



Functional Foods - Beyond Metabolic Health

Immunity and Cognitive Benefits of
Probiotics

Q4 | 2019

INDUSTRY PULSE

FOOD & NUTRITION
INDUSTRY INSIDER



FutureBridge

YEARLY PLAYER ANALYSIS

Jan 2019 - Dec 2019

Partnership

Probiotic companies are increasingly **partnering** with **Universities** and **venture capitalist** to innovate in the probiotics domains by **research** and **launching new products**.

Product Launch

US based Established and startup players are increasingly **launching probiotic** products that boast **immunity** and **cognitive health** benefits.

Investment

Companies are receiving investment to produce **nutritional glycans** for **improving immunity**.

Product Expansion

Anlit company **expanded its portfolio** of probiotic supplements that promote **immunity, women's health,** and **digestive health**.

Note: All company logos have been hyperlinked with respective company websites

FutureBridge Insights:

- The **probiotics segment** is **expanding** from its **native digestive health** claims to **immunity** and **cognitive benefits** claims.
- Players such as **Nestlé, ExeGi Pharma,** and **Synbiotic Health** are collaborating with **Universities** and venture capitalist to **research human gut microbiome** and produce **highly effective products**.
- Players such as **DuPont, Anlit,** and **good culture** are **launching** products with **beyond metabolic health claims** such as **immunity** and **cognitive** health.
- **Research in immunity benefits** has **flourished** with studies showing **positive effects** in both **humans** and **canines**. **Cognitive** health benefits studies **require multiple studies** for **validation** of results.
- The **North American** and **Asia-Pacific regions** are highly active in the probiotic domain for 2019.

Things to look out for:

- **Increased probiotics functional health claims** backed by **research**
- **Increased market share** of **Asia-Pacific regions** in probiotics segment
- Increased **individual-specific** probiotics
- Increased utilization of probiotics in the **pet-food segment**

Key players this quarter:



