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Global Bio-fermented Alanyl-Glutamine Market Growth 2026-2032

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Abstracts

The global Bio-fermented Alanyl-Glutamine market size is predicted to grow from US$ 97 million in 2025 to US$ 153 million in 2032; it is expected to grow at a CAGR of 6.5% from 2026 to 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

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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.

United States market for Bio-fermented Alanyl-Glutamine is estimated to increase from US$ million in 2025 to US$ million by 2032, at a CAGR of % from 2026 through 2032.

China market for Bio-fermented Alanyl-Glutamine is estimated to increase from US$ million in 2025 to US$ million by 2032, at a CAGR of % from 2026 through 2032.

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Europe market for Bio-fermented Alanyl-Glutamine is estimated to increase from US$ million in 2025 to US$ million by 2032, at a CAGR of % from 2026 through 2032.

Global key Bio-fermented Alanyl-Glutamine players cover Ajinomoto, Kyowa Hakko Bio, Wuhan Microsen Technology, Jiangsu Chengxin Pharmaceutical, Jingjing Pharmaceutical, etc. In terms of revenue, the global two largest companies occupied for a share nearly % in 2025.

LP Information, Inc. (LPI) ' newest research report, the “Bio-fermented Alanyl-Glutamine Industry Forecast” looks at past sales and reviews total world Bio-fermented Alanyl-Glutamine sales in 2025, providing a comprehensive analysis by region and market sector of projected Bio-fermented Alanyl-Glutamine sales for 2026 through 2032. With Bio-fermented Alanyl-Glutamine sales broken down by region, market sector and sub-sector, this report provides a detailed analysis in US$ millions of the world Bio-fermented Alanyl-Glutamine industry.

This Insight Report provides a comprehensive analysis of the global Bio-fermented Alanyl-Glutamine landscape and highlights key trends related to product segmentation, company formation, revenue, and market share, latest development, and M&A activity. This report also analyzes the strategies of leading global companies with a focus on Bio-fermented Alanyl-Glutamine portfolios and capabilities, market entry strategies, market positions, and geographic footprints, to better understand these firms’ unique position in an accelerating global Bio-fermented Alanyl-Glutamine market.

This Insight Report evaluates the key market trends, drivers, and affecting factors shaping the global outlook for Bio-fermented Alanyl-Glutamine and breaks down the forecast by Type, by Application, geography, and market size to highlight emerging pockets of opportunity. With a transparent methodology based on hundreds of bottom-up qualitative and quantitative market inputs, this study forecast offers a highly nuanced view of the current state and future trajectory in the global Bio-fermented Alanyl-Glutamine.

This report presents a comprehensive overview, market shares, and growth opportunities of Bio-fermented Alanyl-Glutamine market by product type, application, key manufacturers and key regions and countries.

Segmentation by Type:

Enzymatic Method

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Fermentation Method

Segmentation by Grade:

Pharmaceutical Grade

Food Grade

Feed Grade

Segmentation by Strains:

CorynebacteriumGlutamicum

Escherichia Coli

Brevibacterium Flavum

Segmentation by Application:

Pharmaceuticals Industry

Food & Beverages

Sports Nutrition & Supplements

Animal Feed

Others

This report also splits the market by region:

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Americas

United States

Canada

Mexico

Brazil

APAC

China

Japan

Korea

Southeast Asia

India

Australia

Europe

Germany

France

UK

Italy

Russia

Middle East & Africa

Egypt

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South Africa

Israel

Turkey

GCC Countries

The below companies that are profiled have been selected based on inputs gathered from primary experts and analysing the company's coverage, product portfolio, its market penetration.

Ajinomoto

Kyowa Hakko Bio

Wuhan Microsen Technology

Jiangsu Chengxin Pharmaceutical

Jingjing Pharmaceutical

Shandong Chenlong Pharmaceutical

Key Questions Addressed in this Report

What is the 10-year outlook for the global Bio-fermented Alanyl-Glutamine market?

What factors are driving Bio-fermented Alanyl-Glutamine market growth, globally and by region?

