

Probiotic cultures for dairy and functional foods



DANISCO

First you add knowledge...

Better health and well-being – naturally

Consumers recognise the link between diet, lifestyle and good health, which explains the rising demand for functional food products enriched with ingredients that provide a beneficial health effect. Probiotics are one of the fastest growing category within functional foods. And, as the list of health benefits accredited to them continues to expand, so does their use in new dairy and functional food applications.

Danisco is a world leader in probiotic development and offers an unparalleled probiotic culture brand: HOWARU™. Our probiotics are available frozen or freeze-dried in concentrates or as customised formulas. Danisco probiotic cultures can be used in your products to help customers in their battle against:

- Poor digestive health due to stressful environments or an unbalanced diet
- Intestinal disorders caused by eating on the move
- Exposure to harmful bacteria during extensive travelling
- Unbalanced gut flora following antibiotic treatment
- Day to day agressions which affect our immune system response

Definition of probiotics:

probiotics are live microorganisms which, when administered in adequate amounts, confer a health benefit on the host.



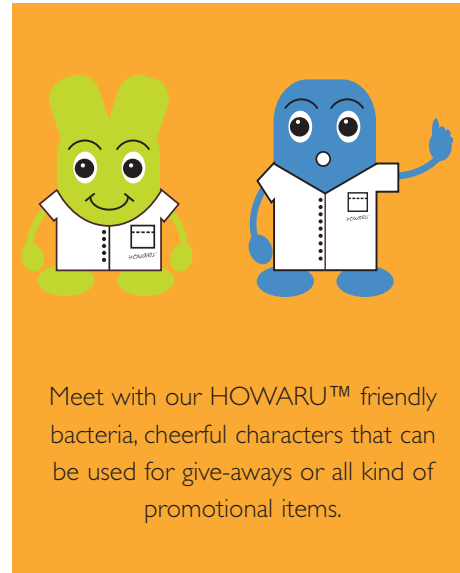
The HOWARU™ brand: an asset for your marketing activities

A successful marketing strategy

No matter how strong the documentation that supports the health benefit of our strains, the key to market success lies in effective communication with consumers.

The Danisco probiotic offer comprises a unique turnkey marketing concept based on a consumer-friendly registered brand, HOWARU™. The concept is based on top quality probiotic strains ideal for use in dairy and other food products. These strains are supported by a memorable HOWARU™ logo and character and a global consumer educational and promotional programme:

- www.howaru.com, a lively and informative website to help consumers understand the benefits of probiotics in terms of gut health and immune modulation
- Co-sponsoring of marketing programmes
- Participation to international scientific & nutritional conferences for brand awareness



Including HOWARU™ Bifido in all our yoghurt and smoothies is part of our overall effort towards encouraging customers to eat more healthily.

Claire Hughes,
Nutritionist, Marks & Spencer, UK



A world of scientific expertise

Microbiology is a core competency at Danisco. First, we use upstream molecular biology tools to define the precise taxonomy, therefore the safety features of each probiotic strain. Then, our global team of experts in microbiology, physical chemistry, bio-processing and human health develop our probiotic offer in three major areas:

- Health efficacy
- Shelf life stability
- Stability in various food and nutritional vectors

