

Global Bio-fermented Alanyl-Glutamine Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global Bio-fermented Alanyl-Glutamine market size is expected to reach \$ 158 million by 2032, rising at a market growth of 6.1% CAGR during the forecast period (2026-2032).

In 2025, the global sales volume of bio-fermented Alanyl-Glutamine reached 966 metric tons, with an average price of \$103.1 per kilogram.

Alanyl-Glutamine (Ala-Gln) is a dipeptide compound formed by linking alanine and glutamine via a peptide bond. As a stable derivative of glutamine, it overcomes the limitations of free glutamine?specifically its low water solubility and poor stability (free glutamine decomposes into glutamic acid or cyclizes into pyrrolidone carboxylic acid under acidic or alkaline conditions and at elevated temperatures). Offering superior water solubility and thermal stability, it serves as a commonly used 'conditionally essential amino acid' supplement in clinical nutritional support.

The bio-fermentation method utilizes genetically engineered microorganisms (such as *Corynebacterium glutamicum* or *Escherichia coli*) as 'cell factories.' Within a fermenter, microbial metabolism converts carbon sources (e.g., glucose) into the target product. Compared to chemical synthesis and enzymatic methods, fermentation offers advantages such as mild reaction conditions, low costs, high product purity, and environmental friendliness, making it the mainstream process for industrial production.

The raw material system for bio-fermented Alanyl-Glutamine comprises four main categories: carbon sources, nitrogen sources, inorganic salts and trace elements, and growth factors. Carbon sources are the most critical raw materials in the fermentation process, primarily derived from the deep processing of agricultural products such as

corn, soybeans, and wheat. Glucose is the most commonly used carbon source?typically prepared from corn starch?and the efficiency of its conversion directly impacts final yield and production costs. Additionally, to reduce raw material expenses, some companies are exploring the use of agricultural wastes or by-products?such as corn stover enzymatic hydrolysate, rice bran extract, and molasses?as partial substitutes for traditional carbon sources; these alternatives not only lower costs but also facilitate resource recycling. Nitrogen sources?such as soybean meal, yeast extract, fish bone hydrolysate, corn steep liquor, and ammonium sulfate?provide the essential nitrogen required for microbial growth and amino acid synthesis. Although inorganic salts and trace elements (e.g., potassium dihydrogen phosphate, magnesium sulfate, zinc carbonate, manganese sulfate, copper sulfate, iron sulfate) and growth factors (e.g., vitamin B1, biotin) are used in small quantities, they play a critical regulatory role in microbial metabolism and product synthesis, making them indispensable.

In terms of cost structure, raw materials typically account for 40%?60% of the total cost of amino acid production via fermentation, with carbon sources (glucose) and nitrogen sources representing the largest expenditures. Energy costs (steam and electricity for sterilization, temperature control, agitation, etc.) account for approximately 15%?25%; the fermentation process requires strict maintenance of temperature, pH, and dissolved oxygen levels, resulting in high energy consumption. Equipment depreciation and maintenance costs?including the amortization of investments in fermenters and separation/purification equipment (such as ion-exchange columns and membrane filtration systems)?account for about 10%?15%. Labor and management costs make up roughly 5%?10%. Additionally, downstream extraction and purification costs (e.g., isoelectric point precipitation, ion exchange, flocculation for cell removal, crystallization, and drying) constitute a significant portion of the total cost, as the efficiency of extraction directly impacts the final yield and cost-effectiveness. Overall, the fermentation method offers significant cost advantages over chemical synthesis; it utilizes renewable agricultural products and is environmentally friendly. Furthermore, continuous improvements in strain engineering and process optimization?leading to higher sugar-to-acid conversion rates and extraction yields?will further reduce unit production costs.

