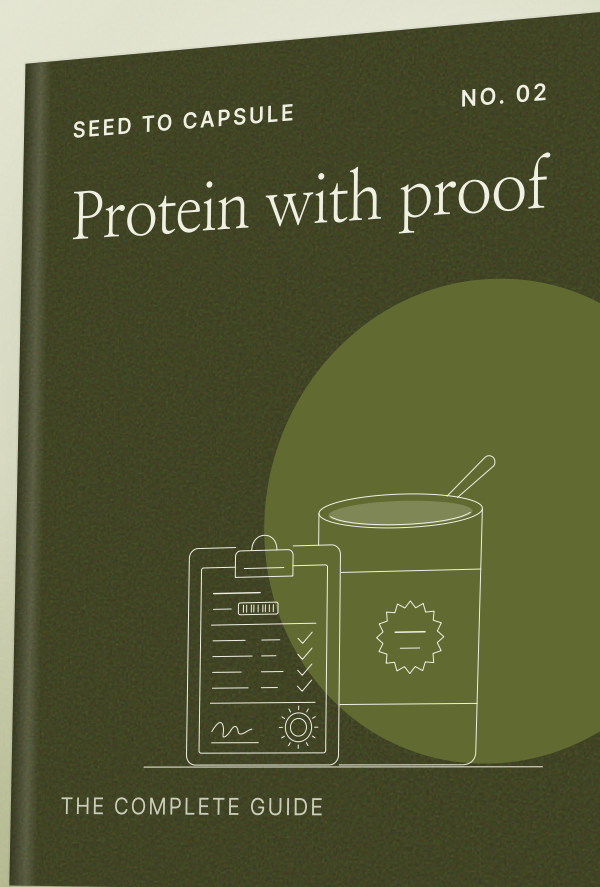




SOURCING GUIDE • TESTING

Check the paper before you taste the protein

For careful buyers who read Supplement Facts and want proof of purity. After reading, they will be able to compare protein labels, request test pages and set one sensible serving.

- Protein math**
Divide protein grams by serving grams before comparing brands.
- Nitrogen limits**
Total nitrogen counts every source, so bound plus free amino acids matter.
- Test pages**
A complete certificate names the lot, method, lab and numeric results.

By Kristen Decker · Updated Sep 20, 2026 · 10 min read

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Protein tubs fail buyers in the same quiet way. Shoppers compare the big protein number on the front and pick by flavour or price. Labels, lab methods and test pages tell a clearer story once protein is read as a share of serving weight.

01

Know concentrate, isolate and plant blends

Whey starts as whey, a milky liquid byproduct from cheese making. That liquid is filtered and then spray dried into powder. How much filtering happens decides what stays in the powder beside protein.

Whey protein concentrate contains 20% to 85% protein with varying fat, lactose and minerals, according to a narrative review in PMC. Tracing the powder back to the dairy shows whey protein isolate contains 90% to 95% protein with minimal fat, lactose and mineral content, according to the same review. Isolate contains less lactose than concentrate because of processing differences. A third form, hydrolysate, is broken into smaller chains, which changes how the powder behaves in liquid and on the label.

Plant powders start in a different field and a different factory, often from soy, pea, rice, or a blend. Only soy protein powder is considered complete among single plant proteins, while blends of two or more plants can supply all essential amino acids. Whey is a complete protein with all nine essential amino acids plus leucine, isoleucine and valine, the three branched chain amino acids often shortened to BCAAs.

Source alone does not settle quality. Plant and whey powders can support muscle growth equally when protein and BCAAs per serving are similar, so purity checks matter more than source alone. The rest of this guide shows how to make that comparison on paper.

Average whey and plant based powders provide 20 to 30 grams of protein per serving. A good powder contains at least 20 to 30 grams of protein and 6 to 15 grams of essential amino acids, including at least 1 to 3 grams of leucine, per serving. Research suggests a 20 to 25 gram dose of high quality protein is associated with stimulating muscle protein synthesis in most adults. Keep those ranges in mind when the scoop looks large and the protein number looks larger.

02

Match protein grams to serving size

The most common mistake is reading protein grams without reading serving grams. FDA Nutrition Facts guidance states that all nutrient amounts including calories refer to the serving size, and serving size reflects the amount people typically eat or drink, not a recommendation. Start with serving size in grams, then divide protein grams by serving grams. That share lets tubs with different scoops be compared.

