

# **Global L-Citrulline Market Size study, by Type (Powder Type, Crystal Type), by Classification (Medical Grade, Food Grade), by Application (Cosmetic & Personal Care, Food & Beverages, Pharmaceuticals, Agriculture, Animal Feed, Others), and Regional Forecasts 2022-2032**

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## **Abstracts**

The Global L-Citrulline Market is valued approximately at USD 0.12 billion in 2023 and is anticipated to grow with a steady compound annual growth rate (CAGR) of more than 5.12% over the forecast period 2024 to 2032. L-Citrulline, a non-essential amino acid, has increasingly attracted attention across a spectrum of industries due to its multifaceted physiological benefits. Found naturally in watermelon and produced in the body, it plays a crucial role in the urea cycle, helping to eliminate ammonia from the body and improve blood flow. Over the years, L-Citrulline has transitioned from being a relatively obscure compound to a critical ingredient in nutraceuticals, functional foods, and sports nutrition. Market traction is fueled by its rapidly expanding role in enhancing cardiovascular health, muscle recovery, and athletic performance, which has driven its widespread adoption, especially among fitness enthusiasts and aging populations.

The shifting focus toward preventive healthcare and natural performance-enhancing solutions has created fertile ground for L-Citrulline-based formulations to thrive. Companies are diversifying their product lines by incorporating both powder and crystal forms into beverages, capsules, and personal care items. At the same time, increased consumer preference for clean-label, plant-derived ingredients is propelling food-grade L-Citrulline demand. Meanwhile, medical-grade applications, particularly in the pharmaceutical and clinical nutrition sectors, continue to rise due to its therapeutic potential in treating erectile dysfunction, fatigue, and metabolic syndromes. Despite

such promising developments, the market encounters certain roadblocks—mainly the lack of regulatory harmonization, pricing volatility for raw materials, and relatively low consumer awareness in emerging markets.

Technological advancements in amino acid synthesis, coupled with investments in R&D, are streamlining production processes and improving bioavailability of L-Citrulline in complex formulations. Leading market participants are channeling efforts into strategic collaborations and clinical trials to validate claims and improve product differentiation. Additionally, digital channels have revolutionized marketing and distribution strategies, allowing players to reach broader demographics. From supplement brands promoting muscle endurance to cosmetic companies highlighting anti-aging benefits, L-Citrulline is steadily embedding itself across multiple verticals. Growth is further bolstered by the rising popularity of vegan and plant-based diets, creating demand for natural amino acid alternatives that are both effective and sustainable.

Regionally, North America dominated the L-Citrulline market in 2023, underpinned by high consumer awareness, well-developed healthcare infrastructure, and a strong nutraceuticals market. The U.S., in particular, shows consistent demand owing to its mature fitness and supplement culture. Europe is not far behind, with countries like Germany, France, and the UK investing heavily in functional food and sports nutrition sectors. The Asia Pacific region is expected to witness the fastest growth over the forecast period, driven by increased health-consciousness, rising disposable incomes, and rapid urbanization in countries like China, Japan, and India. Moreover, the proliferation of e-commerce and the increasing popularity of natural and holistic wellness trends are expected to further elevate demand across developing nations.

Major market player included in this report are:

CJ CheilJedang Corporation

KYOWA HAKKO BIO CO., LTD.

Nutra Green Biotechnology Co., Ltd.

Wuhan Soleado Technology Co., Ltd.

AirWater Inc.

Anhui Huaheng Biotechnology Co., Ltd.

Shijiazhuang Jirong Pharmaceutical Co., Ltd.

Evonik Industries AG

Merck KGaA

Tokyo Chemical Industry Co., Ltd.

Ningbo Sinograce Biotechnology Co., Ltd.

Qufu Tianli Biotech Co., Ltd.

Creative Compounds, LLC

Newseed Chemical Co., Limited

Hubei Yuancheng Saichuang Technology Co., Ltd.

The detailed segments and sub-segment of the market are explained below:

#### By Type

Powder Type

Crystal Type

#### By Classification

Medical Grade

Food Grade

#### By Application

Cosmetic & Personal Care

Food & Beverages

Pharmaceuticals

Agriculture

Animal Feed

Others

By Region:

North America

U.S.

Canada

Europe

UK

Germany

France

Spain

Italy

ROE

Asia Pacific

China

India

Japan

Australia

South Korea

RoAPAC

Latin America

Brazil

Mexico

Middle East & Africa

Saudi Arabia

South Africa

RoMEA

Years considered for the study are as follows:

Historical year – 2022

Base year – 2023

Forecast period – 2024 to 2032

Key Takeaways:

*Global L-Citrulline Market Size study, by Type (Powder Type, Crystal Type), by Classification (Medical Grade,...*

Market Estimates & Forecast for 10 years from 2022 to 2032.