Which technologies are poised for the fastest growth by market and region?

How do Bio-fermented Alanyl-Glutamine market opportunities vary by end

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market size?

How does Bio-fermented Alanyl-Glutamine break out by Type, by Application?

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Contents

1 SCOPE OF THE REPORT

1.1 Market Introduction
1.2 Years Considered
1.3 Research Objectives
1.4 Market Research Methodology
1.5 Research Process and Data Source
1.6 Economic Indicators
1.7 Currency Considered
1.8 Market Estimation Caveats

2 EXECUTIVE SUMMARY

2.1 World Market Overview
  2.1.1 Global Bio-fermented Alanyl-Glutamine Annual Sales 2021-2032
  2.1.2 World Current & Future Analysis for Bio-fermented Alanyl-Glutamine by Geographic Region, 2021, 2025 & 2032
  2.1.3 World Current & Future Analysis for Bio-fermented Alanyl-Glutamine by Country/Region, 2021, 2025 & 2032
2.2 Bio-fermented Alanyl-Glutamine Segment by Type
  2.2.1 Enzymatic Method
  2.2.2 Fermentation Method
  2.2.3 Bio-fermented Alanyl-Glutamine Sales by Type
    2.2.3.1 Global Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
    2.2.3.2 Global Bio-fermented Alanyl-Glutamine Revenue and Market Share by Type (2021-2026)
    2.2.3.3 Global Bio-fermented Alanyl-Glutamine Sale Price by Type (2021-2026)
2.3 Bio-fermented Alanyl-Glutamine Segment by Grade
  2.3.1 Pharmaceutical Grade
  2.3.2 Food Grade
  2.3.3 Feed Grade
  2.3.4 Bio-fermented Alanyl-Glutamine Sales by Grade
    2.3.4.1 Global Bio-fermented Alanyl-Glutamine Sales Market Share by Grade (2021-2026)
    2.3.4.2 Global Bio-fermented Alanyl-Glutamine Revenue and Market Share by Grade (2021-2026)

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2.3.4.3 Global Bio-fermented Alanyl-Glutamine Sale Price by Grade (2021-2026)
2.4 Bio-fermented Alanyl-Glutamine Segment by Strains
2.4.1 CorynebacteriumGlutamicum
2.4.2 Escherichia Coli
2.4.3 Brevibacterium Flavum
2.4.4 Bio-fermented Alanyl-Glutamine Sales by Strains
2.4.4.1 Global Bio-fermented Alanyl-Glutamine Sales Market Share by Strains (2021-2026)
2.4.4.2 Global Bio-fermented Alanyl-Glutamine Revenue and Market Share by Strains (2021-2026)
2.4.4.3 Global Bio-fermented Alanyl-Glutamine Sale Price by Strains (2021-2026)
2.5 Bio-fermented Alanyl-Glutamine Segment by Application
2.5.1 Pharmaceuticals Industry
2.5.2 Food & Beverages
2.5.3 Sports Nutrition & Supplements
2.5.4 Animal Feed
2.5.5 Others
2.5.6 Bio-fermented Alanyl-Glutamine Sales by Application
2.5.6.1 Global Bio-fermented Alanyl-Glutamine Sale Market Share by Application (2021-2026)
2.5.6.2 Global Bio-fermented Alanyl-Glutamine Revenue and Market Share by Application (2021-2026)
2.5.6.3 Global Bio-fermented Alanyl-Glutamine Sale Price by Application (2021-2026)

3 GLOBAL BY COMPANY

3.1 Global Bio-fermented Alanyl-Glutamine Breakdown Data by Company
3.1.1 Global Bio-fermented Alanyl-Glutamine Annual Sales by Company (2021-2026)
3.1.2 Global Bio-fermented Alanyl-Glutamine Sales Market Share by Company (2021-2026)
3.2 Global Bio-fermented Alanyl-Glutamine Annual Revenue by Company (2021-2026)
3.2.1 Global Bio-fermented Alanyl-Glutamine Revenue by Company (2021-2026)
3.2.2 Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Company (2021-2026)
3.3 Global Bio-fermented Alanyl-Glutamine Sale Price by Company
3.4 Key Manufacturers Bio-fermented Alanyl-Glutamine Producing Area Distribution, Sales Area, Product Type
3.4.1 Key Manufacturers Bio-fermented Alanyl-Glutamine Product Location Distribution
3.4.2 Players Bio-fermented Alanyl-Glutamine Products Offered

