INFORMED PROTEIN

Lab Tests vs Label Claims

Protein Supplement Product Survey

UK (2024)

Introduction

Surging Demand and Rising Prices

Over the last few years, protein-based sports supplements have gained significant popularity among fitness and gym enthusiasts. There are compelling reasons for consumers to add protein-based supplements to their diets, with goals such as improving general fitness, supporting weight management, or the promotion of muscle mass and strength.

The global demand for protein supplements is expected to reach a market valuation of US$41.1 bn by 2033, increasing at a CAGR of 6.3% over the next decade[1]. The UK will provide maximum growth opportunities in Europe during the forecast period, which is forecast to contribute to 40% of global market growth[2].

In addition to the popularity of protein increasing, the price of finished products is also going up. Like most industries, the nutritional supplement industry has been affected by rising costs year on year, resulting in increased pressures on manufacturers to find ways of reducing costs to maintain profitability. The average price of whey protein increased by over 85% between 2020 and 2022 because of increased demand and logistical challenges, amongst other factors. While price inflation has slowed, the cascading effects of these events can still be seen in current prices[3].

Consumer sensitivity to increasing costs on goods and services impacts their purchasing decisions. As prices for and use of protein supplements continue to rise, consumers need to be able to trust that products are delivering on the claims made by manufacturers. This makes ensuring accurate protein labelling crucial for consumer trust and dietary adherence.

Conscientious brands may not meet exact label claims due to ingredient substitutions and/or their reliance on database-generated nutrition panels (see more on page 3). In contrast, the significant rise in the cost of protein has led some unscrupulous manufacturers to use a process commonly referred to as 'protein spiking.'

> **When determining nutritional label values, a product's protein content is typically derived via the measurement of total nitrogen, which is then multiplied by an appropriate nitrogen-to-protein conversion factor (NPF) to provide an estimate of crude protein.**

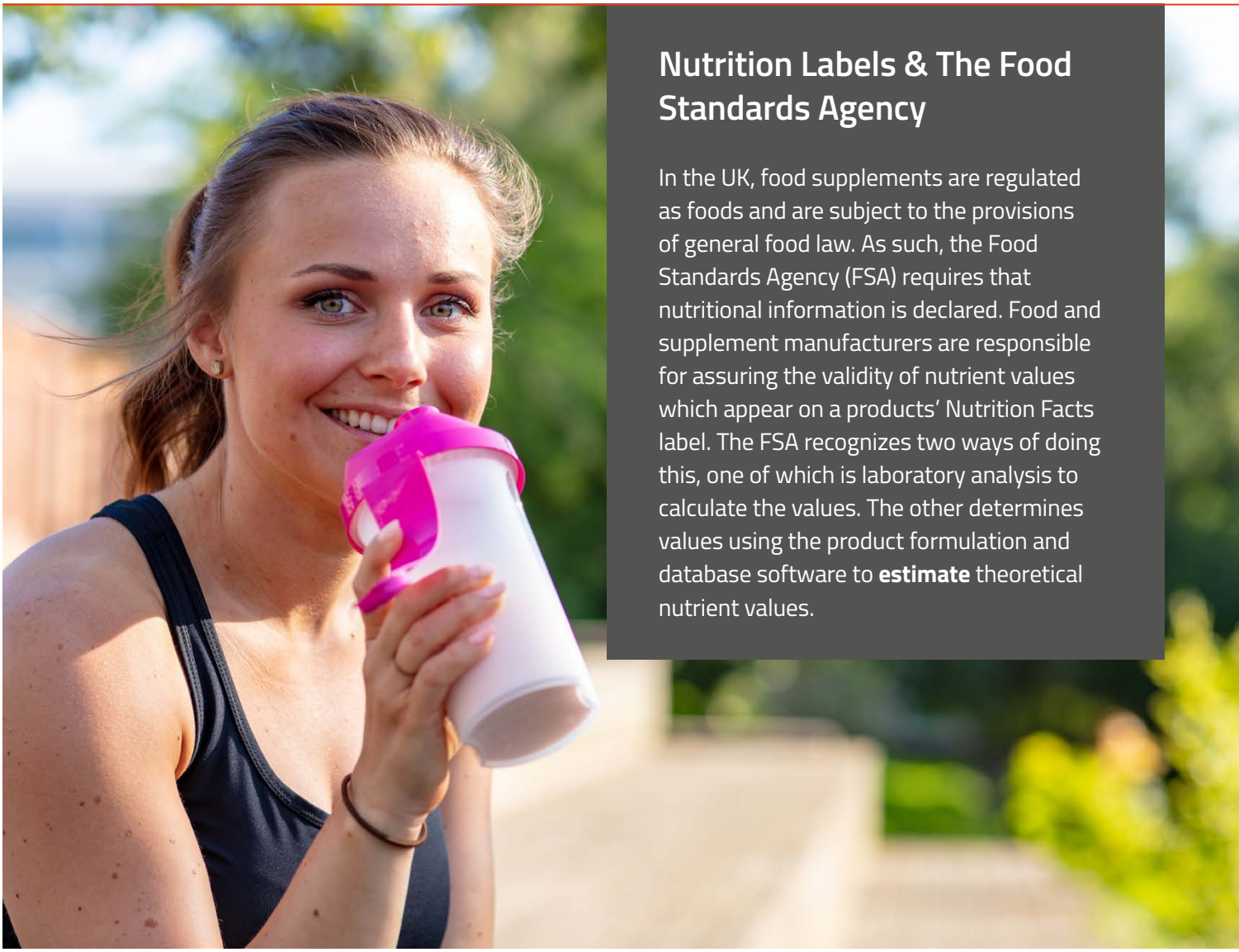
By adding cheaper nitrogen-containing ingredients, such as lower-grade free amino acids, the determined protein content can be artificially inflated. For the consumer, this process represents poor value for money as the efficacy of the product they are purchasing will be far lower than expected. In rare cases which have placed human health at significant risk, harmful nitrogenous materials such as melamine have been detected within protein based formulations.[4].