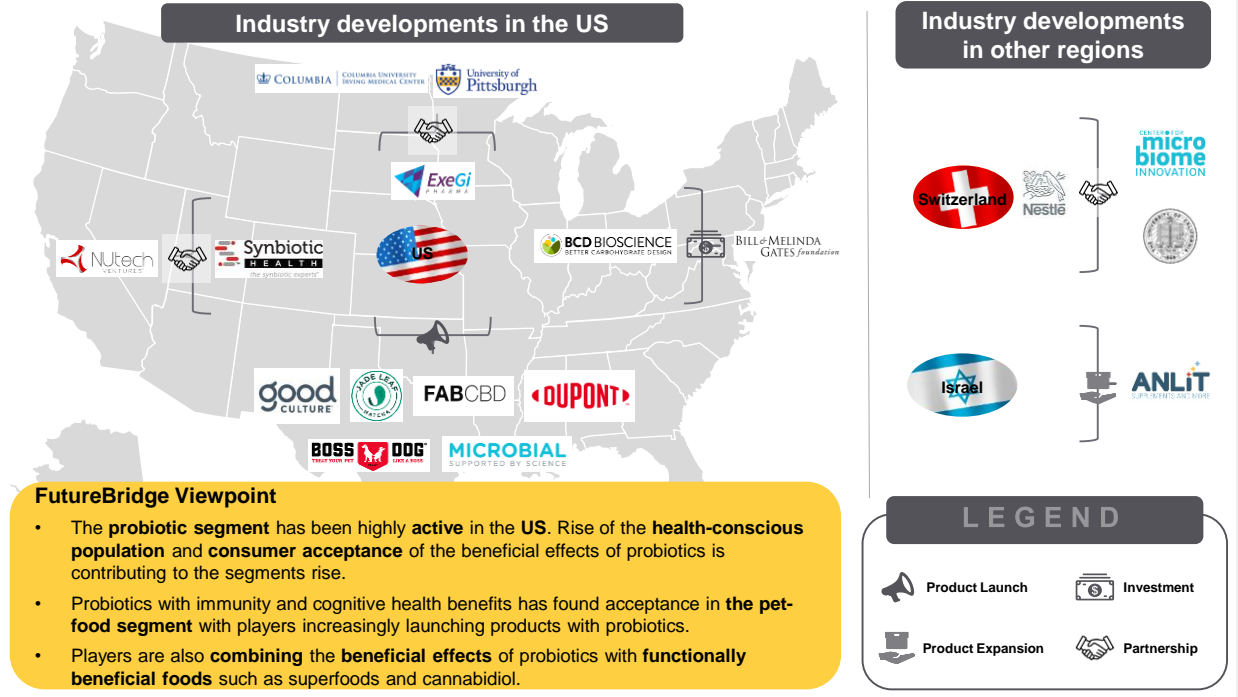


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- Players are increasingly **partnering** with universities and venture capitalists to **research** the **human microbiome**. The research would be utilized to produce **probiotic products** with **research-backed functional benefits**.
- The **probiotic segment** is **increasingly launching** products that have **immunity benefits** plus a **host** of other **benefits** such as **cognitive, bone, and digestive health**.
- The products either **contain blends of probiotics, superfoods, and adaptogens** or are stand-alone **probiotics**.

Established and startup players are increasingly utilizing immunity and cognitive claims for probiotics

Probiotic Segment: Industry Developments in the year 2019



Note: Legend icon have been hyperlinked with respective news. Product launch news has been hyperlinked with the company icons

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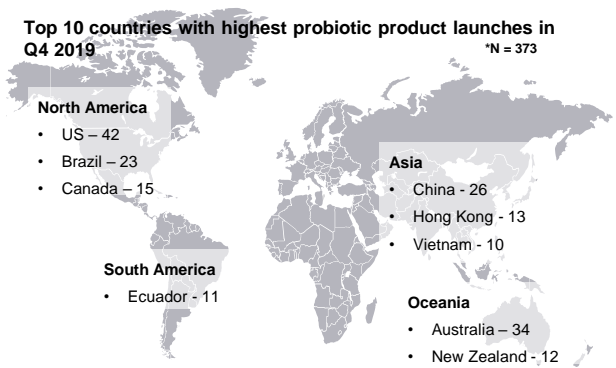
- North American market indicated the highest launches due to health-conscious consumerism.
- Increased launches are also indicated in Asia and Oceania regions due to the recognition of functional benefits of probiotics.
- The dairy segment and beverage segment indicated a higher launch of products as probiotics cell count is easily maintained in liquid environment.
- The highest functional claims for probiotics include digestive health and immune health as these are well-regulated in most countries globally.
- Cognitive health claim is lower due to lack of supportive data.
- Established players such as Danone, Chobani, and Nestlé are highly active in the segment.

Majority probiotic product launches present in the North American market with dairy as the most active segment

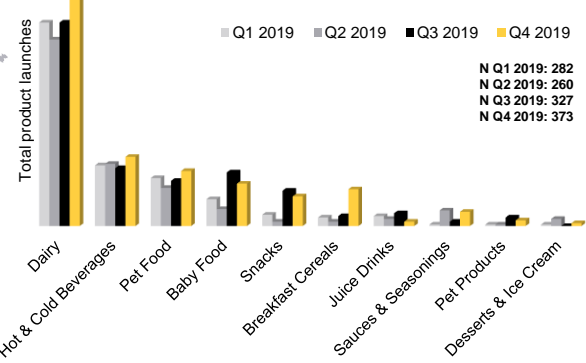


Market analysis of product launches in the probiotic segment

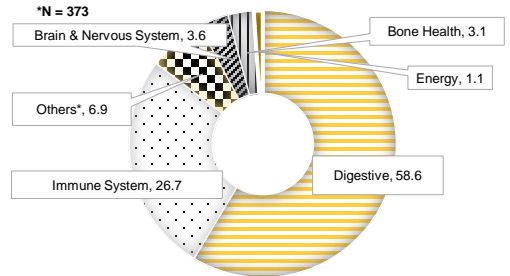
Top 10 countries with highest probiotic product launches in Q4 2019 *N = 373



Category-wise comparison of probiotic-based product launched in the year 2019



Percentage of functional benefit claims in Q4 2019 *N = 373



*Others include: Functional benefits such as eye health and cardiovascular health
 Key: N = Total number of products launched