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3.5 Market Concentration Rate Analysis
3.5.1 Competition Landscape Analysis
3.5.2 Concentration Ratio (CR3, CR5 and CR10) & (2024-2026)
3.6 New Products and Potential Entrants
3.7 Market M&A Activity & Strategy

4 WORLD HISTORIC REVIEW FOR BIO-FERMENTED ALANYL-GLUTAMINE BY GEOGRAPHIC REGION

4.1 World Historic Bio-fermented Alanyl-Glutamine Market Size by Geographic Region (2021-2026)
4.1.1 Global Bio-fermented Alanyl-Glutamine Annual Sales by Geographic Region (2021-2026)
4.1.2 Global Bio-fermented Alanyl-Glutamine Annual Revenue by Geographic Region (2021-2026)
4.2 World Historic Bio-fermented Alanyl-Glutamine Market Size by Country/Region (2021-2026)
4.2.1 Global Bio-fermented Alanyl-Glutamine Annual Sales by Country/Region (2021-2026)
4.2.2 Global Bio-fermented Alanyl-Glutamine Annual Revenue by Country/Region (2021-2026)
4.3 Americas Bio-fermented Alanyl-Glutamine Sales Growth
4.4 APAC Bio-fermented Alanyl-Glutamine Sales Growth
4.5 Europe Bio-fermented Alanyl-Glutamine Sales Growth
4.6 Middle East & Africa Bio-fermented Alanyl-Glutamine Sales Growth

5 AMERICAS

5.1 Americas Bio-fermented Alanyl-Glutamine Sales by Country
5.1.1 Americas Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026)
5.1.2 Americas Bio-fermented Alanyl-Glutamine Revenue by Country (2021-2026)
5.2 Americas Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026)
5.3 Americas Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026)
5.4 United States
5.5 Canada
5.6 Mexico
5.7 Brazil

6 APAC

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6.1 APAC Bio-fermented Alanyl-Glutamine Sales by Region
6.1.1 APAC Bio-fermented Alanyl-Glutamine Sales by Region (2021-2026)
6.1.2 APAC Bio-fermented Alanyl-Glutamine Revenue by Region (2021-2026)
6.2 APAC Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026)
6.3 APAC Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026)
6.4 China
6.5 Japan
6.6 South Korea
6.7 Southeast Asia
6.8 India
6.9 Australia
6.10 China Taiwan

7 EUROPE

7.1 Europe Bio-fermented Alanyl-Glutamine by Country
7.1.1 Europe Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026)
7.1.2 Europe Bio-fermented Alanyl-Glutamine Revenue by Country (2021-2026)
7.2 Europe Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026)
7.3 Europe Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026)
7.4 Germany
7.5 France
7.6 UK
7.7 Italy
7.8 Russia

8 MIDDLE EAST & AFRICA

8.1 Middle East & Africa Bio-fermented Alanyl-Glutamine by Country
8.1.1 Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026)
8.1.2 Middle East & Africa Bio-fermented Alanyl-Glutamine Revenue by Country (2021-2026)
8.2 Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026)
8.3 Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026)
8.4 Egypt
8.5 South Africa

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8.6 Israel
8.7 Turkey
8.8 GCC Countries

9 MARKET DRIVERS, CHALLENGES AND TRENDS

9.1 Market Drivers & Growth Opportunities
9.2 Market Challenges & Risks
9.3 Industry Trends

10 MANUFACTURING COST STRUCTURE ANALYSIS

10.1 Raw Material and Suppliers
10.2 Manufacturing Cost Structure Analysis of Bio-fermented Alanyl-Glutamine
10.3 Manufacturing Process Analysis of Bio-fermented Alanyl-Glutamine
10.4 Industry Chain Structure of Bio-fermented Alanyl-Glutamine

