The information and statistics set out in this section and other sections of this Document were extracted from the Frost & Sullivan Report, which was commissioned by us, and from various official government publications and other publicly available publications. We engaged Frost & Sullivan to prepare the Frost & Sullivan Report, an independent industry report, in connection with the [REDACTED]. The information from official government sources has not been independently verified by us, the Sole Sponsor, the [REDACTED], the [REDACTED], the [REDACTED], the [REDACTED]], the [REDACTED], any of their respective directors and advisers, or any other persons or parties involved in the [REDACTED], and no representation is given as to its accuracy.

OVERVIEW OF PROBIOTICS

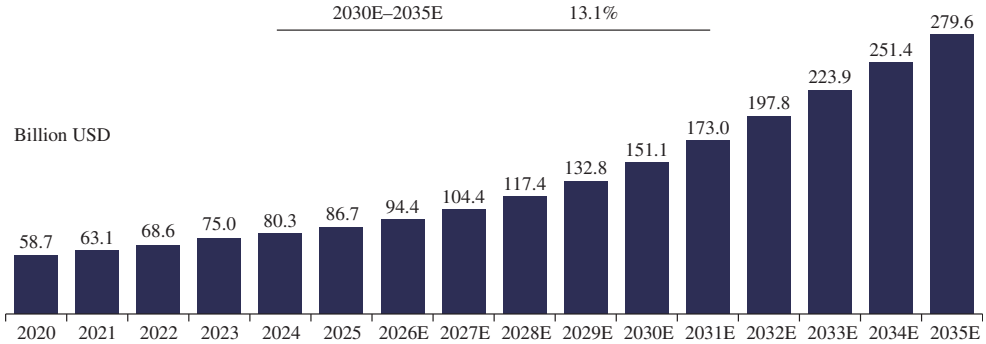
The 2001 Report of a Joint FAO/WHO Expert Consultation on Allergenicity of Foods Derived from Biotechnology defines probiotics as live microorganisms which, when administered in adequate amounts, confer a health benefit on the host.

MARKET SIZE OF PROBIOTICS END PRODUCT

The global probiotic end products market has experienced robust expansion in recent years. The total market size increased from US$58.7 billion in 2020 to US$86.7 billion in 2025, representing a CAGR of 8.1% from 2020 to 2025. The market is projected to further expand to US$151.1 billion by 2030, with a CAGR of 11.8% from 2025 to 2030, and is expected to reach US$279.6 billion by 2035, reflecting a CAGR of 13.1% from 2030 to 2035.

Global Probiotic End Product Market Size, 2020–2035E

Period	CAGR
2020–2025	8.1%
2025–2030E	11.8%
2030E–2035E	13.1%



Source: Frost & Sullivan Analysis

CONNECTIONS BETWEEN PROBIOTIC STRAINS, PROBIOTIC SPECIES AND CULTURES AND PROBIOTIC RAW POWDER

Probiotic strains are individuals isolated from bacterial species, possessing unique genetic characteristics and physiological functions. The efficacy of probiotics is strain-specific. Probiotic species and cultures denotes a biological classification unit comprising multiple closely related strains with similar characteristics. Probiotic raw powder refers to a high-concentration, high-viability

intermediate obtained through fermentation technology, specifically used in the production of probiotic powder and formula products. It serves as the base material intended for application across the human health, dairy, agriculture and other sectors.

APPLICATIONS OF PROBIOTICS

Probiotics have a wide range of applications in daily life, spanning human health (such as dietary supplements and functional foods), dairy, agriculture (such as beneficial microbial strains), and pharmaceutical products.