Companies with product launches in the year 2019

 DANONE ONE FEEL. ONE WAY. Probiotics Shot Drink 	 FARMER JO. Probiotic Hemp And Cacao Baked Granola 	 Chobani. Chobani Non-Fat Greek Yogurt 	 NESTLÉ Nestlé NAN Optipro 	 Abbott Abbott Pediasure BA
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Source: Mintel, Newsletters



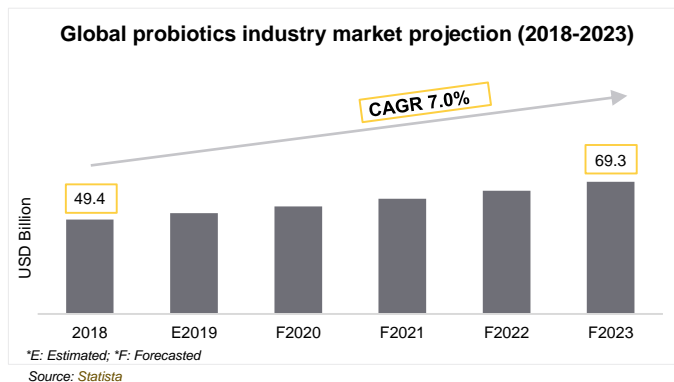
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- The **global market projections** for the probiotics market are **positive** with a **CAGR of 7.0%**.
- The probiotics industry in the **Latin American region** is forecasted to **flourish** due to the increasing population, which is **conscious of the health benefits** of probiotics.
- The **increasing young and aging population** is resulting in **higher awareness** and **sales of probiotics** due to weaker immune systems.



Probiotics segment rapidly expanding positive outlook in European and Latin-American region

Market analysis of probiotic segment

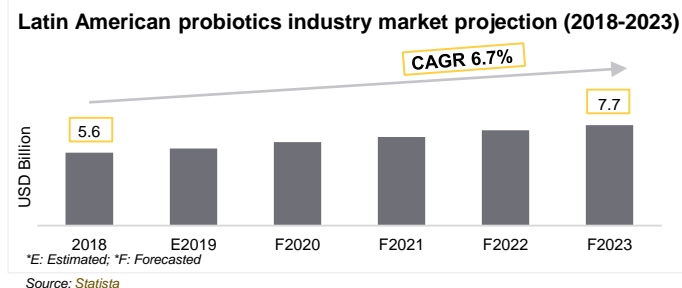


Drivers:

- Increasing awareness amongst the health-conscious population
- Increasing aging population with weakened digestive capabilities
- Awareness of functional benefits beyond digestive health, which includes immunity and cognitive health

Challenges:

- Maintaining colony forming units as claimed on product
- Ineffective probiotics after passage through acids and bile juice present
- Decreased shelf life of liquid formulations
- Traditional strains may be ineffective in different populations



FutureBridge Viewpoint

- The global probiotics industry has a **positive outlook** with a **CAGR of 7.0%** upto **\$69.3 billion** in the year **2023**.
- The **probiotics market** is forecasted to increase the market in the **Latin American region** due to the **rising health-conscious population**.
- **Increasing awareness** amongst the **populace** about the **functional benefits** of probiotics is a **key driver**.



FutureBridge Insights

- The **immunity benefits** derived from **probiotics** are **increasingly backed** by **research** in **2019** due to **increasing health-conscious consumerism**.
- **Research** is being carried out to **determine the probiotics effect** in **humans** as well as **canines**. Thus, **probiotics** focused on **canine well-being** can be **expected in the near future**.
- **Probiotics** especially **designed to enhance athletic performance** is also being carried out with **positive outcomes**. Thereby, **probiotics claimed to provide increased athletic performance** can be **expected**.