This report studies the global Bio-fermented Alanine-Glutamine production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for Bio-fermented Alanine-Glutamine and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends

and competition, as well as details the characteristics of Bio-fermented Alanyl-Glutamine that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global Bio-fermented Alanyl-Glutamine total production and demand, 2021-2032, (Tons)

Global Bio-fermented Alanyl-Glutamine total production value, 2021-2032, (USD Million)

Global Bio-fermented Alanyl-Glutamine production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Tons), (based on production site)

Global Bio-fermented Alanyl-Glutamine consumption by region & country, CAGR, 2021-2032 & (Tons)

U.S. VS China: Bio-fermented Alanyl-Glutamine domestic production, consumption, key domestic manufacturers and share

Global Bio-fermented Alanyl-Glutamine production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Tons)

Global Bio-fermented Alanyl-Glutamine production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

Global Bio-fermented Alanyl-Glutamine production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Tons)

This report profiles key players in the global Bio-fermented Alanyl-Glutamine market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include Ajinomoto, Kyowa Hakko Bio, Wuhan Microsen Technology, Jiangsu Chengxin Pharmaceutical, Jingjing Pharmaceutical, Shandong Chenlong Pharmaceutical, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World Bio-fermented Alanyl-Glutamine market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (Tons) and average price (US\$/kg) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the

forecast year.

Global Bio-fermented Alanyl-Glutamine Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global Bio-fermented Alanyl-Glutamine Market, Segmentation by Type:

Enzymatic Method

Fermentation Method

Global Bio-fermented Alanyl-Glutamine Market, Segmentation by Grade:

Pharmaceutical Grade

Food Grade

Feed Grade

Global Bio-fermented Alanyl-Glutamine Market, Segmentation by Strains:

CorynebacteriumGlutamicum

Escherichia Coli

Brevibacterium Flavum

Global Bio-fermented Alanyl-Glutamine Market, Segmentation by Application:

Pharmaceuticals Industry

Food & Beverages

Sports Nutrition & Supplements

Animal Feed

Others

Companies Profiled:

Ajinomoto

Kyowa Hakko Bio

Wuhan Microsen Technology

Jiangsu Chengxin Pharmaceutical

Jingjing Pharmaceutical

Shandong Chenlong Pharmaceutical

Key Questions Answered:

1. How big is the global Bio-fermented Alanyl-Glutamine market?
2. What is the demand of the global Bio-fermented Alanyl-Glutamine market?
3. What is the year over year growth of the global Bio-fermented Alanyl-Glutamine

market?

4. What is the production and production value of the global Bio-fermented Alanyl-Glutamine market?
5. Who are the key producers in the global Bio-fermented Alanyl-Glutamine market?
6. What are the growth factors driving the market demand?

Contents

1 SUPPLY SUMMARY

- 1.1 Bio-fermented Alanyl-Glutamine Introduction
- 1.2 World Bio-fermented Alanyl-Glutamine Supply & Forecast
 - 1.2.1 World Bio-fermented Alanyl-Glutamine Production Value (2021 & 2025 & 2032)
 - 1.2.2 World Bio-fermented Alanyl-Glutamine Production (2021-2032)
 - 1.2.3 World Bio-fermented Alanyl-Glutamine Pricing Trends (2021-2032)
- 1.3 World Bio-fermented Alanyl-Glutamine Production by Region (Based on Production Site)
 - 1.3.1 World Bio-fermented Alanyl-Glutamine Production Value by Region (2021-2032)
 - 1.3.2 World Bio-fermented Alanyl-Glutamine Production by Region (2021-2032)
 - 1.3.3 World Bio-fermented Alanyl-Glutamine Average Price by Region (2021-2032)
 - 1.3.4 North America Bio-fermented Alanyl-Glutamine Production (2021-2032)
 - 1.3.5 Japan Bio-fermented Alanyl-Glutamine Production (2021-2032)
 - 1.3.6 China Bio-fermented Alanyl-Glutamine Production (2021-2032)
- 1.4 Market Drivers, Restraints and Trends
 - 1.4.1 Bio-fermented Alanyl-Glutamine Market Drivers
 - 1.4.2 Factors Affecting Demand
 - 1.4.3 Bio-fermented Alanyl-Glutamine Major Market Trends

2 DEMAND SUMMARY

- 2.1 World Bio-fermented Alanyl-Glutamine Demand (2021-2032)
- 2.2 World Bio-fermented Alanyl-Glutamine Consumption by Region
 - 2.2.1 World Bio-fermented Alanyl-Glutamine Consumption by Region (2021-2026)
 - 2.2.2 World Bio-fermented Alanyl-Glutamine Consumption Forecast by Region (2027-2032)
- 2.3 United States Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.4 China Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.5 Europe Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.6 Japan Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.7 South Korea Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.8 ASEAN Bio-fermented Alanyl-Glutamine Consumption (2021-2032)
- 2.9 India Bio-fermented Alanyl-Glutamine Consumption (2021-2032)

