

Rice Protein Meal:

An Alternative Protein Source for the Poultry Industry

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From By-Product to Powerhouse

Rice protein meal a by-product of the rice starch industry has emerged as a nutritional goldmine that is reshaping both human nutrition and animal feed markets worldwide. As the global demand for sustainable, plant-based proteins continues to surge, this humble derivative of the world's most consumed grain is stepping into the spotlight.

The rice protein industry is experiencing significant transformation driven by evolving global dietary preferences and increasing health consciousness among consumers. The growing awareness of food allergies and intolerances has become a crucial factor shaping the market landscape, with approximately 68% of the global population being lactose intolerant. This has

led to a substantial shift towards plant protein alternatives. The global market value of rice protein products is around \$800 million per year, with major production concentrated in Southeast Asia. However, the Rice Protein Market size is estimated at 0.88 billion USD in 2025, and is expected to reach 1.11 billion USD by 2030, growing at a Compound Annual Growth Rate (CAGR) of 4.74%.

THE SUSTAINABLE PROTEIN OF TOMORROW

Standardized Ileal Digestibility (SID) of Amino Acids: Effect of Protease Supplementation

Amino Acid	SID – Without Protease	SID (%) – With Protease
Lys	60.4	63.3
Met	44.2	43.3
Cys	27.9	28.1
Thr	54.4	55.6
Arg	73.1	73.5
Ile	53.1	54.5
Leu	52.3	52.9
Gly	51.9	56.2
Val	51.8	52.5
His	55.9	56.4

(Iqbal et al., 2025, Poultry Science)

SID Amino Acid Digestibility Varies by Structure & Processing: Arginine and Lysine Highest, Cysteine and Methionine Lowest

The standardized ileal digestibility (SID) of amino acids varies depending on their chemical structure, protein source, and processing conditions. In general, amino acids such as arginine (73.1%) and lysine (60.4%) show relatively higher digestibility, while sulfur-containing amino acids like cysteine (27.9%) and methionine (44.2%) exhibit lower digestibility, likely due to their sensitivity to heat damage and their involvement in complex protein linkages. Other amino acids, including threonine, isoleucine, leucine, glycine, valine, and histidine, fall within a moderate digestibility range (approximately 50–56%).

The Bottom Line: While rice protein meal offers economic and sustainability advantages in rice-producing regions, its amino acid digestibility particularly for critical sulfur-containing amino acids like methionine and cysteine lags significantly behind soybean meal. Nutritionists formulating with RPM must account for these lower digestibility coefficients rather than treating rice protein as a 1:1 soy substitute, or consider blending strategies to compensate for the 40–50% reduction in key amino acid availability.

Rice Protein Meal: Revolutionizing Global Nutrition & Animal Feed

The Science Behind the Product

The transformation of rice into protein meal is a sophisticated industrial process that maximizes the nutritional value of every grain.

Production Process

The production methodology involves several carefully controlled steps:

- Heating – Rice undergoes controlled thermal treatment to prepare for enzymatic processing
- Amylase Application – Specialized enzymes are introduced to break down starch components
- Incubation – The mixture undergoes a precise incubation period for optimal enzymatic activity
- Filtration – The protein-rich fraction is carefully separated from starch



- Drying – The final product is dried to achieve optimal moisture content

Manufacturers are utilizing advanced enzyme-assisted extraction to overcome the traditionally "gritty" texture of rice protein, allowing for better solubility in beverages and

creamier dairy-free yogurts.

During processing, rice is fractionated into approximately 75% starch and 25% protein-rich meal. The final product is nutritionally comparable to corn gluten meal, making it an excellent alternative in both human nutrition and animal feed applications.

The World's Rice Bowl: Global Production Landscape

To understand the potential of rice protein meal, one must first appreciate the sheer scale of global rice production. Rice remains the staple food for over half of humanity, and production figures are staggering:

The Asian nations—China, India, Bangladesh, Vietnam, Thailand, Cambodia, and Myanmar—collectively form the backbone of the global rice export market, supplying millions of tonnes to Africa, the Middle East, and beyond.

Based on recent estimates, the top leading rice-producing countries are:

- China: ~208–217 million tonnes
- India: ~190–196 million tonnes
- Bangladesh: ~57 million tonnes
- Indonesia: ~53–54 million tonnes
- Vietnam: ~42–43 million tonnes
- Thailand: ~34 million tonnes
- Myanmar: ~24 million tonnes
- Philippines: ~19–20 million tonnes
- Cambodia: ~11–12 million tonnes
- Pakistan: ~10–11 million tonnes

The Future of Rice Protein

Between 2025 and 2030, the rice protein market is projected to expand from USD 1.5 billion to USD 2.2 billion, resulting in a value increase of USD 0.7 billion. The global growth outlook for the rice protein market reflects a strong upward trajectory through 2035, with China leading the expansion at a 7.8% CAGR, followed closely by India at 7.4%. In the Americas, Brazil is anticipated to grow at a robust 6.3%, while the USA

maintains a steady 5.8% CAGR.

The rice protein market is transitioning from a “secondary” plant protein to a primary ingredient in mainstream food formulations. Valued at USD 1.1 billion in 2026, the market is expected to reach USD 1.5 billion by 2029 as the dairy-alternative and meat-analogue sectors expand their use of rice-based blends

Key Considerations for Optimal Use

While rice protein meal offers tremendous potential, several factors require attention for optimal application:

1. Amino Acid Digestibility

Amino acid digestibility needs further evaluation to optimize formulation strategies. Understanding bioavailability is crucial for maximizing nutritional benefits in both human and animal applications.

2. Enzyme Supplementation

Enzyme supplementation may improve nutrient availability and digestibility. Research continues into novel enzymatic approaches that can enhance functional attributes such as emulsification and gelling properties.

3. Maximum Safe Inclusion Levels

Determination of the maximum safe inclusion level is necessary for optimal performance in feed formulations. Working with nutritionists ensures balanced diets that maximize animal health and productivity.

In the vast paddy fields stretching across Asia, a quiet revolution is taking place. What was once considered industrial waste is now being transformed into one of the world's most promising protein sources

4. Market Challenges

Higher production costs compared to other plant proteins and limited consumer awareness may pose challenges to market expansion. Raw material price fluctuation is anticipated to restrain market growth. Furthermore, the high price of the product is expected to obstruct market growth during forecast years

Market Dynamics: A Growing Industry

Regional Market Distribution

In 2025, Asia-Pacific accounts for the largest share by region in the Global Rice Protein Market. North America has the major market share in the current global rice protein market and is expected to dominate during the forecast period, owing to the presence of key market players in the region.

Product Segmentation

Rice Protein Isolates will dominate with a 46.0% market share, while sports nutrition will lead the application segment with a 42.0% share.

Rice Protein Concentrates lead the market with approximately 35% share, due to balanced nutrition and cost-effective production.

Key Industry Players

AIDP, Inc. (USA), Axiom Foods Inc. (USA), and RiceBran Technologies (USA) are some of the key companies performing in the global rice protein industry.