Annualized revenues and regional level analysis for each market segment.

Detailed analysis of geographical landscape with Country level analysis of major regions.

Competitive landscape with information on major players in the market.

Analysis of key business strategies and recommendations on future market approach.

Analysis of competitive structure of the market.

Demand side and supply side analysis of the market.

## Contents

### **CHAPTER 1. GLOBAL L-CITRULLINE MARKET EXECUTIVE SUMMARY**

- 1.1. Global L-Citrulline Market Size & Forecast (2022-2032)
- 1.2. Regional Summary
- 1.3. Segmental Summary
  - 1.3.1. By Type
  - 1.3.2. By Classification
  - 1.3.3. By Application
- 1.4. Key Trends
- 1.5. Recession Impact
- 1.6. Analyst Recommendation & Conclusion

### **CHAPTER 2. GLOBAL L-CITRULLINE MARKET DEFINITION AND RESEARCH ASSUMPTIONS**

- 2.1. Research Objective
- 2.2. Market Definition
- 2.3. Research Assumptions
  - 2.3.1. Inclusion & Exclusion
  - 2.3.2. Limitations
  - 2.3.3. Supply Side Analysis
    - 2.3.3.1. Availability
    - 2.3.3.2. Infrastructure
    - 2.3.3.3. Regulatory Environment
    - 2.3.3.4. Market Competition
    - 2.3.3.5. Economic Viability (Consumer's Perspective)
  - 2.3.4. Demand Side Analysis
    - 2.3.4.1. Regulatory Frameworks
    - 2.3.4.2. Technological Advancements
    - 2.3.4.3. Environmental Considerations
    - 2.3.4.4. Consumer Awareness & Acceptance
- 2.4. Estimation Methodology
- 2.5. Years Considered for the Study
- 2.6. Currency Conversion Rates

### **CHAPTER 3. GLOBAL L-CITRULLINE MARKET DYNAMICS**

### 3.1. Market Drivers

- 3.1.1. Rising Preventive Healthcare and Fitness Trends
- 3.1.2. Increasing Consumer Demand for Natural Amino Acids
- 3.1.3. Growing Applications in Nutraceuticals and Functional Foods

### 3.2. Market Challenges

- 3.2.1. Regulatory Inconsistencies and Lack of Harmonization
- 3.2.2. Raw Material Pricing Volatility

### 3.3. Market Opportunities

- 3.3.1. Expansion in Digital Marketing and E-commerce Channels
- 3.3.2. Rising Trend of Vegan and Plant-Based Diets
- 3.3.3. Technological Advancements in Amino Acid Synthesis

## **CHAPTER 4. GLOBAL L-CITRULLINE MARKET INDUSTRY ANALYSIS**

### 4.1. Porter's 5 Force Model

- 4.1.1. Bargaining Power of Suppliers
- 4.1.2. Bargaining Power of Buyers
- 4.1.3. Threat of New Entrants
- 4.1.4. Threat of Substitutes
- 4.1.5. Competitive Rivalry
- 4.1.6. Futuristic Approach to Porter's 5 Force Model
- 4.1.7. Porter's 5 Force Impact Analysis

### 4.2. PESTEL Analysis

- 4.2.1. Political
- 4.2.2. Economical
- 4.2.3. Social
- 4.2.4. Technological
- 4.2.5. Environmental
- 4.2.6. Legal

### 4.3. Top Investment Opportunity

### 4.4. Top Winning Strategies

### 4.5. Disruptive Trends

### 4.6. Industry Expert Perspective

### 4.7. Analyst Recommendation & Conclusion

## **CHAPTER 5. GLOBAL L-CITRULLINE MARKET SIZE & FORECASTS BY TYPE 2022-2032**

### 5.1. Segment Dashboard

*Global L-Citrulline Market Size study, by Type (Powder Type, Crystal Type), by Classification (Medical Grade,...*

## 5.2. Global L-Citrulline Market: Type Revenue Trend Analysis, 2022 & 2032 (USD Million/Billion)

- 5.2.1. Powder Type
- 5.2.2. Crystal Type

## **CHAPTER 6. GLOBAL L-CITRULLINE MARKET SIZE & FORECASTS BY CLASSIFICATION 2022-2032**

### 6.1. Segment Dashboard

## 6.2. Global L-Citrulline Market: Classification Revenue Trend Analysis, 2022 & 2032 (USD Million/Billion)

- 6.2.1. Medical Grade
- 6.2.2. Food Grade

## **CHAPTER 7. GLOBAL L-CITRULLINE MARKET SIZE & FORECASTS BY APPLICATION 2022-2032**

### 7.1. Segment Dashboard

## 7.2. Global L-Citrulline Market: Application Revenue Trend Analysis, 2022 & 2032 (USD Million/Billion)

- 7.2.1. Cosmetic & Personal Care
- 7.2.2. Food & Beverages
- 7.2.3. Pharmaceuticals
- 7.2.4. Agriculture
- 7.2.5. Animal Feed
- 7.2.6. Others

