Gefilus® products

Valio Gefilus® Baltic adventure started in Estonia in summer 1999 with Gefilus® kefir which is still the most popular Gefilus® product and the country's top selling kefir. Gefilus® capsules were launched in the same year (and in Lithuania in 2000) and are recommended by local doctors for consumption to alleviate side effects during a course of antibiotics.

Optimising the assortment in the face of fierce competition

The product mix continued to grow over the next decade but is now focused on cultured buttermilk with and without fruit, yoghurts, and a recent highly successful addition in the form of Gefilus® shot drinks in Strawberry, Vanilla and Wildberry flavours.

Heidi Mallene, Brand Manager at Valio Estonia points out that some formerly available product groups proved not to be ideal vehicles for a probiotic in Estonia, as the message on health effects wasn't striking a chord with local consumers.



So we optimised the range to concentrate on the categories offering the greatest scope for success.

Understanding health benefits

Valio Gefilus® has nevertheless achieved very high brand awareness and is seen largely as healthy and good for the stomach. While the message on building immunity still lags, the optimised assortment is helping push it to the fore. Local consumers demonstrate a continuing and despite the recession still growing enthusiasm for value added products offering health benefits and there is clear potential to increase Valio Gefilus® sales. A strong range of Valio Gefilus® products is now available throughout the Baltics.

Going native

Estonian consumers explicitly value local foods so the country's fresh Gefilus® products are made at Valio's Laeva Dairy in Tartu from the best Southern Estonian raw milk. It's the only Valio plant outside Finland with the necessary expertise to do so.

In fact, every aspect of the Estonian Gefilus® operation has been brought as close to the consumer as possible, in line with Valio's strategy that has built all its Baltic operations around local milk and production.

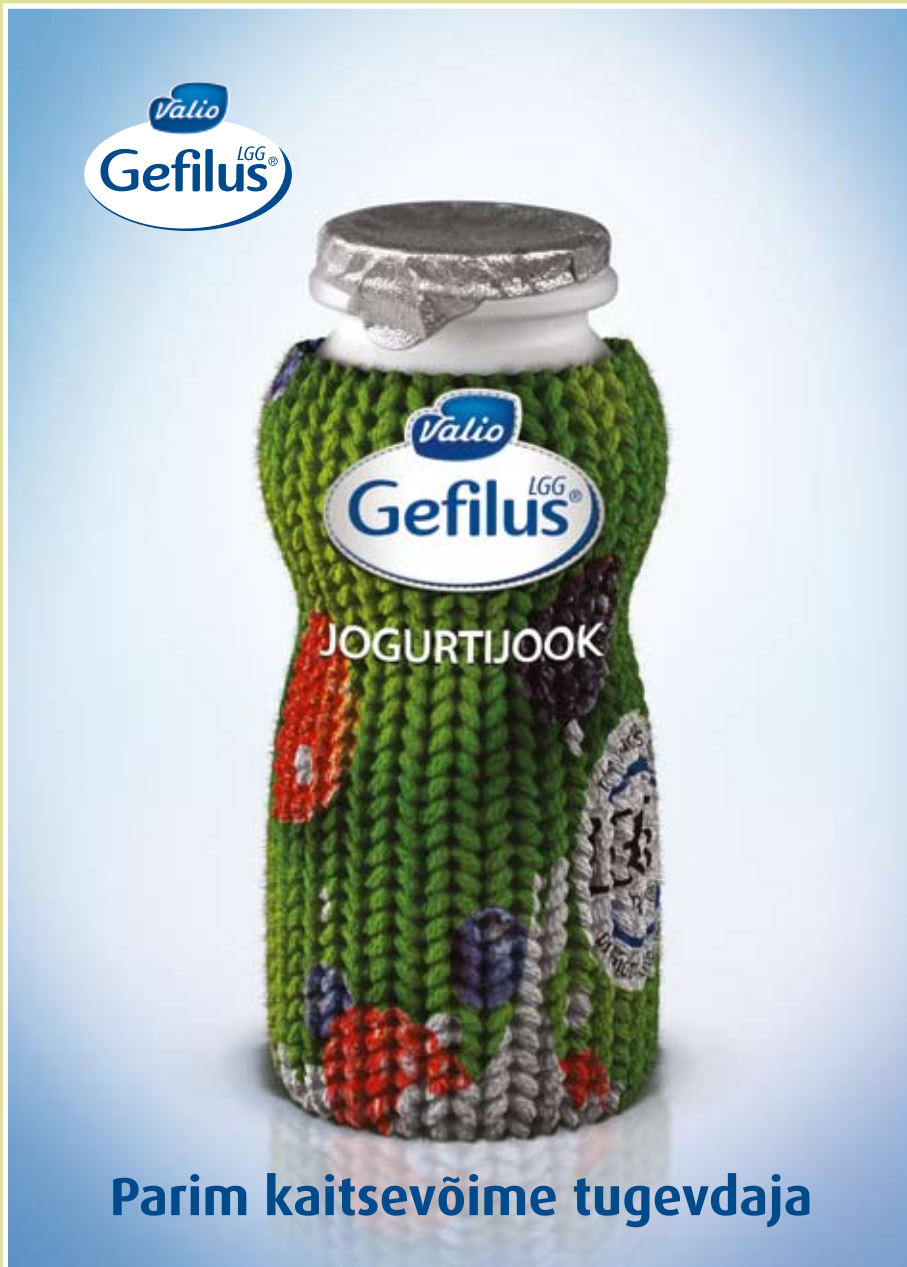
Marketing is also handled locally with packaging design and advertising adapted to local conditions, keeping a close eye on price and communications initiatives launched for competing products, comments Ms Mallene.

