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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

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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.

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

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

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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

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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:

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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

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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?

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Contents

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5 MARKET ANALYSIS BY TYPE

6 MARKET ANALYSIS BY GRADE

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List Of Tables

LIST OF TABLES

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List Of Figures

LIST OF FIGURES

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