With current regulations not always guaranteeing the protein content advertised on product labels, there is the potential to mislead consumers, impacting their health goals. Implementing standardized testing protocols, independent verification, and stricter enforcement would establish greater transparency and accountability, allowing consumers to make informed choices and confidently rely on the nutritional information provided.

1 Protein Supplements Market Analysis by Protein Powders, Ready-to-drink, Protein Bars, and Others from 2023 to 2033.
2 Technavio – The Sports Nutrition Market in Europe
3 The Changing Landscape for Sports Nutrition Retailing in Western Europe, Euromonitor International
4 The Melamine Incident: Implications for International Food and Feed Safety – PMC

Nutrition Facts Label

Whether the consumer is intending to increase muscle mass, meet protein needs as they age, compensate for the absence of protein-rich food from their diet, or to promote satiety to support weight management, it is important to know how much protein is in the supplement products being consumed. Counting macronutrients, or "macros," has become more popular in recent years, wherein individuals design their daily nutrient intake based on a certain percentage of carbohydrates, fats, and protein. **In these situations, the consumer relies on the protein content declared on the Nutrition Facts label.**



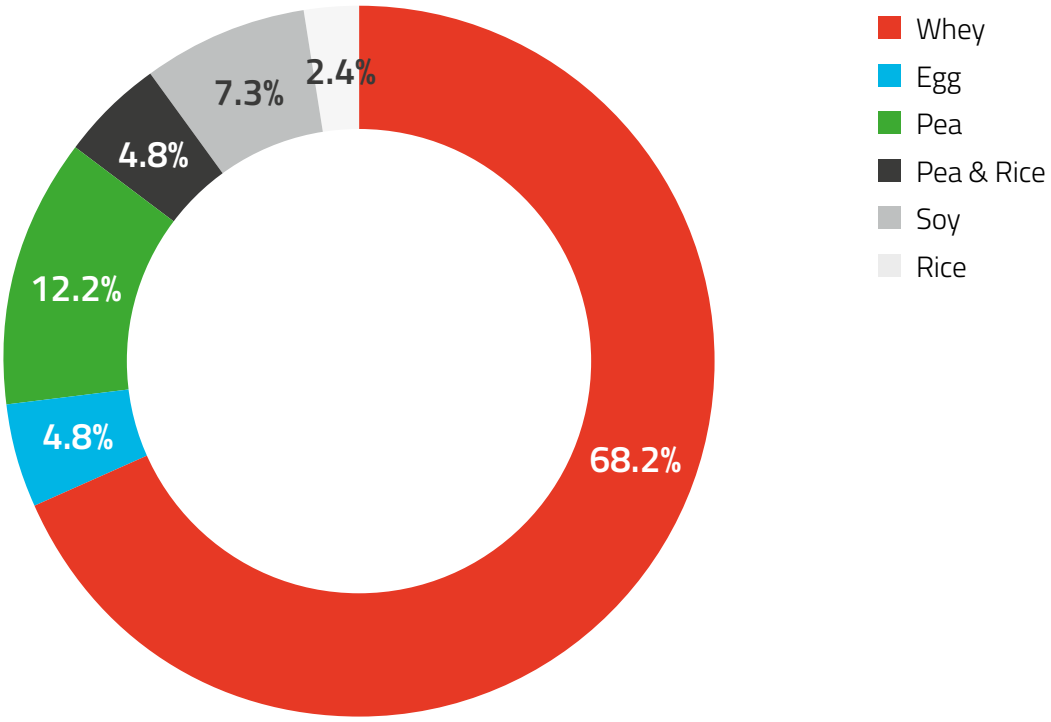
Nutrition Labels & The Food Standards Agency