3 WORLD MANUFACTURERS COMPETITIVE ANALYSIS

- 3.1 World Bio-fermented Alanyl-Glutamine Production Value by Manufacturer (2021-2026)
- 3.2 World Bio-fermented Alanyl-Glutamine Production by Manufacturer (2021-2026)
- 3.3 World Bio-fermented Alanyl-Glutamine Average Price by Manufacturer (2021-2026)
- 3.4 Bio-fermented Alanyl-Glutamine Company Evaluation Quadrant
- 3.5 Industry Rank and Concentration Rate (CR)
 - 3.5.1 Global Bio-fermented Alanyl-Glutamine Industry Rank of Major Manufacturers
 - 3.5.2 Global Concentration Ratios (CR4) for Bio-fermented Alanyl-Glutamine in 2025
 - 3.5.3 Global Concentration Ratios (CR8) for Bio-fermented Alanyl-Glutamine in 2025
- 3.6 Bio-fermented Alanyl-Glutamine Market: Overall Company Footprint Analysis
 - 3.6.1 Bio-fermented Alanyl-Glutamine Market: Region Footprint
 - 3.6.2 Bio-fermented Alanyl-Glutamine Market: Company Product Type Footprint
 - 3.6.3 Bio-fermented Alanyl-Glutamine Market: Company Product Application Footprint
- 3.7 Competitive Environment
 - 3.7.1 Historical Structure of the Industry
 - 3.7.2 Barriers of Market Entry
 - 3.7.3 Factors of Competition
- 3.8 New Entrant and Capacity Expansion Plans
- 3.9 Mergers, Acquisition, Agreements, and Collaborations

4 UNITED STATES VS CHINA VS REST OF THE WORLD

- 4.1 United States VS China: Bio-fermented Alanyl-Glutamine Production Value Comparison
 - 4.1.1 United States VS China: Bio-fermented Alanyl-Glutamine Production Value Comparison (2021 & 2025 & 2032)
 - 4.1.2 United States VS China: Bio-fermented Alanyl-Glutamine Production Value Market Share Comparison (2021 & 2025 & 2032)
- 4.2 United States VS China: Bio-fermented Alanyl-Glutamine Production Comparison
 - 4.2.1 United States VS China: Bio-fermented Alanyl-Glutamine Production Comparison (2021 & 2025 & 2032)
 - 4.2.2 United States VS China: Bio-fermented Alanyl-Glutamine Production Market Share Comparison (2021 & 2025 & 2032)
- 4.3 United States VS China: Bio-fermented Alanyl-Glutamine Consumption Comparison
 - 4.3.1 United States VS China: Bio-fermented Alanyl-Glutamine Consumption Comparison (2021 & 2025 & 2032)
 - 4.3.2 United States VS China: Bio-fermented Alanyl-Glutamine Consumption Market Share Comparison (2021 & 2025 & 2032)
- 4.4 United States Based Bio-fermented Alanyl-Glutamine Manufacturers and Market

Share, 2021-2026

4.4.1 United States Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (States, Country)

4.4.2 United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value (2021-2026)

4.4.3 United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production (2021-2026)

4.5 China Based Bio-fermented Alanyl-Glutamine Manufacturers and Market Share

4.5.1 China Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (Province, Country)

4.5.2 China Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value (2021-2026)

4.5.3 China Based Manufacturers Bio-fermented Alanyl-Glutamine Production (2021-2026)

4.6 Rest of World Based Bio-fermented Alanyl-Glutamine Manufacturers and Market Share, 2021-2026

4.6.1 Rest of World Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (State, Country)

4.6.2 Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value (2021-2026)

4.6.3 Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production (2021-2026)