In the human health sector, probiotics are frequently incorporated into dietary supplements and functional foods to promote gut microbiota balance and deliver health benefits. In the dairy sector, raw milk is co-fermented with probiotics (such as lactic acid bacteria) to produce acidic dairy products, commonly including fermented milk, yogurt, cheese, and lactic acid bacteria beverages. In the agriculture sector, probiotics are utilized in crop cultivation and livestock farming encompassing bio-feed, silage feed, and pet probiotic products, to enhance the health of both animals and plants. In the pharmaceutical sector, specific probiotic strains are formulated into products targeting conditions like irritable bowel syndrome, enteritis, and constipation, helping to alleviate symptoms and restore microbial balance. Overall, probiotics exhibit distinct mechanisms of action across these diverse applications, demonstrating their extensive market potential and versatility in improving health and well-being.

ANALYSIS OF THE PROBIOTICS INDUSTRY CHAIN

The upstream segment focuses on raw material supply and strain development. Key inputs include fermentation raw materials such as peptone, yeast extract, yeast powder, glucose and inorganic salt, as well as equipment like fermenters and culture devices.

The midstream segment centers on the R&D, probiotics powder production, and sales of probiotic raw materials. This stage begins with strain extraction and cultivation, followed by initial processing of key inputs, including fermentation, centrifugation, emulsification, encapsulation, freezing, and drying, to produce probiotic raw powder as the core intermediate. The probiotic raw powder is further processed into probiotic powder and probiotic formula.

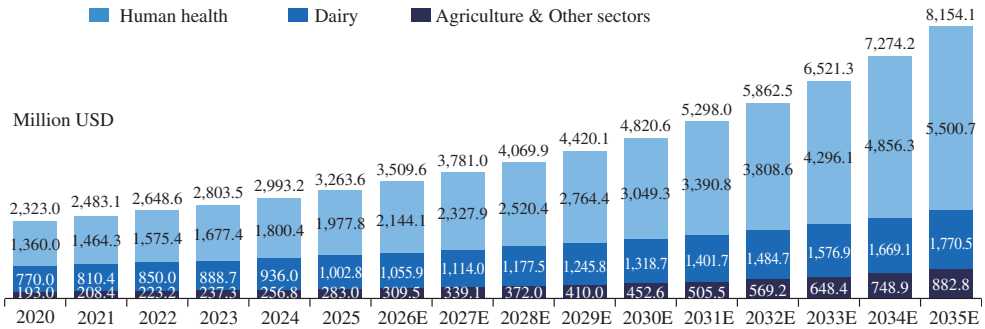
The downstream segment covers the application fields where probiotic raw materials are ultimately utilized, including probiotic foods, dietary supplements and agricultural applications. Downstream customers primarily consist of food and beverage manufacturers, probiotic end-product producers, and pet food producers, etc. End products are delivered to consumers through various channels, addressing health and nutrition needs.

MARKET SIZE OF GLOBAL PROBIOTIC RAW POWDER

The global probiotic raw powder market size increased from US$2,323.0 million in 2020 to US$3,263.6 million in 2025, representing a CAGR of 7.0% from 2020 to 2025. The market is projected to further expand to US$4,820.6 million by 2030, with a CAGR of 8.1% from 2025 to 2030, and reach US$8,154.1 million by 2035, reflecting a CAGR of 11.1% from 2030 to 2035. In 2025, the market of probiotic raw powder for human health, dairy, agriculture and other sectors reached US$1,977.8 million, US$1,002.8 million, and US$283.0 million, representing a CAGR of 7.8%, 5.4%, and 8.0% from 2020 to 2025, respectively. By 2030, these segments are projected to reach US$3,049.3 million, US$1,318.7 million, and US$452.6 million, with a CAGR of 9.0%, 5.6%, and 9.8% from 2025 to 2030, respectively. By 2035, they are expected to reach US$5,500.7 million, US$1,770.5 million, and US$882.8 million, reflecting a CAGR of 12.5%, 6.1%, and 14.3% from 2030 to 2035, respectively.