In the UK, food supplements are regulated as foods and are subject to the provisions of general food law. As such, the Food Standards Agency (FSA) requires that nutritional information is declared. Food and supplement manufacturers are responsible for assuring the validity of nutrient values which appear on a products' Nutrition Facts label. The FSA recognizes two ways of doing this, one of which is laboratory analysis to calculate the values. The other determines values using the product formulation and database software to **estimate** theoretical nutrient values.

Tested Products

- **41 products** were acquired from online retail outlets and traditional brick and mortar stores.
- **21 brands** were selected, including those marketed specifically toward general consumers and those targeted at athletes.
- A variety of protein sources were included in the survey: **egg, milk, soy, rice, pea and whey**.
- The survey focused on protein powders and ready-to-drink protein beverages. **82% of products** tested were protein powders, 18% were ready-to-drink beverages.

Protein Sources Tested



*Percentages may not add up to 100% due to rounding.

Testing

Products were tested using a dedicated elemental combustion analyzer, measuring both carbon and total nitrogen.

The amount of protein in each product was calculated using the determined nitrogen (N) value, multiplied by a nitrogen-to-protein conversion factor (NPF). For example, for products containing whey as the primary source of protein, the NPF used was 6.38 and products containing non-dairy protein sources (e.g. soy), the NPF 6.25 was used in line with current legislation.

The resulting crude protein values were then adjusted for the serving size as declared on the product label, in the following manner:

Protein per serving (g) =
(N content (g/100g)/100 x nitrogen-to-protein conversion factor) x serving size (g)

When comparing the determined protein content to the product label claim, measurement uncertainty of the analytical procedure (determined during method validation) and labelling rounding rules were taken into consideration; both parameters being subtracted from the product label claim prior to comparison with the analytically determined result.

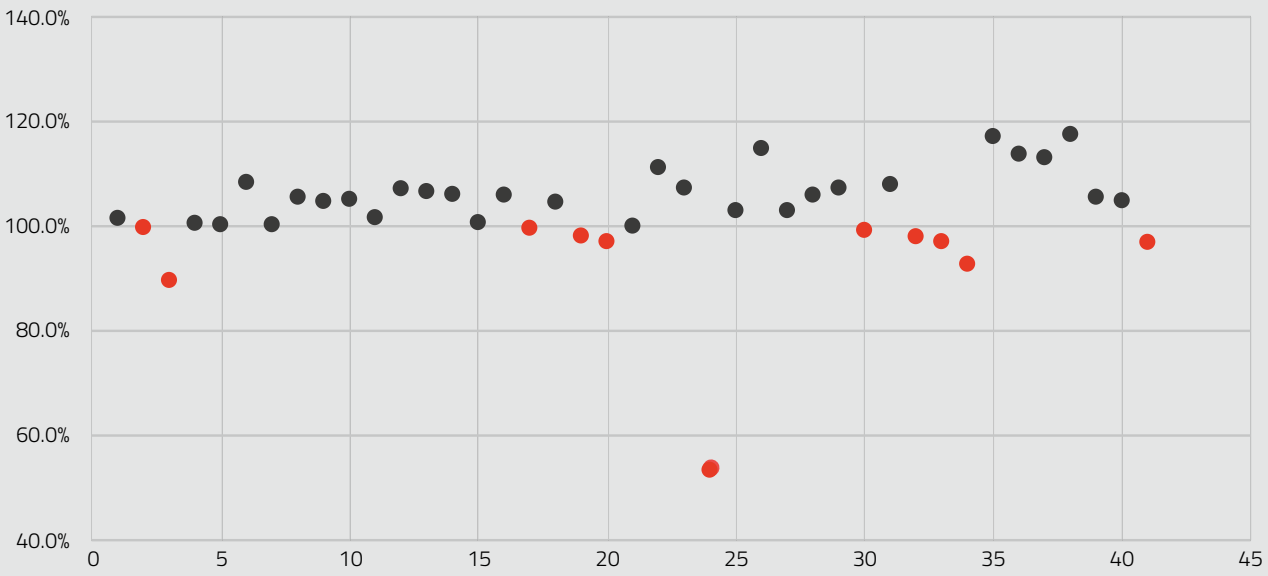
To evaluate the possibility of 'protein spiking,' products were also screened for a range of known adulterants and free amino acids using liquid chromatography tandem mass spectrometry to identify nitrogen-rich compounds that may be included as unlabelled ingredients.