## **CHAPTER 8. GLOBAL L-CITRULLINE MARKET SIZE & FORECASTS BY REGION 2022-2032**

### 8.1. North America L-Citrulline Market

- 8.1.1. U.S. L-Citrulline Market
  - 8.1.1.1. Type Breakdown Size & Forecasts, 2022-2032
  - 8.1.1.2. Classification & Application Breakdown Size & Forecasts, 2022-2032
- 8.1.2. Canada L-Citrulline Market

### 8.2. Europe L-Citrulline Market

- 8.2.1. U.K. L-Citrulline Market
- 8.2.2. Germany L-Citrulline Market
- 8.2.3. France L-Citrulline Market

- 8.2.4. Spain L-Citrulline Market
- 8.2.5. Italy L-Citrulline Market
- 8.2.6. Rest of Europe L-Citrulline Market
- 8.3. Asia-Pacific L-Citrulline Market
  - 8.3.1. China L-Citrulline Market
  - 8.3.2. India L-Citrulline Market
  - 8.3.3. Japan L-Citrulline Market
  - 8.3.4. Australia L-Citrulline Market
  - 8.3.5. South Korea L-Citrulline Market
  - 8.3.6. Rest of Asia-Pacific L-Citrulline Market
- 8.4. Latin America L-Citrulline Market
  - 8.4.1. Brazil L-Citrulline Market
  - 8.4.2. Mexico L-Citrulline Market
  - 8.4.3. Rest of Latin America L-Citrulline Market
- 8.5. Middle East & Africa L-Citrulline Market
  - 8.5.1. Saudi Arabia L-Citrulline Market
  - 8.5.2. South Africa L-Citrulline Market
  - 8.5.3. Rest of Middle East & Africa L-Citrulline Market

## **CHAPTER 9. COMPETITIVE INTELLIGENCE**

- 9.1. Key Company SWOT Analysis
  - 9.1.1. Company
  - 9.1.2. Company
  - 9.1.3. Company
- 9.2. Top Market Strategies
- 9.3. Company Profiles
  - 9.3.1. Company A
    - 9.3.1.1. Key Information
    - 9.3.1.2. Overview
    - 9.3.1.3. Financial (Subject to Data Availability)
    - 9.3.1.4. Product Summary
    - 9.3.1.5. Market Strategies
  - 9.3.2. Company B
  - 9.3.3. Company C
  - 9.3.4. Company D
  - 9.3.5. Company E
  - 9.3.6. Company F
  - 9.3.7. Company G

- 9.3.8. Company H
- 9.3.9. Company I
- 9.3.10. Company J

## **CHAPTER 10. RESEARCH PROCESS**

- 10.1. Research Process
  - 10.1.1. Data Mining
  - 10.1.2. Analysis
  - 10.1.3. Market Estimation
  - 10.1.4. Validation
  - 10.1.5. Publishing
- 10.2. Research Attributes

## List Of Tables

### LIST OF TABLES

TABLE 1. Global L-Citrulline Market, Report Scope

TABLE 2. Global L-Citrulline Market Estimates & Forecasts by Region 2022-2032 (USD Million/Billion)

TABLE 3. Global L-Citrulline Market Estimates & Forecasts by Type 2022-2032 (USD Million/Billion)

TABLE 4. Global L-Citrulline Market Estimates & Forecasts by Classification 2022-2032 (USD Million/Billion)

TABLE 5. Global L-Citrulline Market Estimates & Forecasts by Application 2022-2032 (USD Million/Billion)

TABLE 6. Global L-Citrulline Market by Segment, Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 7. Global L-Citrulline Market by Region, Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 8. Global L-Citrulline Market by Segment, Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 9. Global L-Citrulline Market by Region, Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 10. U.S. L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 11. U.S. L-Citrulline Market Estimates & Forecasts by Segment 2022-2032 (USD Million/Billion)

TABLE 12. Canada L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 13. Canada L-Citrulline Market Estimates & Forecasts by Segment 2022-2032 (USD Million/Billion)

TABLE 14. Europe L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 15. Europe L-Citrulline Market Estimates & Forecasts by Segment 2022-2032 (USD Million/Billion)

TABLE 16. Asia-Pacific L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 17. Latin America L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

TABLE 18. Middle East & Africa L-Citrulline Market Estimates & Forecasts, 2022-2032 (USD Million/Billion)

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