5 MARKET ANALYSIS BY TYPE

5.1 World Bio-fermented Alanyl-Glutamine Market Size Overview by Type: 2021 VS 2025 VS 2032

5.2 Segment Introduction by Type

5.2.1 Enzymatic Method

5.2.2 Fermentation Method

5.3 Market Segment by Type

5.3.1 World Bio-fermented Alanyl-Glutamine Production by Type (2021-2032)

5.3.2 World Bio-fermented Alanyl-Glutamine Production Value by Type (2021-2032)

5.3.3 World Bio-fermented Alanyl-Glutamine Average Price by Type (2021-2032)

6 MARKET ANALYSIS BY GRADE

6.1 World Bio-fermented Alanyl-Glutamine Market Size Overview by Grade: 2021 VS 2025 VS 2032

6.2 Segment Introduction by Grade

6.2.1 Pharmaceutical Grade

6.2.2 Food Grade

6.2.3 Feed Grade

6.3 Market Segment by Grade

6.3.1 World Bio-fermented Alanyl-Glutamine Production by Grade (2021-2032)

6.3.2 World Bio-fermented Alanyl-Glutamine Production Value by Grade (2021-2032)

6.3.3 World Bio-fermented Alanyl-Glutamine Average Price by Grade (2021-2032)

7 MARKET ANALYSIS BY STRAINS

7.1 World Bio-fermented Alanyl-Glutamine Market Size Overview by Strains: 2021 VS 2025 VS 2032

7.2 Segment Introduction by Strains

7.2.1 CorynebacteriumGlutamicum

7.2.2 Escherichia Coli

7.2.3 Brevibacterium Flavum

7.3 Market Segment by Strains

7.3.1 World Bio-fermented Alanyl-Glutamine Production by Strains (2021-2032)

7.3.2 World Bio-fermented Alanyl-Glutamine Production Value by Strains (2021-2032)

7.3.3 World Bio-fermented Alanyl-Glutamine Average Price by Strains (2021-2032)

8 MARKET ANALYSIS BY APPLICATION

8.1 World Bio-fermented Alanyl-Glutamine Market Size Overview by Application: 2021 VS 2025 VS 2032

8.2 Segment Introduction by Application

8.2.1 Pharmaceuticals Industry

8.2.2 Food & Beverages

8.2.3 Sports Nutrition & Supplements

8.2.4 Animal Feed

8.2.5 Others

8.3 Market Segment by Application

8.3.1 World Bio-fermented Alanyl-Glutamine Production by Application (2021-2032)

8.3.2 World Bio-fermented Alanyl-Glutamine Production Value by Application (2021-2032)

8.3.3 World Bio-fermented Alanyl-Glutamine Average Price by Application (2021-2032)

9 COMPANY PROFILES

9.1 Ajinomoto

9.1.1 Ajinomoto Details

9.1.2 Ajinomoto Major Business

9.1.3 Ajinomoto Bio-fermented Alanyl-Glutamine Product and Services

9.1.4 Ajinomoto Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.1.5 Ajinomoto Recent Developments/Updates

9.1.6 Ajinomoto Competitive Strengths & Weaknesses

9.2 Kyowa Hakko Bio

9.2.1 Kyowa Hakko Bio Details

9.2.2 Kyowa Hakko Bio Major Business

9.2.3 Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Product and Services

9.2.4 Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.2.5 Kyowa Hakko Bio Recent Developments/Updates

9.2.6 Kyowa Hakko Bio Competitive Strengths & Weaknesses

9.3 Wuhan Microsen Technology

9.3.1 Wuhan Microsen Technology Details

9.3.2 Wuhan Microsen Technology Major Business

9.3.3 Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Product and Services

9.3.4 Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.3.5 Wuhan Microsen Technology Recent Developments/Updates

9.3.6 Wuhan Microsen Technology Competitive Strengths & Weaknesses

9.4 Jiangsu Chengxin Pharmaceutical

9.4.1 Jiangsu Chengxin Pharmaceutical Details

9.4.2 Jiangsu Chengxin Pharmaceutical Major Business

9.4.3 Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

9.4.4 Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.4.5 Jiangsu Chengxin Pharmaceutical Recent Developments/Updates

9.4.6 Jiangsu Chengxin Pharmaceutical Competitive Strengths & Weaknesses

9.5 Jingjing Pharmaceutical

9.5.1 Jingjing Pharmaceutical Details

9.5.2 Jingjing Pharmaceutical Major Business

9.5.3 Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

9.5.4 Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.5.5 Jingjing Pharmaceutical Recent Developments/Updates