Supplement Product Survey

Findings

Of the 41 products tested, and after making allowances for both label claim rounding and analytical measurement of uncertainty, 11 products were found to have protein levels that were less than the claim on the nutrition facts label.

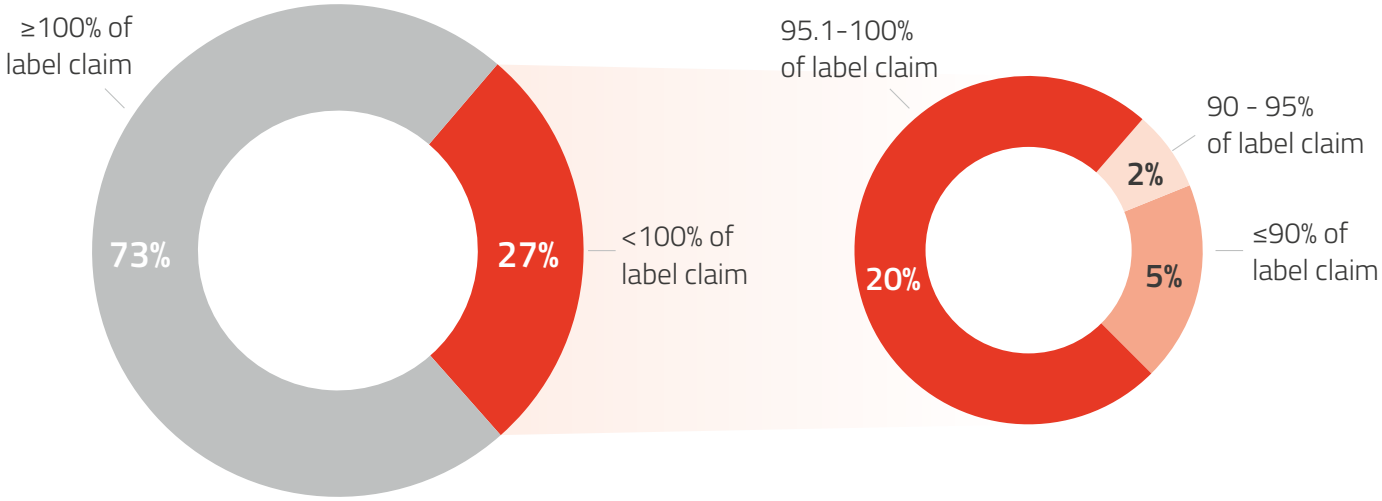
Protein Findings – % of Label Claim



Most products (73%) contained protein at levels greater than or equal to the product label. However, 27% of products were found to contain levels below the label claim. These findings can be broken down as follows:

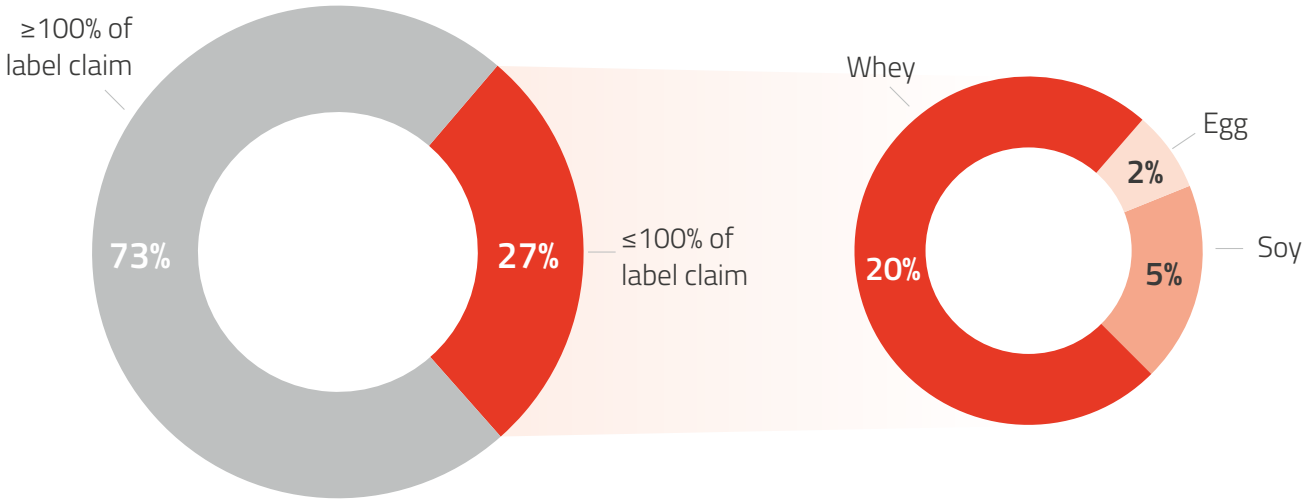
- **19.5% (8)** showed protein levels that were between **95.1% and 100% of label claim**.
- **2.4% (1)** showed protein levels that were between **90.1% and 95% of label claim**.
- **4.9% (2)** showed protein levels that were **less than or equal to 90% of label claim**

