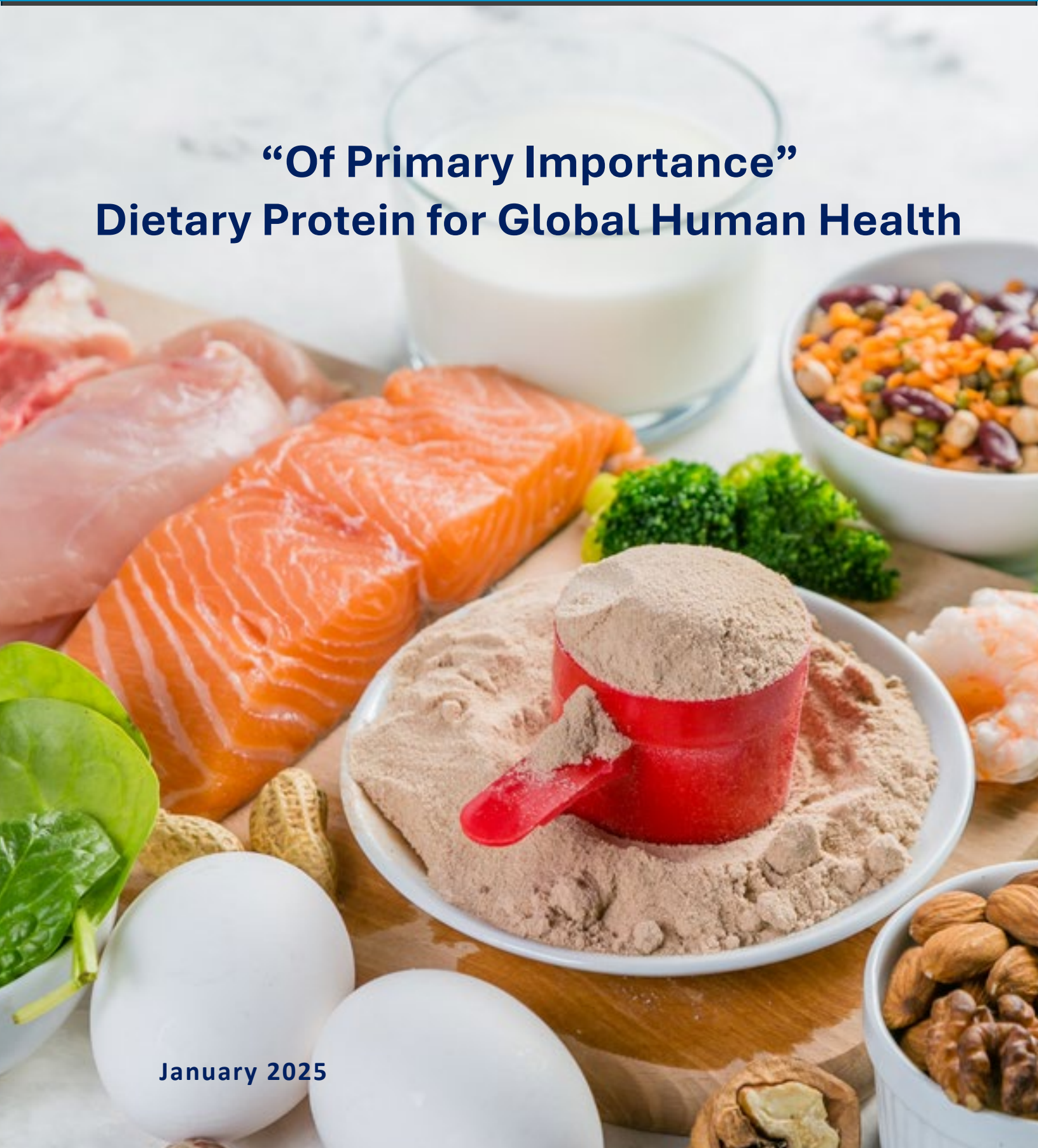


“Of Primary Importance” Dietary Protein for Global Human Health



January 2025

KEY TAKEAWAYS:

- Essential amino acids, which the body cannot synthesize on its own, must be obtained by protein foods in the diet and play crucial roles in metabolism and overall health.
- High-quality protein foods, such as dairy, contain all the essential amino acids in a form that is digestible and available to humans.
- Measurement of protein quality using the Digestible Indispensable Amino Acid Score (DIAAS) method is necessary to accurately differentiate food sources of protein to help ensure nutritional security and health worldwide.

The word “Protein” is derived from the Greek word “Proteios,” meaning “Of primary importance.” The primary importance of dietary protein is that it delivers essential amino acids that humans cannot produce on their own. Amino acids help humans produce energy, maintain strong muscles and bones, regulate appetite and weight, and support optimal organ function that contribute to [long-term health](#).¹

Dietary proteins are not all created equal. Protein-quality is a measure of dietary protein that considers not only the quantity of essential amino acids a food protein provides, but how well the body can digest, absorb and utilize them.