9.5.6 Jingjing Pharmaceutical Competitive Strengths & Weaknesses

9.6 Shandong Chenlong Pharmaceutical

9.6.1 Shandong Chenlong Pharmaceutical Details

9.6.2 Shandong Chenlong Pharmaceutical Major Business

9.6.3 Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

9.6.4 Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.6.5 Shandong Chenlong Pharmaceutical Recent Developments/Updates

9.6.6 Shandong Chenlong Pharmaceutical Competitive Strengths & Weaknesses

10 INDUSTRY CHAIN ANALYSIS

10.1 Bio-fermented Alanyl-Glutamine Industry Chain

10.2 Bio-fermented Alanyl-Glutamine Upstream Analysis

10.2.1 Bio-fermented Alanyl-Glutamine Core Raw Materials

10.2.2 Main Manufacturers of Bio-fermented Alanyl-Glutamine Core Raw Materials

10.3 Midstream Analysis

10.4 Downstream Analysis

10.5 Bio-fermented Alanyl-Glutamine Production Mode

10.6 Bio-fermented Alanyl-Glutamine Procurement Model

10.7 Bio-fermented Alanyl-Glutamine Industry Sales Model and Sales Channels

10.7.1 Bio-fermented Alanyl-Glutamine Sales Model

10.7.2 Bio-fermented Alanyl-Glutamine Typical Distributors

11 RESEARCH FINDINGS AND CONCLUSION

12 APPENDIX

12.1 Methodology

12.2 Research Process and Data Source

12.3 Disclaimer

List Of Tables

LIST OF TABLES

Table 1. World Bio-fermented Alanyl-Glutamine Production Value by Region (2021, 2025 and 2032) & (USD Million)

Table 2. World Bio-fermented Alanyl-Glutamine Production Value by Region (2021-2026) & (USD Million)

Table 3. World Bio-fermented Alanyl-Glutamine Production Value by Region (2027-2032) & (USD Million)

Table 4. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Region (2021-2026)

Table 5. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Region (2027-2032)

Table 6. World Bio-fermented Alanyl-Glutamine Production by Region (2021-2026) & (Tons)

Table 7. World Bio-fermented Alanyl-Glutamine Production by Region (2027-2032) & (Tons)

Table 8. World Bio-fermented Alanyl-Glutamine Production Market Share by Region (2021-2026)

Table 9. World Bio-fermented Alanyl-Glutamine Production Market Share by Region (2027-2032)

Table 10. World Bio-fermented Alanyl-Glutamine Average Price by Region (2021-2026) & (US\$/kg)

Table 11. World Bio-fermented Alanyl-Glutamine Average Price by Region (2027-2032) & (US\$/kg)

Table 12. Bio-fermented Alanyl-Glutamine Major Market Trends

Table 13. World Bio-fermented Alanyl-Glutamine Consumption Growth Rate Forecast by Region (2021 & 2025 & 2032) & (Tons)

Table 14. World Bio-fermented Alanyl-Glutamine Consumption by Region (2021-2026) & (Tons)

Table 15. World Bio-fermented Alanyl-Glutamine Consumption Forecast by Region (2027-2032) & (Tons)

Table 16. World Bio-fermented Alanyl-Glutamine Production Value by Manufacturer (2021-2026) & (USD Million)

Table 17. Production Value Market Share of Key Bio-fermented Alanyl-Glutamine Producers in 2025

Table 18. World Bio-fermented Alanyl-Glutamine Production by Manufacturer (2021-2026) & (Tons)

Table 19. Production Market Share of Key Bio-fermented Alanyl-Glutamine Producers in 2025

Table 20. World Bio-fermented Alanyl-Glutamine Average Price by Manufacturer (2021-2026) & (US\$/kg)

Table 21. Global Bio-fermented Alanyl-Glutamine Company Evaluation Quadrant

Table 22. World Bio-fermented Alanyl-Glutamine Industry Rank of Major Manufacturers, Based on Production Value in 2025

Table 23. Head Office and Bio-fermented Alanyl-Glutamine Production Site of Key Manufacturer

Table 24. Bio-fermented Alanyl-Glutamine Market: Company Product Type Footprint

Table 25. Bio-fermented Alanyl-Glutamine Market: Company Product Application Footprint