Identifying Valio with innovation

A high profile brand such as Gefilus® tends to support and interlink with the Valio house brand and in Estonia both are identified in terms of pioneering R&D, top quality products, focused on well-being. Spontaneous brand awareness for Valio as a dairy producer has strengthened.

Marketing communications channels

TV advertising supported by e.g. in-store and outdoor display materials target consumers while



Parim kaitsevõime tugevdaja – Gefilus is the best defence in Estonian, too!

we are looking to ramp up awareness with medical professionals for instance via a satellite symposium to be held at a conference for doctors in Tallinn in May.

Shared values

The typical Valio Gefilus[®] user has a good work-life balance, family and social life, and leisure pursuits ranging from the arts to sport.

We believe that Gefilus[®] yoghurts are ideal for families with small children and recently tailored one of Valio's Finnish advertising clips for the local market targeting this significant consumer group, Heidi explains.

<http://www.valio.ee/tooted/jogurtid>



New lactose free products with Valio Zero Lactose™ technology

Country: Sweden
Company: Valio Sweden
Product Brand: Valio Laktofri™
Product type: Organic whipping cream
Package: 0.2 litre

Country: Sweden
Company: Valio Sweden
Product Brand: Valio Laktofri™
Product type: Lactose free smetana
Package: 200g

SWEDEN

Country: Sweden
Company: Valio Sweden
Product Brand: Valio Laktofri™
Product type: Organic cooking cream
Package: 0.2 litre



SPAIN

Country: Spain
Company: Kaiku
Product Brand: Kaiku Sin Lactosa
Product type: Lactose free full-fat milk drink
Package: 1 litre



BELGIUM



Country: Belgium
Company: Valio-Vache Bleue
Product Brand: Valio Zero Lactose™
Product type: Semi-skimmed milk drink
Package: 0.5 litre
Note: New package size

FINLAND

Country: Finland
Company: Valio
Brand: Valio Laktoositon™
Product: Organic lactose free semi-skimmed milk drink
Package: 1 litre



Country: Belgium
Company: Valio-Vache Bleue
Product Brand: Valio Zero Lactose™
Product type: Low fat cream
Package: 0.2 litre

Country: Belgium
Company: Valio-Vache Bleue
Product Brand: Valio Zero Lactose™
Product type: Chocolate flavour semi-skimmed milk
Package: 0.2 litre





New products with LGG®

RUSSIA



Country: Russia
Company: Unimilk
Product Brand: BioBalans
Product type: Fruit yoghurt with Northern Berries
Package: Plastic cup, 2 x 100g
Note: LGG® product range extension

Country: Russia
Company: Unimilk
Product Brand: BioBalans
 Immunocomplex
Product type: Fermented milk drink with LGG® and vitamins
Package: Plastic bottle, 6 x 65ml
Note: New range focusing on immunity



Country: Russia
Company: Unimilk
Product Brand: Tema
Product type: Drinking yoghurt with added biscuit for small children
Package: Carton pack with straw 200g
Note: Now with added LGG®



CROATIA

Country: Croatia
Company: Dukat
Product Brand: b.Aktiv
Product type: Yoghurts, drinking yoghurts etc.
Note: New rebranded range



SWITZERLAND



Country: Switzerland
Company: Emmi
Product Brand: Aktifit
Product type: Fruit yoghurt
Package: 2 x 125 g
Note: Product range extension

FINLAND

Country: Finland
Company: Oriola
Product Brand: Gefilus®
Product type: Gefilus® Balance
Package: Instant ORS salt + capsule in dose pouches
Note: New food supplement to help alleviate diarrhoea



Country: Finland
Company: Valio
Product Brand: Kidius®Gefilus®
Product type: Fruit yoghurts
Note: Product range revamp

Country: Finland
Company: Oriola
Product Brand: Gefilus®
Product type: Gefilus® drops with Vitamin D, food supplement
Package: 7.5 ml bottle
Note: New product variant with Added vitamin D3



Gefilus™ Is Here!

Valio's new Gefilus range of products represents the first food products in the world to be manufactured using Lactobacillus GG. Clinical studies have shown that Lactobacillus GG colonizes the intestinal tract, stabilizing its' functions in various disorders. (Ref.: Annals of Medicine 22:1990)



Products containing Lactobacillus GG bear the Gefilac™ trade mark

Gefilus™

fermented apricot-peach whey drink
 - Good fresh taste.
 - Low lactose content.
 - Sweetened with fructose.

Nutritional content per 1 dl of product:
 - energy 240 kJ
 - protein 1.4 g
 - fat 0.1 g
 - carbohydrate 12.5 g
 of which lactose under 1 g

Gefilus™

low lactose fermented milk product - fat content 1.5%
 - Spoonable, natural flavour, mildly sour.
 - Low lactose content.
 - Fat content only 1.5%.
 - Sweetened with fructose.

Nutritional content per 100 g of product:
 - energy 270 kJ
 - protein 4.5 g
 - fat 1.5 g

- carbohydrate 8.0 g
 of which lactose under 1 g
 - calcium 150 mg



FINNISH CO-OPERATIVE
 DAIRIES ASSOCIATION

Original ad from 1990