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Health and Nutrition

Basic Approach

We offer health and nutrition by developing and selling products that combine functionality and good taste "For Ever Brighter Smiles."

Morinaga Milk recognizes that its core business is the development and sale of products that contribute to health and nutrition for extending healthy longevity and the healthy development of infants. Achieving corporate slogans is a goal of health and nutrition, while the guiding principles set out the actions that each and every employee must take.

Health and nutrition are closely tied to Morinaga Milk's commitment to contribute to people's happy lives filled with healthy "smiles." Over the years, Morinaga Milk has explored the benefits and possibilities with research into proprietary nutritious and functional ingredients such as bifidobacteria and lactoferrin, which began with in-house research on the role that breast milk plays in babies' health.

Morinaga Milk's various products, from infant and toddler milk to specialty milk as well as yogurt, foods for medical and elderly care, have helped to improve health and bring smiles to people.

Looking ahead, the corporate goal is to contribute to people's health and nutrition not only in Japan, but around the world as well. Morinaga Milk will continue to tackle challenges toward this end.

System

Morinaga Milk CSR Committee meetings, which are chaired by the president, are held twice a year for monitoring and reporting on the progress of KPIs. In addition, Morinaga Milk implements PDCA (Plan–Do–Check–Act) cycles, with the general managers of the relevant divisions responsible for "Priority Issue: Health and Nutrition" and the general managers of the relevant departments responsible for promoting KPIs.

Based on the recognition that health and nutrition represent our core business, company research institutes, Marketing Department, Sales Department, and Manufacturing Department work together as a team to promote our initiatives in health and nutrition.

KPIs

Direction of activities	KPIs
Contribute to extending healthy longevity	Bring products incorporating nutritious and functional ingredients onto the market (1)
	Share information on nutritious and functional ingredients that help to maintain health
Contribute to the healthy growth of babies and infants	Provide Bifidobacterium breve M-16V; continue to provide in over 120 facilities in Japan and overseas (2)

Progress on main KPIs (corresponding to number on the table):

(1) Launch of food with functional claims *Triple Yogurt*, expansion of the *Milk Life* series of nutritional milk powder products for adults (creating new healthy lifestyles)
Research and marketing for bifidobacteria, lactoferrin, and other ingredients
(2) Bifidobacterium breve M-16V is supplied to over 140 facilities in Japan and overseas, including newborn intensive care units (NICUs)

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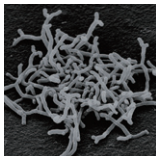
Morinaga Milk's Nutritious and Functional Ingredients

Morinaga Milk has been researching ingredients for maintaining health for over 50 years.

As a result, these ingredients were found to improve the health of people from all generations, from babies to the elderly.

Bifidobacteria



Morinaga Milk has a long history researching breast milk, infant nutrition, and intestinal flora for the healthy growth of infants. We discovered Bifidobacterium longum BB536 in 1969 and successfully used bifidobacteria in dairy products for the first time in Japan in 1971. Bifidobacteria are sensitive to acid and oxygen. However, it has been reported that Bifidobacterium longum BB536 is resilient against acid and oxygen and, among the types of bifidobacteria that live in humans, and reaches the large intestine alive.

Morinaga Milk maintains three strains, Bifidobacterium longum BB536, Bifidobacterium MCC1274 (B-3) and Bifidobacterium breve M-16V, has published a wide range of research results on bifidobacteria, and is proud of being a bifidobacteria pioneer in Japan. We develop a range of bifidobacteria products–not just such as yogurt but also supplements such as powdered bifidobacteria. Our technological know-how for keeping powdered bacteria alive and stable for long periods of time at room temperature is one of our major strengths.

The U.S. Food and Drug Administration (FDA) has affirmed Bifidobacterium longum BB536 and Bifidobacterium breve M-16V as GRAS (Generally Recognized As Safe) under its safety review system and these two strains are now used around the world, including the U.S., Europe, and Southeast Asia.

◆Main bifidobacteria

Bifidobacterium longum BB536 reaches the large intestine and can be used for various health benefits such as excellent regulation of intestinal function by improving intestinal flora.

Bifidobacteria MCC1274 (B-3) has been reported to reduce body fat and waist circumference when ingested by people with a relatively high BMI. It has also been reported that middle-aged and elderly people with mild cognitive impairment (MCI) have experienced improved cognitive function with Bifidobacteria MCC1274 (B-3).