11 MARKETING, DISTRIBUTORS AND CUSTOMER

11.1 Sales Channel
  11.1.1 Direct Channels
  11.1.2 Indirect Channels
11.2 Bio-fermented Alanyl-Glutamine Distributors
11.3 Bio-fermented Alanyl-Glutamine Customer

12 WORLD FORECAST REVIEW FOR BIO-FERMENTED ALANYL-GLUTAMINE BY GEOGRAPHIC REGION

12.1 Global Bio-fermented Alanyl-Glutamine Market Size Forecast by Region
  12.1.1 Global Bio-fermented Alanyl-Glutamine Forecast by Region (2027-2032)
  12.1.2 Global Bio-fermented Alanyl-Glutamine Annual Revenue Forecast by Region (2027-2032)
12.2 Americas Forecast by Country (2027-2032)
12.3 APAC Forecast by Region (2027-2032)
12.4 Europe Forecast by Country (2027-2032)
12.5 Middle East & Africa Forecast by Country (2027-2032)
12.6 Global Bio-fermented Alanyl-Glutamine Forecast by Type (2027-2032)
12.7 Global Bio-fermented Alanyl-Glutamine Forecast by Application (2027-2032)

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13 KEY PLAYERS ANALYSIS

13.1 Ajinomoto
13.1.1 Ajinomoto Company Information
13.1.2 Ajinomoto Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.1.3 Ajinomoto Bio-fermented Alanyl-Glutamine Sales, Revenue, Price and Gross Margin (2021-2026)
13.1.4 Ajinomoto Main Business Overview
13.1.5 Ajinomoto Latest Developments
13.2 Kyowa Hakko Bio
13.2.1 Kyowa Hakko Bio Company Information
13.2.2 Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.2.3 Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Sales, Revenue, Price and Gross Margin (2021-2026)
13.2.4 Kyowa Hakko Bio Main Business Overview
13.2.5 Kyowa Hakko Bio Latest Developments
13.3 Wuhan Microsen Technology
13.3.1 Wuhan Microsen Technology Company Information
13.3.2 Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.3.3 Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Sales, Revenue, Price and Gross Margin (2021-2026)
13.3.4 Wuhan Microsen Technology Main Business Overview
13.3.5 Wuhan Microsen Technology Latest Developments
13.4 Jiangsu Chengxin Pharmaceutical
13.4.1 Jiangsu Chengxin Pharmaceutical Company Information
13.4.2 Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.4.3 Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Sales, Revenue, Price and Gross Margin (2021-2026)
13.4.4 Jiangsu Chengxin Pharmaceutical Main Business Overview
13.4.5 Jiangsu Chengxin Pharmaceutical Latest Developments
13.5 Jingjing Pharmaceutical
13.5.1 Jingjing Pharmaceutical Company Information
13.5.2 Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.5.3 Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Sales, Revenue, Price

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and Gross Margin (2021-2026)
13.5.4 Jingjing Pharmaceutical Main Business Overview
13.5.5 Jingjing Pharmaceutical Latest Developments
13.6 Shandong Chenlong Pharmaceutical
13.6.1 Shandong Chenlong Pharmaceutical Company Information
13.6.2 Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
13.6.3 Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Sales, Revenue, Price and Gross Margin (2021-2026)
13.6.4 Shandong Chenlong Pharmaceutical Main Business Overview
13.6.5 Shandong Chenlong Pharmaceutical Latest Developments