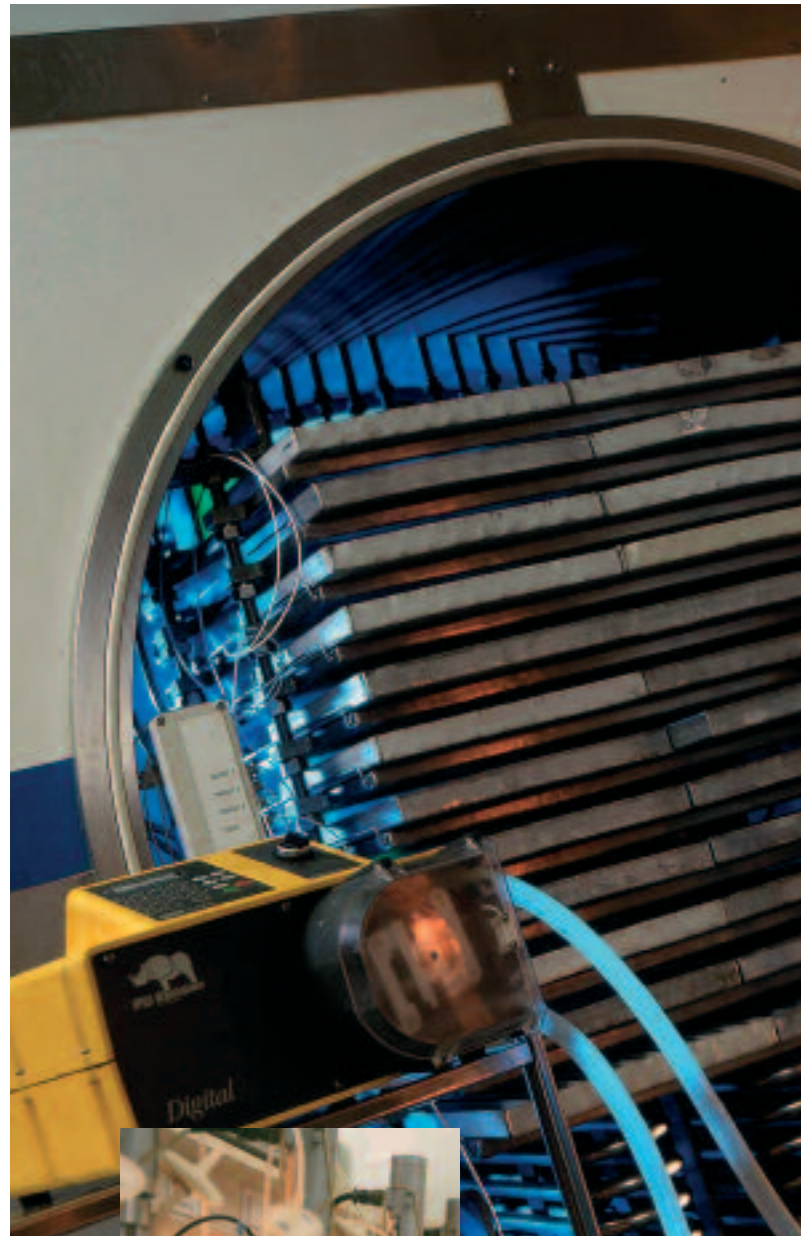
We have unique expertise in the area of freeze-dried probiotic stability as a result of decades of research in process development in the field of lactic acid bacteria.

Our main centres for probiotic research and development are located in Madison (USA), Dangé St-Romain (France), Niebüll (Germany), Singapore and Kantvik (Finland). In the Madison Innovation centre, we use upstream biotechnology tools, such as microarrays and functional genomics, which, in collaboration with Dr. Todd Klaenhammer of North Carolina State University, have derived a fully annotated sequence of *Lb acidophilus* NCFM genome.

In Kantvik, our health and nutrition centre has developed its own technology, EnteroMix®, to determine how functional ingredients work in the gastrointestinal tract. With more than 150 scientific papers published, our scientists are highly experienced in:

- Intestinal microbiology
- Physiology
- Immunology
- Biochemistry
- Biomathematics

From Kantvik to Madison we also coordinate different human clinical studies in collaboration with different hospitals throughout the world to demonstrate gut health (ie: Irritable Bowel Syndrome, gut transit,...) and immune modulation (Inflammatory Bowel Disease). In addition, we work in collaboration with other divisions as part of Danisco's Health & Nutrition programme to demonstrate the synbiotic effects between probiotics and other ingredients (ie: non digestible oligosaccharides).





A global quality production

Probiotic quality guaranteed

We maintain well-documented control over each step of the production process. Our proprietary stabilisation techniques ensure we deliver live and active probiotics that can survive higher temperatures and have a longer shelf life. The identity of all our strains is verified by an independent laboratory, using the most modern genetic techniques to ensure superior consistency batch after batch.