Table 26. Bio-fermented Alanyl-Glutamine Competitive Factors

Table 27. Bio-fermented Alanyl-Glutamine New Entrant and Capacity Expansion Plans

Table 28. Bio-fermented Alanyl-Glutamine Mergers & Acquisitions Activity

Table 29. United States VS China Bio-fermented Alanyl-Glutamine Production Value Comparison, (2021 & 2025 & 2032) & (USD Million)

Table 30. United States VS China Bio-fermented Alanyl-Glutamine Production Comparison, (2021 & 2025 & 2032) & (Tons)

Table 31. United States VS China Bio-fermented Alanyl-Glutamine Consumption Comparison, (2021 & 2025 & 2032) & (Tons)

Table 32. United States Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (States, Country)

Table 33. United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value, (2021-2026) & (USD Million)

Table 34. United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value Market Share (2021-2026)

Table 35. United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production (2021-2026) & (Tons)

Table 36. United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share (2021-2026)

Table 37. China Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (Province, Country)

Table 38. China Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value, (2021-2026) & (USD Million)

Table 39. China Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value Market Share (2021-2026)

Table 40. China Based Manufacturers Bio-fermented Alanyl-Glutamine Production, (2021-2026) & (Tons)

Table 41. China Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share (2021-2026)

Table 42. Rest of World Based Bio-fermented Alanyl-Glutamine Manufacturers, Headquarters and Production Site (State, Country)

Table 43. Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value, (2021-2026) & (USD Million)

Table 44. Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production Value Market Share (2021-2026)

Table 45. Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production, (2021-2026) & (Tons)

Table 46. Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share (2021-2026)

Table 47. World Bio-fermented Alanyl-Glutamine Production Value by Type, (USD Million), 2021 & 2025 & 2032

Table 48. World Bio-fermented Alanyl-Glutamine Production by Type (2021-2026) & (Tons)

Table 49. World Bio-fermented Alanyl-Glutamine Production by Type (2027-2032) & (Tons)

Table 50. World Bio-fermented Alanyl-Glutamine Production Value by Type (2021-2026) & (USD Million)

Table 51. World Bio-fermented Alanyl-Glutamine Production Value by Type (2027-2032) & (USD Million)

Table 52. World Bio-fermented Alanyl-Glutamine Average Price by Type (2021-2026) & (US\$/kg)

Table 53. World Bio-fermented Alanyl-Glutamine Average Price by Type (2027-2032) & (US\$/kg)

Table 54. World Bio-fermented Alanyl-Glutamine Production Value by Grade, (USD Million), 2021 & 2025 & 2032

Table 55. World Bio-fermented Alanyl-Glutamine Production by Grade (2021-2026) & (Tons)

Table 56. World Bio-fermented Alanyl-Glutamine Production by Grade (2027-2032) & (Tons)

Table 57. World Bio-fermented Alanyl-Glutamine Production Value by Grade (2021-2026) & (USD Million)

Table 58. World Bio-fermented Alanyl-Glutamine Production Value by Grade (2027-2032) & (USD Million)

Table 59. World Bio-fermented Alanyl-Glutamine Average Price by Grade (2021-2026) & (US\$/kg)

Table 60. World Bio-fermented Alanyl-Glutamine Average Price by Grade (2027-2032)

& (US\$/kg)

Table 61. World Bio-fermented Alanyl-Glutamine Production Value by Strains, (USD Million), 2021 & 2025 & 2032

Table 62. World Bio-fermented Alanyl-Glutamine Production by Strains (2021-2026) & (Tons)

Table 63. World Bio-fermented Alanyl-Glutamine Production by Strains (2027-2032) & (Tons)

Table 64. World Bio-fermented Alanyl-Glutamine Production Value by Strains (2021-2026) & (USD Million)

Table 65. World Bio-fermented Alanyl-Glutamine Production Value by Strains (2027-2032) & (USD Million)

Table 66. World Bio-fermented Alanyl-Glutamine Average Price by Strains (2021-2026) & (US\$/kg)

Table 67. World Bio-fermented Alanyl-Glutamine Average Price by Strains (2027-2032) & (US\$/kg)

Table 68. World Bio-fermented Alanyl-Glutamine Production Value by Application, (USD Million), 2021 & 2025 & 2032