Bifidobacterium breve M-16V was developed for its function in promoting normalization of intestinal flora in infants. Administering it to low birth weight babies, who tend to have under-developed intestinal function, speeds up colonization of bifidobacteria and promotes normal development of the intestines.

WEB Morinaga Milk's Bifidobacteria Research
▶ https://www.morinagamilk.co.jp/english/research/r_and_d/bifidobacteria/

Topics

Recognized as Safe for Baby Food in the U.S.

Bifidobacterium longum BB536 and Bifidobacterium breve M-16V have been certified as GRAS* for general foods and infant foods under the U.S. Food and Drug Administration (FDA) safety review system. Although Bifidobacterium longum BB536 was already recognized as GRAS for general foods, it was also approved for use in infant foods from April 2020.

Morinaga Milk is the only Japanese company that has acquired GRAS for bifidobacteria (current as of April 7, 2020).

*GRAS (Generally Recognized as Safe)
For a food ingredient newly used in the U.S., specialists evaluate the safety of the ingredient as a food by considering its material characteristics, manufacturing processes, quality control, product specifications, actual use, clinical test results, etc. Since 1958, new food ingredients in the U.S. must be GRAS before they can be sold.

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Lactoferrin

Morinaga Milk has been studying lactoferrin since the early 1960s. Lactoferrin is a protein found in the milk, tears, saliva, and blood of mammals and is believed to protect babies from a variety of infectious diseases. The name is derived from lacto (milk) and ferrin (iron) because of the protein's ability to easily bind iron.

In terms of lactoferrin products, Morinaga Milk released an infant and toddler milk, called Morinaga BF-L Dry Milk in 1986. Today, Morinaga Milk sells lactoferrin products to support the daily health of people at all ages from babies to the elderly—from infant and toddler milk to lactoferrin yogurt and supplements.

WEB Morinaga Milk's Lactoferrin Research
▶ https://www.morinagamilk.co.jp/english/research/ingredients/

Topics

MILEI: Manufacturing High-Quality Lactoferrin

MILEI GmbH, headquartered in Leutkirch, Germany, has accumulated some 40 years of experience since beginning production in 1975, supplying whey protein products, milk protein products, lactose and lactoferrin and other dairy ingredients to multinational food companies in Europe and Asia and around the world. It has the know-how to manufacture high-quality and high-purity lactoferrin, having established a strong reputation among many users. In recent years, global interest in lactoferrin has increased and MILEI, as the world's highest-volume manufacturer of lactoferrin*, is actively working to increase production volumes and create a stable supply.

*From 2018 data from Absolute Reports.

Peptide

Cow's milk contains good quality protein, and is used in products such as infant and toddler milk. However, it cannot be used for babies with milk allergies. Therefore, Morinaga Milk developed a peptide (milk protein degradant) that has been digested by enzymes.

In 1977, Morinaga Milk released *MA-1*, the first milk in Japan containing peptide for babies and infants with allergies. In 1994, the company released another product called *Morinaga Peptide Milk E-Akachan*, which combines more than a half century of Morinaga Milk's technologies, knowledge and experience in the development of infant and toddler milk, especially for the allergenicity of milk.

In recent years, Morinaga Milk was granted a patent for MKP®, a tripeptide of methionine, lysine and proline derived from casein. Clinical trials targeting people with high systolic pressure confirmed that MKP® has an effect in lowering blood pressure.

WEB Morinaga Milk's Peptide Research
▶ https://www.morinagamilk.co.jp/english/research/ingredients/

Lactulose

Lactulose is a saccharide made from the lactose contained in cow's milk. Morinaga Milk was a pioneer on the effects of lactulose in increasing bifidobacteria in the intestines, and launched for the first time in the world the lactulose-containing infant and toddler milk Morinaga G Dry Milk in 1960. Lactulose is also widely used worldwide as a medicine for constipation.

WEB Morinaga Milk's Lactulose Research
▶ https://www.morinagamilk.co.jp/english/research/ingredients/

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Contributing to Extending Healthy Longevity

Morinaga Milk is pursuing product R&D under the theme of extending healthy longevity for an era when people will commonly live to the age of 100. The company will research and develop products using nutritious and functional ingredients and supply them to consumers so that people can have healthier and more active lives.