Global Probiotic Raw Powder Market Size, 2020–2035E

	CAGR			
Period	Human health	Dairy	Agriculture & Other sectors	Total
2020–2025	7.8%	5.4%	8.0%	7.0%
2025–2030E	9.0%	5.6%	9.8%	8.1%
2030E–2035E	12.5%	6.1%	14.3%	11.1%



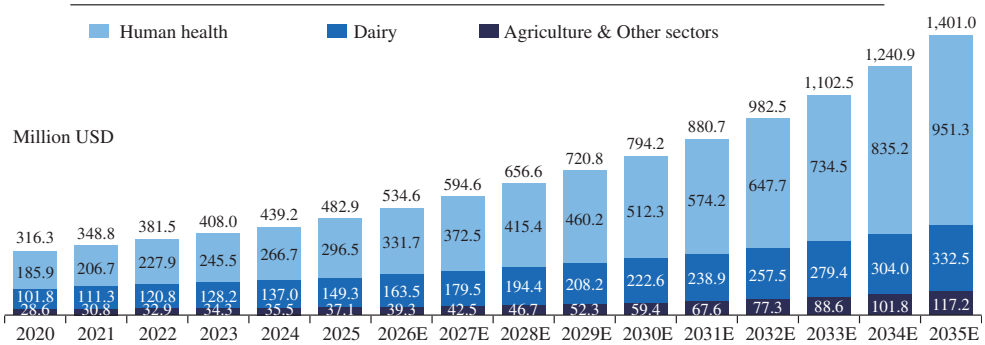
Note: The probiotic raw powder market size is calculated by multiplying the annual production volume of probiotic raw powder by the average selling price per ton among enterprises in the industry. The reason for using raw powder as the market size metric is that probiotic raw powder serves as a core intermediate in the industrial chain. After being diluted with excipients, it is processed into probiotic powder and probiotic formula, positioning it as a fundamental raw material in the upstream segment. Compared with probiotic powder and probiotic formula metrics, this approach more objectively reflects the true scale of the upstream raw material market.

Source: Frost & Sullivan Analysis

The China probiotic raw powder market size increased from US$316.3 million in 2020 to US$482.9 million in 2025, representing a CAGR of 8.8% from 2020 to 2025. The market is projected to further expand to US$794.2 million by 2030, with a CAGR of 10.5% from 2025 to 2030, and reach US$1,401.0 million by 2035, reflecting a CAGR of 12.0% from 2030 to 2035. In 2025, the market for human health, dairy, agriculture and other sectors reached US$296.5 million, US$149.3 million, and US$37.1 million, representing a CAGR of 9.8%, 8.0%, and 5.3% from 2020 to 2025, respectively. By 2030, these segments are projected to reach US$512.3 million, US$222.6 million, and US$59.4 million, with a CAGR of 11.6%, 8.3%, and 9.8% from 2025 to 2030, respectively. By 2035, they are expected to reach US$951.3 million, US$332.5 million, and US$117.2 million, reflecting CAGRs of 13.2%, 8.4%, and 14.6% from 2030 to 2035, respectively.

China Probiotic Raw Powder Market Size, 2020–2035E

	CAGR			
Period	Human Health	Dairy	Agriculture & Other sectors	Total
2020–2025	9.8%	8.0%	5.3%	8.8%
2025–2030E	11.6%	8.3%	9.8%	10.5%
2030E–2035E	13.2%	8.4%	14.6%	12.0%