Protein Findings – % of Label Claim



The majority of the products that failed to meet survey criteria (noting bias which may be attributable to product type distribution) were whey protein products (73%).

Protein Findings – Protein Source



Results

One whey protein product was shown to contain only 54% of the protein claimed on the Nutrition Facts label. This product, purchased from a high street retailer, was advertised to contain '22.7g of protein per serving.' Testing showed that the product contained only 12.3g per serving.

Relying solely on the information from the Nutrition Facts label, a consumer would be led to believe that a single serving would deliver the claimed amount of protein, however, these results indicate that a user would have to take significantly more than the recommended serving in order to consume the intended amount.

The consumer would not only be underestimating their protein intake, but they would also be misled into overpaying for the amount of protein received. This finding also calls into question the overall product integrity and risks to which the end consumer may be exposed, through potentially consuming products of uncertain composition.

In total, there were seven brands included in the survey, where at least one product was found to contain protein at a level less than that specified within nutritional declarations.

Over the years, LGC has conducted several analytical surveys of supplement products as part of its ongoing support of supplement manufacturers, athletes, and general consumers[5,6].

In this study, the objective was not evaluation of contamination, but assessment of protein content and label claims. With broad use, increased demand, and a growing industry, LGC set out to evaluate the accuracy of protein label claims across a variety of protein supplement products available for purchase in the UK.

5 The Continued Detection of Methylhexaneamine and other Aliphatic Amine Stimulants in UK Supplement Products https://sport.wetestyoutrust.com/continued-detection-methylhexaneamine-and-other-aliphatic-amine-stimulants-uk-supplement-products

6 Australian Supplement Survey – Analysis of sports supplements sold in the Australian market https://www2.lgcgroup.com/australiansupplementsurvey

Challenge

This survey highlights a potential challenge and risk that consumers and athletes face when purchasing and consuming protein-based supplements.

Of the 41 products tested, 11 were found to have protein content that was less than the claim on the Nutrition Facts label.

Though the majority of the products that fell below their claim did so by 5% or less, one **product was found to contain almost half the stated labelled amount.** The findings were observed across different protein sources (whey, soy, and egg) and across 7 different supplement brands. It is encouraging that no evidence of 'protein spiking' was found in any of the products tested.

Many of the products included in this survey met or exceeded label claims. However, this survey shows that **information on Nutrition Facts labels is unreliable in some cases** and points to a consumer risk in the purchase of a protein-based supplements.

With only the information on the Nutrition Facts label the user may purchase and consume an unknowingly low amount of protein. Depending on the degree of the inaccuracy or the criticality of the protein need, this could have serious consequences.

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Conclusion

Verifying protein levels in supplements is crucial for both manufacturers and consumers.

From a consumer perspective, verified protein levels ensure they are receiving the nutritional benefits they expect. Especially for athletes and individuals with specific dietary needs, accurate protein intake is essential for achieving fitness goals and maintaining overall health.

For supplement brands, accurate protein labelling builds trust and reinforces brand integrity. Precise protein quantification allows for accurate nutritional information, enabling businesses to provide reliable data to their customers and maintain a competitive edge in the market.

Informed Protein – The Protein Promise: Supplement Labelling Claims

Informed Protein is a quality assurance programme that verifies the amount of protein in a product using laboratory analysis.

LGC is a globally recognised leader in the field of dietary supplement certification and anti-doping. LGC applied its experience and scientific expertise to develop a testing and certification programme specifically for protein-based supplements.

With a combination of both testing procedures and manufacturer assessment, Informed Protein enables supplement brands to assure consumers and athletes their product label claims have been verified independently, providing confidence the amount of protein within a product is consistent with what is claimed on the label.

The programme also considers the risk of adulteration by incorporating a check on both the declared and undeclared free amino acid content as well as a targeted screen for common harmful nitrogenous adulterants.

To learn more about Informed Protein, visit our website.

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wetestyoutrust.com