Bifidus Yogurt

Fifty years ago, Bifidobacterium longum BB536 was discovered from the large intestine of a healthy baby.

Bifidus yogurt includes not only lactobacillus but also Bifidobacterium longum BB536, which reaches the large intestine.

With low acidity that results in a mellow flavor, this yogurt supports everyday health.

Triple Yogurt

This yogurt displays three functionalities in lowering and stabilizing blood pressure, blood sugar and triglyceride levels. Tripeptide MKP® lowers high systolic pressure, while the indigestible dextrin (dietary fiber) stabilizes the blood sugar and triglyceride levels after a meal.

Milk Life

This is a powdered milk for adults that includes nutritious and functional ingredients such as bifidobacteria, lactoferrin, and LAC-Shield®. *Milk Life* has established a strong reputation for its good taste and as a source of nutrition that can be readily consumed.

Morinaga Milk Supplements

Morinaga Milk offers products claims that contain Bifidobacterium longum BB536 or Bifidobacterium MCC1274 (B-3) as a functional substance, as well as products that can be readily consumed as a source of lactoferrin.

Foods for Medical and Elderly Care

The Morinaga Milk Group carefully researches and develops foods for medical and elderly care in terms of taste, nutritional value, safety, and ease of eating, so that the elderly and people with illnesses can maintain their quality of life while experiencing the joy of food.

Using the opinions of medical and nursing care professionals, Clinico Co., Ltd. (a company within the Morinaga Milk Group) and Morinaga Milk's institute work together to develop and market foods for medical and elderly care. This includes liquid foods, nutritional supplement foods (drinks, jellies, etc.), and pureed foods.

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Information Dissemination on Nutritious and Functional Ingredients

The Morinaga Milk Group disseminates information, including the results of research on nutritious and functional ingredients, to various stakeholders including customers and suppliers.

Symposiums and Exhibitions

(In Japan)

In FY 2019, Morinaga Milk gave 96 conference presentations and published 55 papers.

In November 2019, the Japanese Association for Food Immunology awarded Morinaga Milk its Food Immunity Industry Award in recognition of its excellent ongoing research results for Bifidobacterium longum BB536.

In June 2019, Morinaga Milk endowed a chair at MATSUMOTO JUNIOR COLLEGE to promote the following three initiatives.

(1) In cooperation with Matsumoto City and MATSUMOTO JUNIOR COLLEGE, Morinaga Milk will proactively hold public lectures, etc. to raise health awareness among the general public.
(2) Provide a learning program for MATSUMOTO JUNIOR COLLEGE students for understanding the effects of food in health promotion.
(3) Collaboratively verify the effects of Morinaga Milk's proprietary ingredients on health promotion, establish reliable evidence, and communicate the results obtained in the process.

(Outside Japan)

Every year, Morinaga Milk actively participates in around 20 symposiums or exhibitions outside of Japan in cooperation with overseas business partners to promote nutritious and functional ingredients.

Bifidobacterium breve M-16V was recognized with Infant Nutrition Ingredient of the Year

Morinaga Milk exhibited at the September 2019 Vitafoods Asia exhibition in Singapore, the only event for nutritional supplement foods in Asia. We participate in this exhibition annually in collaboration with MNF-AP. On the evening before the exhibition, Morinaga Milk became the first Japanese company to win Infant Nutrition Ingredient of the Year in the child nutrition category at the Nutra Ingredients-Asia Awards, sponsored by NutraIngredients-Asia.com.

At the annual Probiota conference and exhibition for prebiotics, probiotics, the microbiome , functional ingredients and related innovative technologies (held in rotating European locations and Asia), Morinaga Milk not only had a booth, but also participated in the panel discussions and gave a poster presentation on Morinaga Milk bifidobacteria products.

Through such activities, Morinaga Milk strives to spread awareness of human-derived bifidobacteria and their benefits.

Contributing to the Healthy Growth of Babies and Infants

Morinaga Milk began researching and developing infant and toddler milk in the 1920s with the commitment to contribute to the healthy growth and development of infants. Over the years, the company engaged in research of infant and toddler milk that combines lactoferrin, etc. with nutritional elements such as protein, fats, carbohydrates, vitamins, and minerals in order to provide products as close to mother's milk as possible.