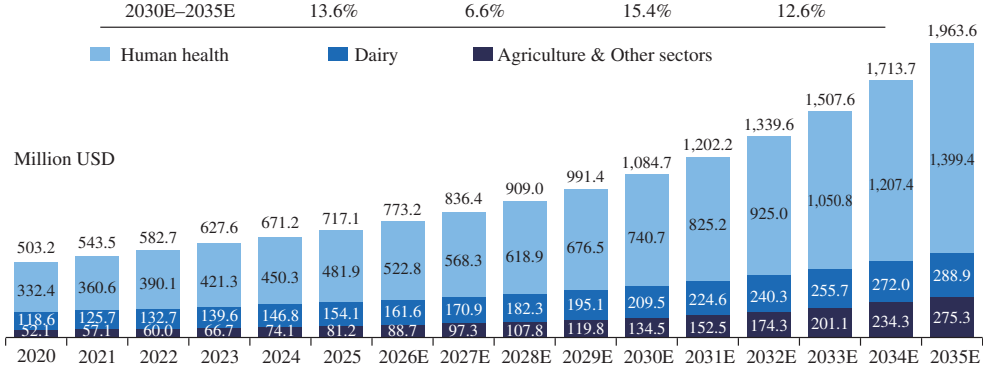
Note: The probiotic raw powder market size is calculated by multiplying the annual production volume of probiotic raw powder by the average selling price per ton among enterprises in the industry. The reason for using raw powder as the market size metric is that probiotic raw powder serves as a core intermediate in the industrial chain. After being diluted with excipients, it is processed into probiotic powder and probiotic formula, positioning it as a fundamental raw material in the upstream segment. Compared with probiotic powder and probiotic formula metrics, this approach more objectively reflects the true scale of the upstream raw material market.

Source: Frost & Sullivan Analysis

The North America probiotic raw powder market size increased to US$717.1 million in 2025, representing a CAGR of 7.3% from 2020 to 2025. The market is projected to further expand to US$1,084.7 million by 2030, with a CAGR of 8.6% from 2025 to 2030, and reach US$1,963.6 million by 2035, reflecting a CAGR of 12.6% from 2030 to 2035. In 2025, the market for human health, dairy, agriculture and other sectors reached US$481.9 million, US$154.1 million, and US$81.2 million, representing a CAGR of 7.7%, 5.4%, and 9.3% from 2020 to 2025, respectively. By 2030, these segments are projected to reach US$740.7 million, US$209.5 million, and US$134.5 million, with a CAGR of 9.0%, 6.3%, and 10.6% from 2025 to 2030, respectively. By 2035, they are expected to reach US$1,399.4 million, US$288.9 million, and US$275.3 million, reflecting a CAGR of 13.6%, 6.6%, and 15.4% from 2030 to 2035, respectively.

North America Probiotic Raw Powder Market Size, 2020–2035E

	CAGR			
Period	Human health	Dairy	Agriculture & Other sectors	Total
2020–2025	7.7%	5.4%	9.3%	7.3%
2025–2030E	9.0%	6.3%	10.6%	8.6%
2030E–2035E	13.6%	6.6%	15.4%	12.6%



Note: The probiotic raw powder market size is calculated by multiplying the annual production volume of probiotic raw powder by the average selling price per ton among enterprises in the industry. The reason for using raw powder as the market size metric is that probiotic raw powder serves as a core intermediate in the industrial chain. After being diluted with excipients, it is processed into probiotic powder and probiotic formula, positioning it as a fundamental raw material in the upstream segment. Compared with probiotic powder and probiotic formula metrics, this approach more objectively reflects the true scale of the upstream raw material market.