14 RESEARCH FINDINGS AND CONCLUSION

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List Of Tables

LIST OF TABLES

Table 1. Bio-fermented Alanyl-Glutamine Annual Sales CAGR by Geographic Region (2021, 2025 & 2032) & ($ millions)
Table 2. Bio-fermented Alanyl-Glutamine Annual Sales CAGR by Country/Region (2021, 2025 & 2032) & ($ millions)
Table 3. Major Players of Enzymatic Method
Table 4. Major Players of Fermentation Method
Table 5. Global Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026) & (Tons)
Table 6. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
Table 7. Global Bio-fermented Alanyl-Glutamine Revenue by Type (2021-2026) & ($ million)
Table 8. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Type (2021-2026)
Table 9. Global Bio-fermented Alanyl-Glutamine Sale Price by Type (2021-2026) & (US$/kg)
Table 10. Major Players of Pharmaceutical Grade
Table 11. Major Players of Food Grade
Table 12. Major Players of Feed Grade
Table 13. Global Bio-fermented Alanyl-Glutamine Sales by Grade (2021-2026) & (Tons)
Table 14. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Grade (2021-2026)
Table 15. Global Bio-fermented Alanyl-Glutamine Revenue by Grade (2021-2026) & ($ million)
Table 16. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Grade (2021-2026)
Table 17. Global Bio-fermented Alanyl-Glutamine Sale Price by Grade (2021-2026) & (US$/kg)
Table 18. Major Players of CorynebacteriumGlutamicum
Table 19. Major Players of Escherichia Coli
Table 20. Major Players of Brevibacterium Flavum
Table 21. Global Bio-fermented Alanyl-Glutamine Sales by Strains (2021-2026) & (Tons)
Table 22. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Strains (2021-2026)
Table 23. Global Bio-fermented Alanyl-Glutamine Revenue by Strains (2021-2026) & ($

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million)
Table 24. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Strains (2021-2026)
Table 25. Global Bio-fermented Alanyl-Glutamine Sale Price by Strains (2021-2026) & (US$/kg)
Table 26. Global Bio-fermented Alanyl-Glutamine Sale by Application (2021-2026) & (Tons)
Table 27. Global Bio-fermented Alanyl-Glutamine Sale Market Share by Application (2021-2026)
Table 28. Global Bio-fermented Alanyl-Glutamine Revenue by Application (2021-2026) & ($ million)
Table 29. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Application (2021-2026)
Table 30. Global Bio-fermented Alanyl-Glutamine Sale Price by Application (2021-2026) & (US$/kg)
Table 31. Global Bio-fermented Alanyl-Glutamine Sales by Company (2021-2026) & (Tons)
Table 32. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Company (2021-2026)
Table 33. Global Bio-fermented Alanyl-Glutamine Revenue by Company (2021-2026) & ($ millions)
Table 34. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Company (2021-2026)
Table 35. Global Bio-fermented Alanyl-Glutamine Sale Price by Company (2021-2026) & (US$/kg)
Table 36. Key Manufacturers Bio-fermented Alanyl-Glutamine Producing Area Distribution and Sales Area
Table 37. Players Bio-fermented Alanyl-Glutamine Products Offered
Table 38. Bio-fermented Alanyl-Glutamine Concentration Ratio (CR3, CR5 and CR10) & (2024-2026)
Table 39. New Products and Potential Entrants
Table 40. Market M&A Activity & Strategy
Table 41. Global Bio-fermented Alanyl-Glutamine Sales by Geographic Region (2021-2026) & (Tons)
Table 42. Global Bio-fermented Alanyl-Glutamine Sales Market Share Geographic Region (2021-2026)
Table 43. Global Bio-fermented Alanyl-Glutamine Revenue by Geographic Region (2021-2026) & ($ millions)
Table 44. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by