World population is expected to reach nearly 10 billion by 2050, meaning significantly more dietary protein will be necessary to meet growing demand. Sustainably nourishing the global population with affordable and accessible protein-containing foods is a [pressing global health challenge](#) exacerbated by accelerated climate change.²

This ever-increasing need for protein makes protein quality estimates vitally important. Protein quality estimates are used to inform policies and programs aimed at improving nutritional security worldwide and helps:

- Evaluation of the protein quality of local food sources and the promotion of agricultural practices that cultivate high-quality protein foods
- Creation of food-based dietary guidelines that promote overall health and prevent chronic disease
- Development of Codex Alimentarius food standards and guidelines for use in nutrition labeling and protein content claims¹

Project Proteos: An Investment in Nutritional Security

Driven by the need to help ensure nutritional security within planetary boundaries, GDP coordinated Project Proteos, a six-year study involving researchers from four laboratories on three continents, to determine the Digestible Indispensable Amino Acid Score (DIAAS) values of local foods. This was in response to a [report](#) published by the Food and Agriculture Organization (FAO) of the United Nations calling for the need to replace the Protein Digestibility Corrected Amino Acid Score (PDCAAS) method for evaluating protein quality for humans with the DIAAS method because DIAAS offered a more complete measure of protein quality.³ For example, PDCAAS [overestimates the quality of plant proteins](#) and truncates the value of animal proteins, including from dairy.⁴ One of the challenges to replacing PDCAAS with DIAAS included having data on the DIAAS values of foods. The results of Project Proteos, the last of which were published in 2024, are being used to populate an FAO database of amino acid contents and DIAAS values of foods to fill that gap and inform future policies and programs aimed at using protein quality to help ensure nutritional security.

High-Quality Protein Supports Human Health

Upon the completion of Project Proteos, the international symposium, “*Dietary Protein for Human Health*” was organized by the FAO, the Riddet Institute, Massey University, Wageningen University and Research, and the International Atomic Energy Agency in Utrecht, the Netherlands in September 2023. The symposium attracted more than 300 delegates to hear more than 60 expert presenters from 16 countries communicate the state of the science on protein quality and growth, development, and whole-body protein metabolism; plant, animal and alternative proteins and their roles in sustainable nutrition; and the future of sustainable food protein production. The science presented indicated:

- Affordable high-quality protein foods that also contain other nutrients that are in short supply, such as dairy foods, are necessary to [feed the growing population](#), particularly in low- and middle-income countries.⁵
- While protein consumption in high-income countries is perceived to be high, dietary assessment indicates a significant percentage of individuals fall short of consuming [optimal levels of essential amino acids](#).⁶
- Dramatic reductions in [animal source foods](#), such as dairy, will worsen already prevalent micronutrient and protein deficiencies worldwide.⁷
- High-quality protein, such as from dairy, is important for [optimal muscle mass and function](#) and is important for muscle maintenance in older adulthood.⁸

- Animal-derived protein sources elicit more robust muscle protein responses than plant-derived protein sources. Plant derived protein sources can elicit muscle protein responses when blended appropriately.⁷
- Animal source foods, such as dairy, need to be included in diets to sufficiently meet basic nutrient requirements at the **least cost**, thus providing affordable diets.⁹

The original research presented at the symposium has been published as an [article collection](#) in *Frontiers in Nutrition* and can be used as scientific support for the influence of protein quality on human health and sustainable diets and food systems.

“The landmark Expert Consultation convened by the FAO in 2011 recommended a completely new approach to determining the quality ratings of food proteins (DIAAS), the application of which assures adequate intakes of ‘utilizable’ protein for individuals in both developing and developed countries. Implementation of DIAAS in practice, is of utmost importance for future nutritional, environmental, economic and cultural food sustainability.”

Distinguished Professor Paul J Moughan

Head of the project Proteos and Chair of the FAO Expert Consultation

Dietary Protein for Global Human Health

For over a century, recommendations for dietary protein intake have been expressed in grams of protein per day with little to no specificity on source or quality of protein. As concerns for the environment fuel a “protein transition” toward more plant-based proteins, such a shift could have significant impact on the overall protein quality of the diet.⁶ This is particularly concerning given that a recent analysis of dietary data in the Netherlands found that [optimizing dietary patterns](#) for nutrition and the environment were not determined by protein in the diet, but by micronutrients, such as iron, calcium, selenium, iodine, and vitamins A and B12.¹⁰ For example, modeling revealed that when dairy was removed from the diet, vegetable consumption would have to more than double and cost would increase 35% just to meet nutritional adequacy, and with no significant effect on the environment.¹⁰ In other words, removal of dairy from the diet to reduce animal protein resulted in micronutrient deficiencies that required greater consumption of other foods that

were unrealistic from a quantity, cost and cultural perspective and didn't benefit the environment.

Accurate measurement of protein quality in research and policy utilizing the DIAAS method is of importance to nutritional security worldwide. This will be the focus of the *Dietary Protein for Global Human Health* symposium being held May 30, 2025, as a pre-conference event in conjunction with the American Society for Nutrition Annual Meeting, Nutrition 2025. To learn more about the symposium and how you can contribute to its success, please contact Dr. Beth Bradley (details below).

DAIRY LEADERSHIP: A CALL TO ACTION

- Champion the role of dairy in providing high-quality protein and essential micronutrients necessary for nutritional security worldwide.
- Promote the use of the DIAAS method in research and policy to ensure the appropriate evaluation of protein quality.
- Advocate that dairy remain a food group in dietary recommendations because of its high-quality protein and unique nutrient package that contribute to healthy, sustainable diets.

For more information on the Global Dairy Platform's Perspective Papers or our Quarterly Webinar Series, please reach out to Dr. Beth Bradley at beth.bradley@globaldairyplatform.com.

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