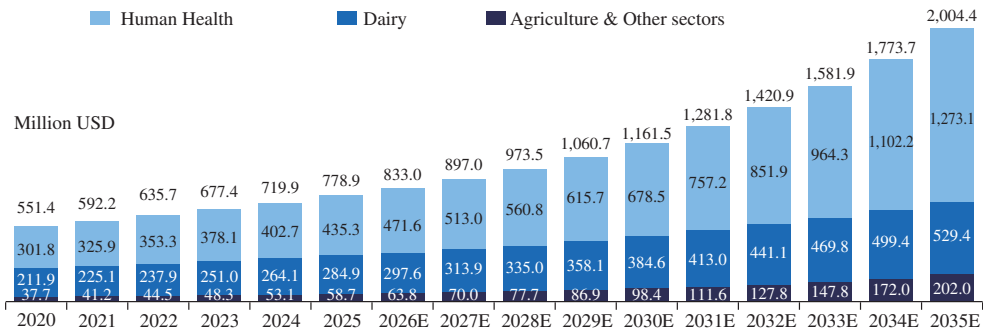
Source: Frost & Sullivan Analysis

The Europe probiotic raw powder market size increased from US$551.4 million in 2020 to US$778.9 million in 2025, representing a CAGR of 7.2% from 2020 to 2025. The market is projected to further expand to US$1,161.5 million by 2030, with a CAGR of 8.3% from 2025 to 2030, and reach US$2,004.4 million by 2035, reflecting a CAGR of 11.5% from 2030 to 2035. In 2025, the market for human health, dairy, agriculture and other sectors reached US$435.3 million, US$284.9 million, and US$58.7 million, representing a CAGR of 7.6%, 6.1%, and 9.3% from 2020 to 2025, respectively. By 2030, these segments are projected to reach US$678.5 million, US$384.6 million, and US$98.4 million,

with a CAGR of 9.3%, 6.2%, and 10.9% from 2025 to 2030, respectively. By 2035, they are expected to reach US$1,273.1 million, US$529.4 million, and US$202.0 million, reflecting a CAGR of 13.4%, 6.6%, and 15.5% from 2030 to 2035, respectively.

Europe Probiotic Raw Powder Market Size, 2020–2035E

	CAGR			
Period	Human health	Dairy	Agriculture & Other sectors	Total
2020–2025	7.6%	6.1%	9.3%	7.2%
2025–2030E	9.3%	6.2%	10.9%	8.3%
2030E–2035E	13.4%	6.6%	15.5%	11.5%



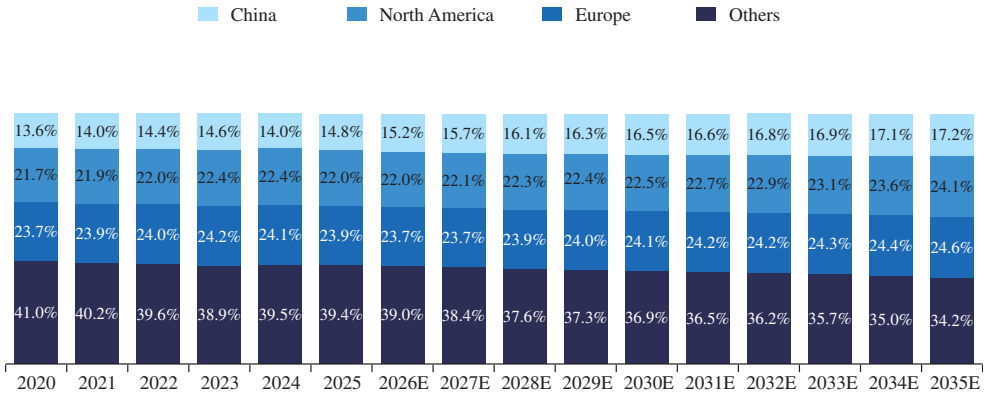
Note: The probiotic raw powder market size is calculated by multiplying the annual production volume of probiotic raw powder by the average selling price per ton among enterprises in the industry. The reason for using raw powder as the market size metric is that probiotic raw powder serves as a core intermediate in the industrial chain. After being diluted with excipients, it is processed into probiotic powder and probiotic formula, positioning it as a fundamental raw material in the upstream segment. Compared with probiotic powder and probiotic formula metrics, this approach more objectively reflects the true scale of the upstream raw material market.

Source: Frost & Sullivan Analysis

GLOBAL PROBIOTIC RAW POWDER MARKET BREAKDOWN BY REGION

The global probiotic raw powder market has demonstrated distinct regional growth trends over the forecast period. In terms of regional share, Europe accounted for the largest proportion of 23.9% in 2025, followed by North America at 22.0% and China at 14.8%. It is expected that by 2030, their proportions will change to 24.1%, 22.5%, and 16.5%, respectively.