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Geographic Region (2021-2026)
Table 45. Global Bio-fermented Alanyl-Glutamine Sales by Country/Region (2021-2026) & (Tons)
Table 46. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Country/Region (2021-2026)
Table 47. Global Bio-fermented Alanyl-Glutamine Revenue by Country/Region (2021-2026) & ($ millions)
Table 48. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Country/Region (2021-2026)
Table 49. Americas Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026) & (Tons)
Table 50. Americas Bio-fermented Alanyl-Glutamine Sales Market Share by Country (2021-2026)
Table 51. Americas Bio-fermented Alanyl-Glutamine Revenue by Country (2021-2026) & ($ millions)
Table 52. Americas Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026) & (Tons)
Table 53. Americas Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026) & (Tons)
Table 54. APAC Bio-fermented Alanyl-Glutamine Sales by Region (2021-2026) & (Tons)
Table 55. APAC Bio-fermented Alanyl-Glutamine Sales Market Share by Region (2021-2026)
Table 56. APAC Bio-fermented Alanyl-Glutamine Revenue by Region (2021-2026) & ($ millions)
Table 57. APAC Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026) & (Tons)
Table 58. APAC Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026) & (Tons)
Table 59. Europe Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026) & (Tons)
Table 60. Europe Bio-fermented Alanyl-Glutamine Revenue by Country (2021-2026) & ($ millions)
Table 61. Europe Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026) & (Tons)
Table 62. Europe Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026) & (Tons)
Table 63. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Country (2021-2026) & (Tons)
Table 64. Middle East & Africa Bio-fermented Alanyl-Glutamine Revenue Market Share by Country (2021-2026)

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Table 65. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Type (2021-2026) & (Tons)
Table 66. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales by Application (2021-2026) & (Tons)
Table 67. Key Market Drivers & Growth Opportunities of Bio-fermented Alanyl-Glutamine
Table 68. Key Market Challenges & Risks of Bio-fermented Alanyl-Glutamine
Table 69. Key Industry Trends of Bio-fermented Alanyl-Glutamine
Table 70. Bio-fermented Alanyl-Glutamine Raw Material
Table 71. Key Suppliers of Raw Materials
Table 72. Bio-fermented Alanyl-Glutamine Distributors List
Table 73. Bio-fermented Alanyl-Glutamine Customer List
Table 74. Global Bio-fermented Alanyl-Glutamine Sales Forecast by Region (2027-2032) & (Tons)
Table 75. Global Bio-fermented Alanyl-Glutamine Revenue Forecast by Region (2027-2032) & ($ millions)
Table 76. Americas Bio-fermented Alanyl-Glutamine Sales Forecast by Country (2027-2032) & (Tons)
Table 77. Americas Bio-fermented Alanyl-Glutamine Annual Revenue Forecast by Country (2027-2032) & ($ millions)
Table 78. APAC Bio-fermented Alanyl-Glutamine Sales Forecast by Region (2027-2032) & (Tons)
Table 79. APAC Bio-fermented Alanyl-Glutamine Annual Revenue Forecast by Region (2027-2032) & ($ millions)
Table 80. Europe Bio-fermented Alanyl-Glutamine Sales Forecast by Country (2027-2032) & (Tons)
Table 81. Europe Bio-fermented Alanyl-Glutamine Revenue Forecast by Country (2027-2032) & ($ millions)
Table 82. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales Forecast by Country (2027-2032) & (Tons)
Table 83. Middle East & Africa Bio-fermented Alanyl-Glutamine Revenue Forecast by Country (2027-2032) & ($ millions)
Table 84. Global Bio-fermented Alanyl-Glutamine Sales Forecast by Type (2027-2032) & (Tons)
Table 85. Global Bio-fermented Alanyl-Glutamine Revenue Forecast by Type (2027-2032) & ($ millions)
Table 86. Global Bio-fermented Alanyl-Glutamine Sales Forecast by Application (2027-2032) & (Tons)
Table 87. Global Bio-fermented Alanyl-Glutamine Revenue Forecast by Application

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(2027-2032) & ($ millions)
Table 88. Ajinomoto Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 89. Ajinomoto Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 90. Ajinomoto Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)
Table 91. Ajinomoto Main Business
Table 92. Ajinomoto Latest Developments
Table 93. Kyowa Hakko Bio Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 94. Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 95. Kyowa Hakko Bio Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)
Table 96. Kyowa Hakko Bio Main Business
Table 97. Kyowa Hakko Bio Latest Developments
Table 98. Wuhan Microsen Technology Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 99. Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 100. Wuhan Microsen Technology Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)
Table 101. Wuhan Microsen Technology Main Business
Table 102. Wuhan Microsen Technology Latest Developments
Table 103. Jiangsu Chengxin Pharmaceutical Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 104. Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 105. Jiangsu Chengxin Pharmaceutical Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)
Table 106. Jiangsu Chengxin Pharmaceutical Main Business
Table 107. Jiangsu Chengxin Pharmaceutical Latest Developments
Table 108. Jingjing Pharmaceutical Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 109. Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 110. Jingjing Pharmaceutical Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)