In recent years, Morinaga Milk has developed its infant and toddler milk business mainly in Asia in order to contribute to children's nutrition not only in Japan, but around the world.

Looking ahead, Morinaga Milk will continue its long-standing research and development on the nurturing and protective powers of breast milk.

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Contributions to Building Nutritional Infrastructure in Asia

Emerging countries mainly in Southeast Asia are experiencing rapid population growth and urbanization. The more population concentrates in cities, the more important it is to build nutritional infrastructure to supply safe and high-quality foods. Playing an active role in solving this issue represents the social mission of Morinaga Milk as a food company.

Morinaga Milk considers the supply of infant and toddler milk as part of this nutritional infrastructure. The company manufactures infant and toddler milk at product bases in Japan and overseas, including Indonesia, and supplies products to markets in Indonesia, Pakistan, Malaysia, Vietnam, etc. Morinaga Milk aims to create an environment in which children around the world can grow healthily.

Overseas Launch of Infant and Toddler Milk

Topics

Sale and Manufacture of Infant Formula Products at NutriCo Morinaga

Morinaga Milk has been exporting infant formula milk and other products to Pakistan for more than 40 years and selling them through a local distributor, NutriCo Pakistan (Private) Limited.* In March 2017, a new joint venture with Morinaga Milk, ICI Pakistan Limited and Unibrands (Private) Limited was established to locally manufacture and sell these products. This joint venture, NutriCo Morinaga (Private) Limited, began operating in November 2019.

NutriCo Morinaga continues to import milk products as before, but also domestically manufactures its own products for consumers in Pakistan. The company will provide safe, reliable and high-quality products to more consumers in Pakistan, contributing to their health.

*NutriCo Pakistan (Private) Limited is also a joint venture between Morinaga Milk, ICI Pakistan Limited and Unibrands (Private) Limited.

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Providing Bifidobacterium Breve M-16V to Low Birth Weight Babies around the World

Normally, the intestinal flora of babies is composed of more than 90% bifidobacteria. However, very low birth weight babies or super low birth weight babies with a birth weight of less than 1,500 g have an underdeveloped intestinal tract. This condition delays the proliferation of bifidobacteria, resulting in an increase in E. coli and S. aureus. Morinaga Milk is now pursuing joint research with hospitals and universities in the field. By administering our proprietarily developed Bifidobacterium breve M-16V to very low birth weight babies or super low birth weight babies, it was found that intestinal flora good for bifidobacteria form more quickly, preventing dangerous health conditions in newborns such as necrotizing enterocolitis and septicemia.

Currently, Morinaga Milk provides M-16V to more than 150 facilities nationwide in Japan, including newborn intensive care units (NICUs) and pediatric wards, supporting the sound development of countless babies. In addition, the effects of Bifidobacterium breve M-16V on low birth weight babies have been reported overseas through academic societies and papers, and it has been used in NICUs in Australia since 2012. Furthermore, in recent years, use has begun at NICUs in New Zealand and Singapore.

Morinaga Milk will continue to support the healthy growth of babies and children around the world.

Provision of Bifidobacterium Breve M-16V

 = 1 packet

	2015	2016	2017	2018	2019
Japan (packets)	152,000	171,000	197,000	210,000	236,000
Overseas (packets)	31,000	43,000	62,000	75,000	77,000

Specialty Milk

As a company that manufactures and sells infant and toddler milk, Morinaga Milk sells infant and toddler milk in Japan that can be consumed safely by children with milk allergies, and supplies medical institutions with specialty milk matched to the individual needs of children with congenital metabolic disorders.

Commercially Available Specialty Milk

Morinaga Milk supplies specialty milk for milk allergies, lactose intolerance, gastro-esophageal reflux and low birth weight babies.

Commercially Available Specialty Milk

Product Name	Characteristics
Morinaga New-MA-1	Milk for milk allergies, with highly digested proteins and significantly reduced allergenicity
Morinaga MA-mi	Milk for milk allergies with improved nutritional balance, flavor and solubility with reduced allergenicity
Morinaga Non-Lactose	Lactose-free milk for children with lactose intolerance and diarrhea
Morinaga AR Milk	Milk for children prone to gastro-esophageal reflux disease with a higher milk viscosity using a naturally derived thickening ingredient (locust bean gum)
Morinaga GP-P*	Milk for low birth weight babies

*The product is directly delivered to hospitals and medical facilities.