Global Probiotic Raw Powder Market Breakdown by Region, 2020–2035E



Source: Frost & Sullivan Analysis

ENTRY BARRIERS IN THE DEVELOPMENT OF THE PROBIOTIC RAW POWDER INDUSTRY

The development of the probiotics industry faces a range of complex challenges including technology, industrialization, raw material supply, and regulatory frameworks.

- **Technical and R&D Challenges.** When benchmarked against internationally leading standards, domestic probiotic strains exhibit gaps in key areas such as clinical validation, mechanism research, and application translation. Furthermore, probiotics demonstrate low survival rates when exposed to harsh human environments like gastric acid and bile, necessitating advanced protective technologies such as microencapsulation, freeze-drying, and coating techniques to enhance their activity under acidic and high-temperature conditions. Achieving these technological breakthroughs requires substantial time, financial investment, and interdisciplinary expertise. Concurrently, domestic enterprises lack sufficient industrial-scale production capacity for probiotic strains, resulting in persistent reliance on imported premium strains for numerous commercial products. This reliance incurs substantial licensing fees and patent royalties, elevating production costs for local firms and compressing profit margins.

- **Industrialization and Product Efficacy Challenges.** The current market suffers from inconsistent quality among probiotic products, with the presence of low-quality products undermining the credibility of the entire industry. Many products still advertise "tens of billions" or "hundreds of billions" of live bacteria as a marketing gimmick, yet such claims often fail to translate into actual health benefits due to poor strain stability or inadequate formulation. More concerning is that the viable count in some products significantly declines within their shelf life due to improper storage, transportation conditions, or lack of proper packaging. Low-dose or poorly protected live bacteria products are often insufficient to overcome the digestive tract's barriers, failing to reach the intestines in adequate numbers to confer the desired effects. This efficacy gap erodes consumer trust and hampers long-term industry growth.

- **Industry Regulation and Standards.** Probiotic policies and regulatory requirements vary significantly across jurisdictions, imposing compliance burdens on multinational corporations seeking global market access. Whilst some countries have established standards for probiotic products, achieving universal harmonization remains challenging due to divergent scientific interpretations, cultural practices, and consumer protection philosophies. In China, the

regulatory framework for probiotics remains in its developmental phase, lacking clear guidance on key aspects such as the definition of probiotic additives in ordinary foods, permissible dosage levels, permissible health claims, and safety assessment protocols.

GROWTH DRIVERS OF PROBIOTIC RAW POWDER MARKET

The growth of the probiotics market is expected to be driven by the following factors:

- **Increasing Demand.** The global aging trend is becoming increasingly pronounced and continues to rise, with the demand for "healthy aging" fostering a rigid market for probiotics. Population aging has become a key driver of the expansion of the probiotics market. It not only generates substantial underlying demand but also propels product development towards greater precision and sophistication. As the size of the elderly population grows worldwide, including in China, age-related health issues such as functional decline caused by gut microbiota imbalance, reduced immune function, and metabolic diseases. This creates a scenario of rigid demand for probiotic products.

- **Technological Innovation.** Scientific and technological innovation permeates all segments of the probiotic industry chain, from strain research and development to dosage form optimization, continuously enhancing product competitiveness. The encapsulation process achieved high survival rates, low moisture content, and low water activity, ensuring long-term stability. Research on the gut microbiota of the Chinese population provides a pivotal point for Chinese probiotic products to substitute foreign strains. Innovations in production technology also meet consumer demands for different usage scenarios. For example, some domestic enterprises have established large-scale strain resource banks, screening indigenous strains adapted to the intestinal environment of the Chinese population. These strains demonstrate unique advantages in regulating intestinal function and enhancing immunity.