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Table 111. Jingjing Pharmaceutical Main Business
Table 112. Jingjing Pharmaceutical Latest Developments
Table 113. Shandong Chenlong Pharmaceutical Basic Information, Bio-fermented Alanyl-Glutamine Manufacturing Base, Sales Area and Its Competitors
Table 114. Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Product Portfolios and Specifications
Table 115. Shandong Chenlong Pharmaceutical Bio-fermented Alanyl-Glutamine Sales (Tons), Revenue ($ Million), Price (US$/kg) and Gross Margin (2021-2026)
Table 116. Shandong Chenlong Pharmaceutical Main Business
Table 117. Shandong Chenlong Pharmaceutical Latest Developments

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List Of Figures

LIST OF FIGURES

Figure 1. Picture of Bio-fermented Alanyl-Glutamine
Figure 2. Bio-fermented Alanyl-Glutamine Report Years Considered
Figure 3. Research Objectives
Figure 4. Research Methodology
Figure 5. Research Process and Data Source
Figure 6. Global Bio-fermented Alanyl-Glutamine Sales Growth Rate 2021-2032 (Tons)
Figure 7. Global Bio-fermented Alanyl-Glutamine Revenue Growth Rate 2021-2032 ($ millions)
Figure 8. Bio-fermented Alanyl-Glutamine Sales by Geographic Region (2021, 2025 & 2032) & ($ millions)
Figure 9. Bio-fermented Alanyl-Glutamine Sales Market Share by Country/Region (2025)
Figure 10. Bio-fermented Alanyl-Glutamine Sales Market Share by Country/Region (2021, 2025 & 2032)
Figure 11. Product Picture of Enzymatic Method
Figure 12. Product Picture of Fermentation Method
Figure 13. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Type in 2026
Figure 14. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Type (2021-2026)
Figure 15. Product Picture of Pharmaceutical Grade
Figure 16. Product Picture of Food Grade
Figure 17. Product Picture of Feed Grade
Figure 18. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Grade in 2026
Figure 19. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Grade (2021-2026)
Figure 20. Product Picture of CorynebacteriumGlutamicum
Figure 21. Product Picture of Escherichia Coli
Figure 22. Product Picture of Brevibacterium Flavum
Figure 23. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Strains in 2026
Figure 24. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Strains (2021-2026)
Figure 25. Bio-fermented Alanyl-Glutamine Consumed in Pharmaceuticals Industry
Figure 26. Global Bio-fermented Alanyl-Glutamine Market: Pharmaceuticals Industry

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(2021-2026) & (Tons)
Figure 27. Bio-fermented Alanyl-Glutamine Consumed in Food & Beverages
Figure 28. Global Bio-fermented Alanyl-Glutamine Market: Food & Beverages (2021-2026) & (Tons)
Figure 29. Bio-fermented Alanyl-Glutamine Consumed in Sports Nutrition & Supplements
Figure 30. Global Bio-fermented Alanyl-Glutamine Market: Sports Nutrition & Supplements (2021-2026) & (Tons)
Figure 31. Bio-fermented Alanyl-Glutamine Consumed in Animal Feed
Figure 32. Global Bio-fermented Alanyl-Glutamine Market: Animal Feed (2021-2026) & (Tons)
Figure 33. Bio-fermented Alanyl-Glutamine Consumed in Others
Figure 34. Global Bio-fermented Alanyl-Glutamine Market: Others (2021-2026) & (Tons)
Figure 35. Global Bio-fermented Alanyl-Glutamine Sale Market Share by Application (2025)
Figure 36. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Application in 2025
Figure 37. Bio-fermented Alanyl-Glutamine Sales by Company in 2025 (Tons)
Figure 38. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Company in 2025
Figure 39. Bio-fermented Alanyl-Glutamine Revenue by Company in 2025 ($ millions)
Figure 40. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Company in 2025
Figure 41. Global Bio-fermented Alanyl-Glutamine Sales Market Share by Geographic Region (2021-2026)
Figure 42. Global Bio-fermented Alanyl-Glutamine Revenue Market Share by Geographic Region in 2025
Figure 43. Americas Bio-fermented Alanyl-Glutamine Sales 2021-2026 (Tons)
Figure 44. Americas Bio-fermented Alanyl-Glutamine Revenue 2021-2026 ($ millions)
Figure 45. APAC Bio-fermented Alanyl-Glutamine Sales 2021-2026 (Tons)
Figure 46. APAC Bio-fermented Alanyl-Glutamine Revenue 2021-2026 ($ millions)
Figure 47. Europe Bio-fermented Alanyl-Glutamine Sales 2021-2026 (Tons)
Figure 48. Europe Bio-fermented Alanyl-Glutamine Revenue 2021-2026 ($ millions)
Figure 49. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales 2021-2026 (Tons)
Figure 50. Middle East & Africa Bio-fermented Alanyl-Glutamine Revenue 2021-2026 ($ millions)
Figure 51. Americas Bio-fermented Alanyl-Glutamine Sales Market Share by Country in 2025