Probiotics derived immunity benefits are showcased by both humans and canines

Research in probiotics derived immunity benefits in the year 2019

Title Of Study: Probiotics modulate the gut microbiota composition and immune responses in patients with atopic dermatitis: a pilot study

Abstract: The study was conducted to research the **effects of probiotics on patients suffering from atopic dermatitis**. A total of 109 patients were divided into 4 groups. Each group was provided one type of powdered form of **oligosaccharides group, *Bifidobacterium bifidum* CCFM16 group, *Lactobacillus plantarum* CCFM8610 group,** and the **placebo group** was provided with a mixture containing **soy protein** and **maltodextrin**. The results were evaluated by **serological indications, SCORAD (SCORing Atopic Dermatitis), Dermatology Life Quality Index indices** and **sequencing of gut microbiota**.
Journal: European Journal of Nutrition

Conclusions: The study revealed

- ***Lactobacillus plantarum* CCFM8610** and ***Bifidobacterium bifidum* CCFM16** regulated immune responses in **atopic dermatitis patients**.
- ***Lactobacillus plantarum* CCFM8610** produced **compositional and functional changes** in the gut microbiota.

Authors: Zhifeng Fang, Wenwei Lu et. al.

Universities Associated:



Other research on immunity benefits:

- Beneficial **Effects** of Probiotic Consumption on the Immune System
- Probiotics and **sports**: A new magic bullet?
- Combination **Therapy** of TGF- β Blockade and Commensal-derived Probiotics Provides Enhanced Antitumor Immune Response and Tumor Suppression

Title Of Study: Oral administration of compound probiotics improved canine feed intake, weight gain, immunity and intestinal microbiota

Abstract: The research was conducted to **verify the functional benefits of probiotics on canines**. 90 canines were grouped into three groups based on age (elderly, young, training). The groups were further subdivided into groups that were given **probiotics** and groups that received a placebo. The probiotic contained ***Lactobacillus casei* Zhang, *Lactobacillus plantarum* P-8, and *Bifidobacterium animalis subsp. lactis* V9**. The **serum and fecal samples of the canines** were procured at time points 0, 30 days, 60 days, and 15 days after ceasing treatment with probiotics.
Journal: Frontiers in Immunology

Conclusions: The study concluded that

- The **average daily feed intake** and **immunity of elderly dogs** are **positively affected by probiotic intake**.
- **Statistically significant increase** in **antibodies** is **observed in canines** treated with probiotics.

Authors: Haiyan Xu, Weiqiang Huang et. al.

Universities Associated:





FutureBridge Insights

- The **claim** for the cognitive benefits of probiotics is **limited** due to **lower supporting research**.
- Positive research present in the probiotic domain in 2019 indicates **probiotics efficacy** in lowering **one depression vulnerability marker**.
- Trials conducted with **mouse model** determine the **positive effects of probiotics** and stimulation of **signaling pathways of brain-derived neurotrophic factor** and **toll-like receptor 4** molecules.



Research in the cognitive benefits segment requires multiple studies and clinical trials for validation of results

Research in probiotics derived cognitive benefits in the year 2019

Title Of Study: Gut feelings: A randomized, triple-blind, placebo-controlled trial of probiotics for depressive symptoms

Abstract: The study was conducted to research the **effects of probiotics supplement consumption on patients suffering from depressive symptoms**. 71 participants were randomly given either probiotic or placebo daily for over eight weeks. The pre and post probiotic consumption symptoms, vulnerability markers of depression, and gut microbiota compositions were collated. The participants were also compared to a non-depressed control group on parameters such as psychological variables and gut microbiota.

Journal: Journal of Affective Disorders

Conclusions: The study revealed

- The gut **microbiota** composition **remained similar** between all the groups.
- The mild or moderately depressed group indicated a **lower cognitive reactivity score**, which is a **vulnerability marker of depression**.

Authors: Bahia Chahwan, Sophia Kwan et. al.

Universities Associated:



Other research on cognitive benefits:

- Mediterranean diet: The role of **long-chain** ω-3 fatty acids in fish; polyphenols in fruits, vegetables, cereals, coffee, tea, cacao and wine; probiotics and vitamins in prevention of stroke, age-related cognitive decline, and Alzheimer disease.