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Milk for Children with Congenital Metabolic Disorders or Other Diseases

Morinaga Milk supplies medical institutions, under the guidance of the Safety Development Committee*, with specialty milk that is a vital nutritional supplement for children with congenital metabolic disorders, etc.

Congenital metabolic disorders are a serious health condition. If identified in newborn babies at an early stage and food therapy is initiated, most children will grow properly. Therefore, milk for children with such conditions needs special processing to reduce certain components such as protein or phosphorous according to the individual child's conditions. Such specialty milk requires advanced manufacturing technologies, so the knowledge and experience of infant nutrition that Morinaga Milk has developed over many years is applied. In FY 2019, Morinaga Milk supplied 5,600 cans of specialty milk.

*Safety Development Committee
The Specialty Milk Joint Safety Development Project was launched in 1980 under the guidance of the (then) Ministry of Health and Welfare with public funding in order to develop and improve, and provide a steady supply of specialty milk to treat children with congenital metabolic disorders. This project defines the specific criteria for specialty milk and its quality, ingredients, and method of use, as well as implements the development, improvement, and steady supply of the specialty milk. At the same time, the Safety Development Committee was established, consisting of academic experts and the directors of research organizations at specialty milk companies to ensure the smooth operation of the project.

Types of Specialty Milk for Children with Congenital Metabolic Disorders and Other Diseases

Category	Main indications	Symbol	Name
Protein and amino acid metabolism disorders	Phenylketonuria	MP-11	Low phenylalanine peptide powder
Electrolyte metabolism disorders	Adrenocortical hypofunction	MM-2	Low potassium milk
	Heart and kidney diseases	MP-2	Low protein, low sodium milk
	Idiopathic hypercalcemia	MM-4	Low calcium milk
	・Hypoparathyroidism ・Pseudohypoparathyroidism ・Kidney disease	MM-5	Low phosphorus milk
Malabsorption	Deficiency in lipid absorption	ML-1	Low fat milk
Other	・Cystic fibrosis ・Citrin deficiency	ML-3	Proteolytic MCT milk

Breast milk Additive Powder

Breast milk additive powder is intended to reinforce the nutritional elements of breast milk for very low birth weight babies. Morinaga Milk provides *HMS-1* and *HMS-2*.

Very low birth weight babies (who weigh less than 1,500 grams) tend to have complications such as underdeveloped physical functions for digestion and absorption. Such infants need to have adequate nutritional intake to quickly develop their physical functions. However, breast milk alone is relatively lacking in calories or various nutritional elements for such babies. As such, *HMS-1* and *HMS-2* reinforce protein and trace elements such as calcium and phosphorous, which cannot be sufficiently provided by mother's breast milk alone, while *HMS-2* provides increased calorific value, promoting faster development in babies. In FY 2019, Morinaga Milk sold around 15,000 boxes of *HMS-1* and around 12,000 boxes of *HMS-2*, for a total of 27,000 boxes.

**HMS-1* is sold in 100 packets/box and *HMS-2* in 60 packets/box

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Enhancing Public Health

Contributing to Health with *PURESTER*

PURESTER, a slightly acidic electrolyzed water generator, is a hygiene control apparatus developed by Morinaga Milk that aims to have both high anti-bacterial effect and safety. *PURESTER* was first sold around 20 years ago, more than 6,500 units have been sold as of March 31, 2020.

Slightly acidic electrolyzed water generator
PURESTER μ-Clean II

PURESTER devices can generate hypochlorous acid water within the prescribed range needed for sterilization of food additives. Unlike the alcohol disinfectants and sodium hypochlorite commonly used for sterilization, *PURESTER* has been confirmed to have minimum effect on the skin and to be safe in various aspects. It has been verified having a bactericidal effect against various bacteria that cause food poisoning, and micro-organisms that threaten food hygiene, and is therefore an effective tool in places where hygiene management is required.

Contributes to maintenance of food hygiene

Customers who are already using *PURESTER* have provided highly positive feedback explaining that *PURESTER* water can be used easily in the same way as municipal water despite being a disinfectant, making *PURESTER* indispensable for on-site hygiene management.

Morinaga Milk is committed to providing its long-standing hygiene management technology to society to help protect the healthy lives of people. Continuing efforts are made to develop new and innovative ways to realize this commitment.