Master of the supply chain

We have probiotic culture formulation plants in operation in the United States, France, Germany and Singapore. That gives you the guarantee of reliable, on-time deliveries – with primary and back-up supplies all from one supplier:

Your production partner

Looking for a production partner? Turn to Danisco. We offer an expert, efficient and confidential custom manufacturing service to customers who wish to produce their own proprietary culture. The service is well suited to customers that require large volumes for commercial sale or those that seek pilot-scale culture production for clinical studies or other development activities.

For probiotic applications, we use the industry knowledge of our twelve innovation application centres around the world, ranging from infant formulas in the USA to chocolate bars in Europe or soya beverages in Asia.

In addition, we also benefit from years of collaboration with the best worldwide scientific experts and research institutes such as North Carolina State University in the USA, Institut Pasteur in France, Turku University in Finland, Beijing University in China or Victoria University in Australia.

Danisco actively participates to the IDF¹, EFFCA² assembly, and ISAPP³ where guidelines and claims on probiotics are discussed between scientists, safety agencies, regulatory bodies, and official authorities.

1: International Dairy Federation

2: European Food & Feed Cultures Association

3: International Scientific Association for Probiotics and Prebiotics



Probiotics for dairy products, beverages and functional foods

Yogurts and fermented dairy drinks have long been considered an ideal vehicle for delivering probiotic bacteria to the human gastrointestinal tract which, explains the widespread use of probiotic cultures in dairy products. Probiotics are also increasingly introduced into non-dairy beverages such as fruit juices or energy drinks. Cheese is another promising delivery vehicle of some probiotics to humans. For all application developments, Danisco uses its globally network of application specialists. Use our probiotics in:

- Yogurts
- Fermented milks
- Dairy drinks
- Cheese
- Ice cream
- Fruit juice



An important goal for Woolworths is to provide the consumer with good food which contributes to health beyond basic nutrition. Combining HOWARU™ Exclusive Probiotics with Woolworths' nutritious dairy products illustrates how we can achieve this goal.

Richard Butt, Food Director, Woolworths, South Africa





**HOWARU™ Acidophilus
(*Lactobacillus acidophilus* NCFM®)**

HOWARU™ Acidophilus is one of the world's most extensively studied probiotic strains backed by extensive documentation that proves its outstanding health benefits in terms of gut health. In addition to its unique ability to survive passage through the gastrointestinal tract and its extraordinary adherence to intestinal mucosa, HOWARU™ Acidophilus is the first commercially available acidophilus strain to have a complete genome sequence published.

**HOWARU™ Bifido
(*Bifidobacterium lactis* HN019)
and HOWARU™ Rhamnosus
(*Lactobacillus rhamnosus* HN001)**

HOWARU™ Bifido and HOWARU™ Rhamnosus have been specifically selected for their immunomodulating properties, which have been confirmed in human studies in different countries. These study results indicate that improved immune function due to the consumption of HOWARU™ Bifido and HOWARU™ Rhamnosus may reduce the risk of different types of enteritis and non-gastro-intestinal diseases and enhance the body's natural immune response, especially in the elderly.

To complete the range, Danisco also supplies HOWARU™ Yogurt Blends, carefully selected cultures including HOWARU™ strains that are designed for yogurt applications.

In addition, Danisco provides a wide range of probiotic strains and blends for customers who want to make a content claim or use these strains for technological reasons:

- *Lactobacillus acidophilus*
- *Bifidobacterium lactis*
- *Lactobacillus casei*



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Danisco develops and produces functional ingredients primarily for the food and beverage industry and, to a lesser extent, for the non-food industry.

Produced mainly from natural raw materials, the broad product range is backed by top technical services, creating innovative, high quality solutions for food and beverage products. The range includes antimicrobials, antioxidants, emulsifiers, enzymes, flavours, functional systems, speciality fats, speciality sweeteners, starter cultures and media, and textural ingredients. Danisco is also one of the largest and most efficient sugar producers in Europe.

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