Title Of Study: Modulation of Hippocampal TLR4/BDNF Signal Pathway Using Probiotics is a Step Closer Towards Treating Cognitive Impairment in NASH Model

Abstract: The research studied the effect of probiotics on the progression of non-alcoholic steatohepatitis (NASH) and associated **cognitive dysfunction in rats**. 4 groups of male Wister rats were divided into Naive, **Lactobacillus Plantarum** EMCC-1039, NASH, and NASH+ **Lactobacillus Plantarum** EMCC-1039 groups. NASH was induced in mice by a high-fat diet. The body weight percentage changes, Lee index (LI), liver function tests were performed. The expression of signaling proteins such as BDNF (Brain-derived neurotrophic factor), TLR4 (Toll-like receptor 4) was quantified and histological studies and assessment of cognitive function were carried out.

Journal: Physiology & Behaviour

Conclusions: The conclusion of the study is

- Gut **dysbiosis-induced NASH** is associated with **cognitive impairment in Wistar rats**
- Supplementation with **Lactobacillus Plantarum** EMCC-1039 has **positive effect**, which **modulates** signalling pathways of **BDNF and TLR4**

Authors: Safaa K. Mohammed, Yosra M. Magdy et. al.

Universities Associated:



- Probiotics and **probiotics** as potential therapy for cognitive impairment.
- Probiotic **supplementation** improves the cognitive function and the anxiety-like behaviors in the stressed rats



FutureBridge Insights

- Patents published in Q4-2019 **claim improvement in immunity and cognitive health.**
- Patents pertaining to probiotics contain **multiple probiotics strains** as well as **multiple functional ingredients.**
- Patent publishing from **Asian countries** is increasing in Q4-2019, with the incorporation of probiotics in a variety of **foodstuffs** such as **ice-cream** and **drinks.**



Patents in the probiotic segment focus on claim-based products with multiple ingredients

Patents in probiotic segment for Q4-2019

Patent Number: [CN110432494A](#)

Patent Title: Probiotic composition and the application for preventing and treating infant's allergic eczema and/or diarrhea

Technology Overview

The objective of the patent is to provide a probiotic that **prevents allergic eczema and diarrhea in infants**. The probiotic is claimed to contain *Lactobacillus rhamnosus* HN001, *Bifidobacterium lactis* HN019 dextrin, galactooligosaccharide, and oligofructose.

Current Assignee



Guangzhou Proforcare Pharmaceuticals

Patent Number: [CN110339218A](#)

Patent Title: A kind of probiotic composition and its application in improvement is sleep disordered

Technology Overview

The probiotic is designed to **improve sleep in patients with sleep disorders and craniocerebral injury**. The probiotic contains *Bacillus acidi lactici* and *Rothia* spp.

Current Assignee



Niu Zhanfeng

Patent Number : [CN110354188A](#)

Patent Title: Method of preventing cancer probiotic emulsion

Technology Overview

The patent provides a probiotic and fruit containing powder that has **immunity-boosting and anti-cancer properties**. The powder contains inulin, dextrose, probiotic powder, ginseng, tragacanth, *Cordyceps* spp., *Aloe vera*, barbata, chrysanthemum, *Eucommia* spp., rain red algae ball, arrowroot, dates, *Rhodiola rosea*, snow lotus, and wolfberry.

Current Assignee



Zhao Jun

Other patents in probiotic segment:

- [WO2019191325A1](#): Microencapsulated Probiotic And Low-water-activity Compositions Containing The Same.
- [CN110463815A](#): A kind of freeze-drying crispy cone probiotics fruity full milk rouge ice cream and preparation method thereof.
- [BR102018006778A2](#): probiotic vegetable drink enriched with yam flour.
- [CN110354227A](#): Application containing soil material in the drug or health care product of prepreparation prevention and/or treatment immune system disorder disease.

Keywords for patent search: (Probiotics OR Synbiotics) AND (Immunity OR Cognitive OR brain OR Resistant OR mental OR stress)

Key: Individual Assignee

FutureBridge Insights

- Gut health and immunity benefits are the major accepted probiotic health claims in different geographies globally.
- Despite increasing research on various health benefits of probiotics, the **European Food Safety Authority** has **not approved health claims** for probiotic products.
- Asian countries such as **Japan** and **China** allow **digestion** and **immunity**-related probiotic health claims.