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Figure 52. Americas Bio-fermented Alanyl-Glutamine Revenue Market Share by Country (2021-2026)
Figure 53. Americas Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
Figure 54. Americas Bio-fermented Alanyl-Glutamine Sales Market Share by Application (2021-2026)
Figure 55. United States Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 56. Canada Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 57. Mexico Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 58. Brazil Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 59. APAC Bio-fermented Alanyl-Glutamine Sales Market Share by Region in 2025
Figure 60. APAC Bio-fermented Alanyl-Glutamine Revenue Market Share by Region (2021-2026)
Figure 61. APAC Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
Figure 62. APAC Bio-fermented Alanyl-Glutamine Sales Market Share by Application (2021-2026)
Figure 63. China Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 64. Japan Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 65. South Korea Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 66. Southeast Asia Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 67. India Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 68. Australia Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 69. China Taiwan Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 70. Europe Bio-fermented Alanyl-Glutamine Sales Market Share by Country in 2025
Figure 71. Europe Bio-fermented Alanyl-Glutamine Revenue Market Share by Country

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(2021-2026)
Figure 72. Europe Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
Figure 73. Europe Bio-fermented Alanyl-Glutamine Sales Market Share by Application (2021-2026)
Figure 74. Germany Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 75. France Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 76. UK Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 77. Italy Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 78. Russia Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 79. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales Market Share by Country (2021-2026)
Figure 80. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales Market Share by Type (2021-2026)
Figure 81. Middle East & Africa Bio-fermented Alanyl-Glutamine Sales Market Share by Application (2021-2026)
Figure 82. Egypt Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 83. South Africa Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 84. Israel Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 85. Turkey Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 86. GCC Countries Bio-fermented Alanyl-Glutamine Revenue Growth 2021-2026 ($ millions)
Figure 87. Manufacturing Cost Structure Analysis of Bio-fermented Alanyl-Glutamine in 2026
Figure 88. Manufacturing Process Analysis of Bio-fermented Alanyl-Glutamine
Figure 89. Industry Chain Structure of Bio-fermented Alanyl-Glutamine
Figure 90. Channels of Distribution
Figure 91. Global Bio-fermented Alanyl-Glutamine Sales Market Forecast by Region (2027-2032)
Figure 92. Global Bio-fermented Alanyl-Glutamine Revenue Market Share Forecast by Region (2027-2032)

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Figure 93. Global Bio-fermented Alanyl-Glutamine Sales Market Share Forecast by Type (2027-2032)
Figure 94. Global Bio-fermented Alanyl-Glutamine Revenue Market Share Forecast by Type (2027-2032)
Figure 95. Global Bio-fermented Alanyl-Glutamine Sales Market Share Forecast by Application (2027-2032)
Figure 96. Global Bio-fermented Alanyl-Glutamine Revenue Market Share Forecast by Application (2027-2032)

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