Table 69. World Bio-fermented Alanyl-Glutamine Production by Application (2021-2026) & (Tons)

Table 70. World Bio-fermented Alanyl-Glutamine Production by Application (2027-2032) & (Tons)

Table 71. World Bio-fermented Alanyl-Glutamine Production Value by Application (2021-2026) & (USD Million)

Table 72. World Bio-fermented Alanyl-Glutamine Production Value by Application (2027-2032) & (USD Million)

Table 73. World Bio-fermented Alanyl-Glutamine Average Price by Application (2021-2026) & (US\$/kg)

Table 74. World Bio-fermented Alanyl-Glutamine Average Price by Application (2027-2032) & (US\$/kg)

Table 75. Ajinomoto Basic Information, Manufacturing Base and Competitors

Table 76. Ajinomoto Major Business

Table 77. Ajinomoto Bio-fermented Alanyl-Glutamine Product and Services

Table 78. Ajinomoto Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 79. Ajinomoto Recent Developments/Updates

Table 80. Ajinomoto Competitive Strengths & Weaknesses

Table 81. Kyowa Hakko Bio Basic Information, Manufacturing Base and Competitors

Table 82. Kyowa Hakko Bio Major Business

Table 83. Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Product and Services

Table 84. Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 85. Kyowa Hakko Bio Recent Developments/Updates

Table 86. Kyowa Hakko Bio Competitive Strengths & Weaknesses

Table 87. Wuhan Microsen Technology Basic Information, Manufacturing Base and Competitors

Table 88. Wuhan Microsen Technology Major Business

Table 89. Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Product and Services

Table 90. Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 91. Wuhan Microsen Technology Recent Developments/Updates

Table 92. Wuhan Microsen Technology Competitive Strengths & Weaknesses

Table 93. Jiangsu Chengxin Pharmaceutical Basic Information, Manufacturing Base and Competitors

Table 94. Jiangsu Chengxin Pharmaceutical Major Business

Table 95. Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

Table 96. Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 97. Jiangsu Chengxin Pharmaceutical Recent Developments/Updates

Table 98. Jiangsu Chengxin Pharmaceutical Competitive Strengths & Weaknesses

Table 99. Jingjing Pharmaceutical Basic Information, Manufacturing Base and Competitors

Table 100. Jingjing Pharmaceutical Major Business

Table 101. Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

Table 102. Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 103. Jingjing Pharmaceutical Recent Developments/Updates

Table 104. Jingjing Pharmaceutical Competitive Strengths & Weaknesses

Table 105. Shandong Chenlong Pharmaceutical Basic Information, Manufacturing Base and Competitors

Table 106. Shandong Chenlong Pharmaceutical Major Business

Table 107. Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Product and Services

Table 108. Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Production (Tons), Price (US\$/kg), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 109. Shandong Chenlong Pharmaceutical Recent Developments/Updates

Table 110. Shandong Chenlong Pharmaceutical Competitive Strengths & Weaknesses

Table 111. Global Key Players of Bio-fermented Alanyl-Glutamine Upstream (Raw Materials)

Table 112. Global Bio-fermented Alanyl-Glutamine Typical Customers

Table 113. Bio-fermented Alanyl-Glutamine Typical Distributors

List Of Figures

LIST OF FIGURES

Figure 1. Bio-fermented Alanyl-Glutamine Picture

Figure 2. World Bio-fermented Alanyl-Glutamine Production Value: 2021 & 2025 & 2032, (USD Million)

Figure 3. World Bio-fermented Alanyl-Glutamine Production Value and Forecast (2021-2032) & (USD Million)

Figure 4. World Bio-fermented Alanyl-Glutamine Production (2021-2032) & (Tons)

Figure 5. World Bio-fermented Alanyl-Glutamine Average Price (2021-2032) & (US\$/kg)

Figure 6. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Region (2021-2032)

Figure 7. World Bio-fermented Alanyl-Glutamine Production Market Share by Region (2021-2032)

Figure 8. North America Bio-fermented Alanyl-Glutamine Production (2021-2032) & (Tons)

Figure 9. Japan Bio-fermented Alanyl-Glutamine Production (2021-2032) & (Tons)

Figure 10. China Bio-fermented Alanyl-Glutamine Production (2021-2032) & (Tons)