- **Favorable Policy.** A favorable policy environment and the refinement of standards have facilitated rapid industry development and promoted healthy market competition. Europe and the U.S. enforce stringent strain approval and labeling systems, with the European Union clearly defining the scope of permitted probiotic function claims. Policies across various countries focus on industry standardization. China has introduced multiple policies to propel the probiotics industry forward, such as Opinion of the State Council on Implementing the Healthy China Initiative《國務院關於實施健康中國行動的意見》, Proposal of the Central Committee of the Communist Party of China on Formulating the Outline for the 15th Five-Year Plan for National Economic and Social Development.《中共中央關於制定國民經濟和社會發展第十五個五年規劃的建議》proactively charts the course for future industries, propelling sectors such as biomanufacturing to become new engines of economic growth. Policies such as the List of Bacterial Species Permitted for Use in Food《可用於食品的菌種名單》, the List of Bacterial Species That Can Be Used in Infant and Young Children Food《可用於嬰幼兒食品的菌種名單》 and the Regulations for the Application and Evaluation of Probiotic Health Foods《益生菌類保健食品申報與審評規定》 have clarified product entry thresholds.

FUTURE TRENDS OF PROBIOTIC RAW POWDER MARKET

The future trends of the probiotics market are primarily reflected in the following aspects:

- **Technology-Driven Innovation Acceleration.** Breakthroughs in efficient production techniques, including advances in encapsulation technology and optimization of freeze-drying protectants, have markedly enhanced probiotic survival rates under ambient conditions. This has overcome cold chain transportation bottlenecks, reducing both production costs and logistical complexity.

- **Developing towards personalization and contextualization.** With the proliferation of genetic testing technologies and advancements in big data analytics, enterprises can now tailor probiotic solutions based on individual gut microbiome characteristics, genetic profiles, and lifestyle patterns. By focusing on innovative operations and core manufacturing capabilities, and adopting differentiated positioning and competitive strategies, these companies have transcended traditional gut health domains. They are now expanding into multi-dimensional applications encompassing immune enhancement, skin management, emotional regulation, and weight control.

- **Progress in Regulatory Frameworks.** Governments and industry organizations worldwide are strengthening regulatory systems for probiotics by establishing stringent guidelines for strain safety, efficacy assessment, and product standards. These measures help standardize market practices and protect consumer rights. Stricter regulatory requirements encourage greater investment in R&D, drive improvements in product quality and technology, and promote the industry's development toward higher standards and standardization.

GLOBAL RANKING OF ENTERPRISES BY PROBIOTIC RAW PRODUCTION VOLUME

Probiotic raw powder is a critical material for all downstream productions including probiotic powder, probiotic formula and probiotic end product. As illustrated by below table, we ranked third globally and first in Asia in 2025 by probiotic raw powder production volume, with a total production volume of 328 tons.

Global Ranking of Enterprises by Probiotic Raw Powder Production Volume, 2025

Rank	Company	Probiotic Raw Powder Production Volume (Unit: Ton)
1	Company A	2,200
2	Company B	1,800
3	The Group	328
4	Company C	300
5	Company D	100

Source: Frost & Sullivan Analysis

Note: The following table sets forth the background information of other competitors.

Company	Background
Company A	A company based in Denmark, founded in 2024 through the merger of two biotechnology companies (established in 1874 and 1921, respectively), provides probiotic strains, innovative human milk oligosaccharides (HMOs) and advanced protein solutions, and has consistently delivered a series of transformative biological solutions through its advanced bio-enzyme products and application technologies.
Company B	A company based in Denmark, founded in 1989, is primarily engaged in the research, development, manufacturing, and distribution of food additives, sweeteners, emulsifiers, probiotics, and enzyme preparations.
Company C	A company based in Canada, founded in 1915, is primarily engaged in the R&D, production and marketing of yeast, bacteria and their derivatives.
Company D	A company based in Italy, founded in 2016, is primarily engaged in the R&D and production of lactic acid starter cultures, probiotics, postbiotics and enzymes for food, nutrition, pharmaceutical and agricultural veterinary sectors.