Regulations in various geographies accept immunity and digestive health claims



Probiotic functional claims geographical analysis

Probiotic health claim acceptance in different geographies

North America



US: Probiotic majority considered a **dietary supplement**. Dietary supplements should bear a note declaring the product has not been evaluated by the FDA.



Canada: Claims stating **general effect** (improves gut health, boosts immunity) are **not recommended**.

Europe



Ireland: Probiotic itself is considered as a **health claim**. Health claims for probiotics are generally not approved.



UK: All nutritional health claims are **assessed** by the European Food Safety Authority (EFSA), and if permitted to included in the **central list of permitted claims**.

FutureBridge Viewpoint

- Although **most regions accept digestive and immunity health claims**, **cognitive health claim is also on the rise**.
- Companies rely on **in-house research** and **peer-reviewed research** to back their functional claims such as cognitive health.

Asia-Pacific



Japan: Allows health claims such as increases intestinal beneficial bacteria, maintains intestine good health.



China: Specific probiotics allowed to carry **health claims** such as immunity and digestion.



Australia and New Zealand: Probiotics are regulated under **therapeutic goods or food products**, which are subjected to stricter guidelines.



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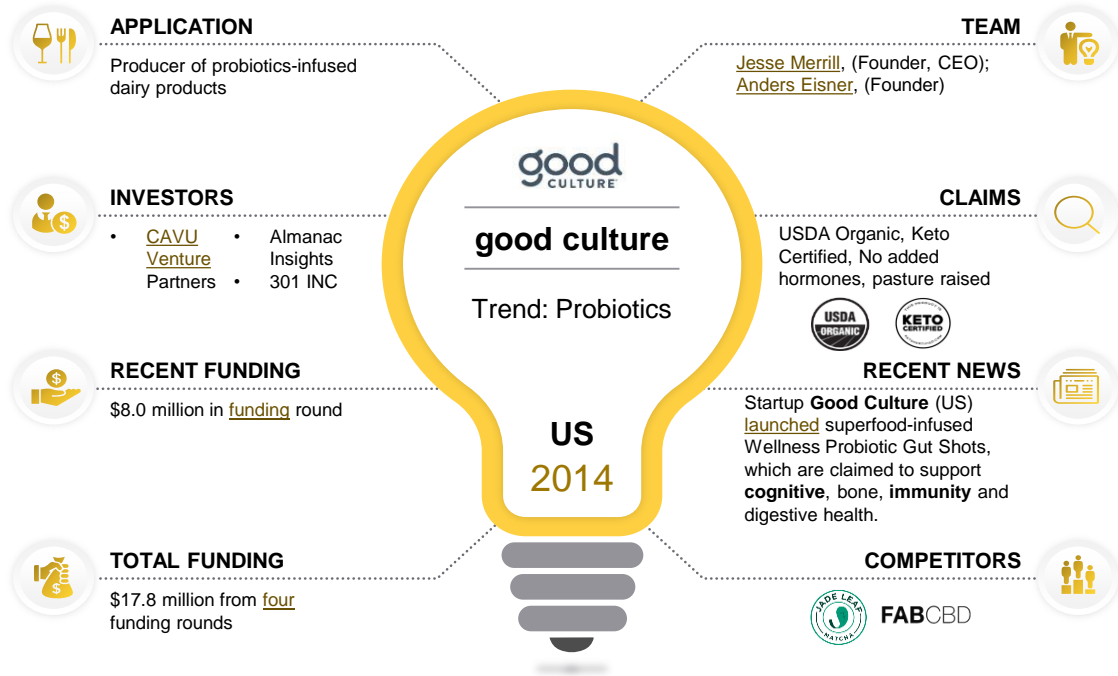
- Startup **good culture** produces functionally beneficial products infused with **superfoods** and **probiotics**. It has also received funding in the year 2019 to **expand its distribution** and **increase the presence** of its products.
- Claims such as **USDA organic** and **Keto Certified** help to make the product more popular amongst the **health-conscious population**.



Source: [good culture](#)

Startup good culture launched products with multiple functional ingredients such as probiotics and superfoods

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