Figure 11. Bio-fermented Alanyl-Glutamine Market Drivers

Figure 12. Factors Affecting Demand

Figure 13. World Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 14. World Bio-fermented Alanyl-Glutamine Consumption Market Share by Region (2021-2032)

Figure 15. United States Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 16. China Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 17. Europe Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 18. Japan Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 19. South Korea Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 20. ASEAN Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 21. India Bio-fermented Alanyl-Glutamine Consumption (2021-2032) & (Tons)

Figure 22. Producer Shipments of Bio-fermented Alanyl-Glutamine by Manufacturer Revenue (\$MM) and Market Share (%): 2025

Figure 23. Global Four-firm Concentration Ratios (CR4) for Bio-fermented Alanyl-Glutamine Markets in 2025

Figure 24. Global Four-firm Concentration Ratios (CR8) for Bio-fermented Alanyl-Glutamine Markets in 2025

Figure 25. United States VS China: Bio-fermented Alanyl-Glutamine Production Value Market Share Comparison (2021 & 2025 & 2032)

Figure 26. United States VS China: Bio-fermented Alanyl-Glutamine Production Market Share Comparison (2021 & 2025 & 2032)

Figure 27. United States VS China: Bio-fermented Alanyl-Glutamine Consumption Market Share Comparison (2021 & 2025 & 2032)

Figure 28. United States Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share 2025

Figure 29. China Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share 2025

Figure 30. Rest of World Based Manufacturers Bio-fermented Alanyl-Glutamine Production Market Share 2025

Figure 31. World Bio-fermented Alanyl-Glutamine Production Value by Type, (USD Million), 2021 & 2025 & 2032

Figure 32. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Type in 2025

Figure 33. Enzymatic Method

Figure 34. Fermentation Method

Figure 35. World Bio-fermented Alanyl-Glutamine Production Market Share by Type (2021-2032)

Figure 36. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Type (2021-2032)

Figure 37. World Bio-fermented Alanyl-Glutamine Average Price by Type (2021-2032) & (US\$/kg)

Figure 38. World Bio-fermented Alanyl-Glutamine Production Value by Grade, (USD Million), 2021 & 2025 & 2032

Figure 39. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Grade in 2025

Figure 40. Pharmaceutical Grade

Figure 41. Food Grade

Figure 42. Feed Grade

Figure 43. World Bio-fermented Alanyl-Glutamine Production Market Share by Grade (2021-2032)

Figure 44. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Grade (2021-2032)

Figure 45. World Bio-fermented Alanyl-Glutamine Average Price by Grade (2021-2032) & (US\$/kg)

Figure 46. World Bio-fermented Alanyl-Glutamine Production Value by Strains, (USD Million), 2021 & 2025 & 2032

Figure 47. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Strains in 2025

Figure 48. *Corynebacterium Glutamicum*

Figure 49. *Escherichia Coli*

Figure 50. *Brevibacterium Flavum*

Figure 51. World Bio-fermented Alanyl-Glutamine Production Market Share by Strains (2021-2032)

Figure 52. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Strains (2021-2032)

Figure 53. World Bio-fermented Alanyl-Glutamine Average Price by Strains (2021-2032) & (US\$/kg)

Figure 54. World Bio-fermented Alanyl-Glutamine Production Value by Application, (USD Million), 2021 & 2025 & 2032

Figure 55. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Application in 2025

Figure 56. Pharmaceuticals Industry

Figure 57. Food & Beverages

Figure 58. Sports Nutrition & Supplements

Figure 59. Animal Feed

Figure 60. Others

Figure 61. World Bio-fermented Alanyl-Glutamine Production Market Share by Application (2021-2032)

Figure 62. World Bio-fermented Alanyl-Glutamine Production Value Market Share by Application (2021-2032)

Figure 63. World Bio-fermented Alanyl-Glutamine Average Price by Application (2021-2032) & (US\$/kg)

Figure 64. Bio-fermented Alanyl-Glutamine Industry Chain

Figure 65. Bio-fermented Alanyl-Glutamine Procurement Model

Figure 66. Bio-fermented Alanyl-Glutamine Sales Model

Figure 67. Bio-fermented Alanyl-Glutamine Sales Channels, Direct Sales, and Distribution

Figure 68. Methodology

Figure 69. Research Process and Data Source

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