RANKING OF ENTERPRISES BY PROBIOTIC RAW POWDER PRODUCTION VOLUME IN CHINA

The table below shows the top five manufacturers of probiotic raw powder in China. The Group ranked first in terms of probiotic raw powder production volume in 2025, with a total production volume of 328 tons. The Group's probiotic raw powder production volume is notably higher than that of its competitors, reflecting its strong position in China's probiotic raw powder market.

Ranking of Enterprises by Probiotic Raw Powder Production Volume in China, 2025

Rank	Company	Probiotic Raw Powder Production Volume (Unit: Ton)
1	The Group	328
2	Company E	75
3	Company F	55
4	Company G	40
5	Company H	35

Source: Frost & Sullivan Analysis

Note: The following table sets forth the background information of other competitors.

Company	Background
Company E	An A-share listed company based in PRC, founded in 2003 and listed in 2020, is primarily engaged in the R&D, production and sales of edible probiotic products, animal and plant microecological preparations, and compound food additives.
Company F	A company based in PRC, founded in 2011, is primarily engaged in the research and industrialization of probiotics and lactic acid bacteria, and delivers probiotic raw materials, innovative probiotic-fermented traditional Chinese medicine products, and a comprehensive customer service system.
Company G	A company based in PRC, founded in 2006, is primarily engaged in products including probiotic powders, starter cultures, functional foods, and related derivatives, which are widely used in food, pharmaceuticals, daily chemicals, aquaculture, and many other fields.
Company H	A company based in PRC, founded in 2008, specializes in the R&D of functional probiotics, providing premium lactic acid bacteria, postbiotics, concentrated fermentation solutions, and probiotic raw materials for conventional and health food applications.

PRICE ANALYSIS OF RAW MATERIALS FOR PROBIOTIC RAW POWDER PRODUCTION

The upstream supply chain of probiotic raw material powder consists of glucose, peptone, yeast extract, inorganic salts and other bulk raw material manufacturers. These raw materials are all commonly traded commodities with sufficient supply and stable pricing. Historically, minor price fluctuations are primarily attributable to: (1) Commodity Linkage: Raw material prices are subject to agricultural cycle fluctuations; (2) Capacity Flexibility: Low barriers to capacity expansion result in rapid supply-side adjustments; (3) Seasonal Patterns: Price volatility is typically concentrated during peak procurement periods and new crop marketing seasons.

China's average cost of major raw materials for probiotic raw powder (RMB/Ton)*	2023	2024	2025
glucose	~3,600–3,800/ton	~3,500–3,600/ton	~3,300–3,400/ton
yeast extract	~4,000–5,000/ton	~4,500–5,500/ton	~5,000–6,000/ton
peptone	~3,000–3,500/ton	~3,500–4,000/ton	~3,500–4,500/ton
inorganic salt (e.g., magnesium sulfate)	~600–700/ton	~500–800/ton	~550–900/ton

**Note:* The price of a specific product depends on brand, seasonal supply, and other factors.

SOURCE OF INFORMATION

We engaged Frost & Sullivan, a market research consultant, to prepare the Frost & Sullivan Report for use in this Document. The information from Frost & Sullivan disclosed in this Document is extracted from the Frost & Sullivan Report and is disclosed with the consent of Frost & Sullivan. In preparing the Frost & Sullivan Report, Frost & Sullivan collected and reviewed publicly available data such as government-derived information, annual reports, trade and medical journals, industry reports and other available information gathered by not-for-profit organizations as well as market data collected by conducting interviews with industry key opinion leaders. Frost & Sullivan has exercised due care in collecting and reviewing the information so collected and independently analyzed the information, but the accuracy of the conclusions of its review largely relies on the accuracy of the information collected. We agreed to pay Frost & Sullivan a fee of RMB680,000 for the preparation and update of the Frost & Sullivan Report, which is not contingent on the **[REDACTED]** proceeding.