Do the share check

A 30 gram scoop with 24 grams of protein is 80 percent protein. A 45 gram scoop with 25 grams of protein is about 56 percent protein. The second tub may taste smoother or mix thicker, because flavouring, sweeteners, gums, creamers and extra carbohydrate add weight without adding intact protein. Large scoops often lower protein percent even when the front panel number looks strong.

Calories give a second check. Protein provides 4 calories per gram and fat provides 9 calories per gram for cross checking total calories against protein, fat and carbohydrate. A powder that lists 20 to 30 grams of protein will often sit near 100 to 150 calories when fat and carbohydrate are modest, though added oils, sugars and serving size shift the total. When calories run high while protein stays flat, read the other ingredients line for what fills the scoop.

The first ingredient should be a named protein, such as whey protein isolate, whey protein concentrate, milk protein isolate, soy protein isolate, pea protein, or a stated blend with shares. Vague terms such as protein blend without amounts hide quality because the share of each source stays unknown. A buyer who cooks for a household needs that line most, since lactose tolerance, soy use and milk allergy management turn on exact names.

FROM THE EDITORS

Protein percent is serving arithmetic, not a health claim. It shows how much of the scoop is protein and how much is flavour, sweetener, thickener and other carriers. Use it to compare tubs, then turn to amino acids and lab pages for the rest.

03

Read sweeteners and the amino acid line

Sweeteners shape taste and tolerance, not protein content. Some tubs use sugar, some use stevia or monk fruit, some use sucralose or acesulfame potassium. The Supplement Facts panel shows sugars and the other ingredients line shows the system. Choose the system the

household will use consistently, then return to protein quality.

The amino acid line is where quality shows. Look for 5 grams or more BCAAs, 2 to 3 grams leucine, and all nine essential amino acids listed with amounts. Quality whey should show about 11 percent leucine, around 2.7 grams in a 25 gram serving, and about 25 percent BCAAs, around 6 grams. Plant blends need the same scrutiny, since single sources other than soy may run low in one essential amino acid and depend on the blend to cover the gap.

Added taurine, glycine or creatine beside a high protein number needs a second look. Amino spiking adds inexpensive free amino acids or nitrogen compounds such as taurine or creatine to inflate nitrogen based protein results without adding intact protein. Those ingredients are not hidden when they appear in the ingredient list, yet the effect on the protein number is easy to miss. No published universal cutoff defines how large a free amino acid fraction proves spiking, so brands must set formula specific limits.

Price and texture can signal a check, not a verdict. A very low price per gram of claimed protein, a thin mouthfeel that still claims isolate level protein, or a label with added amino acids high in the list all point toward the lab section below. The question to carry forward is simple. Does the same sample show total nitrogen, bound amino acids and free amino acids from an accredited lab?

04

Spot amino spiking in lab reports

Protein claims rest on nitrogen tests. Kjeldahl (AOAC 981.10) and Dumas combustion (AOAC 991.20) quantify total nitrogen and multiply by a factor, usually 6.25, to estimate protein. U.S. labeling rules at 21 CFR 101.9©(7) permit protein as 6.25 times nitrogen by AOAC methods unless another official factor applies, with 6.38 listed for dairy protein.

The limit sits in the method. Those tests count all nitrogen, whether the nitrogen comes from intact whey chains, free amino acids, or other nitrogen compounds. A tub can therefore pass a nitrogen test while carrying less intact protein than the number suggests. That gap is why a bound amino acid sum plus free amino acid test is needed alongside total nitrogen.

Ask for a same sample panel when spiking is suspected. Total nitrogen gives the label estimate. Bound amino acids, measured after hydrolysis, show protein built into chains. Free amino acids show what was added or left unbound. Whether a specific lot is spiked cannot be known without that same sample panel of total nitrogen, bound amino acids and free amino acids from an accredited lab. One page alone rarely answers it.

Use the whey markers as a guide, not a rule. Typical leucine near 11 percent and BCAAs near 25 percent in quality whey give a reference point for a full amino acid profile. A profile far below those shares, or a large free amino acid fraction relative to the brand formula limit, calls for an

explanation from the maker. The paperwork should name the grower or dairy stream where possible, the batch or lot number, the method, and the lab, so the result can be tied to the tub in hand.

05

Use third party checks and read the certificate

Third party certification does not test every scoop, yet it sets a paper trail that a simple claim cannot. NSF ANSI 173 covers dietary supplement contents and contaminants under a published standard. The NSF Certified for Sport directory shows which products and lots carry that sport certification at the time of search. Informed-Choice and USP Verified seals signal separate programs with their own testing and listing rules. How to search a product and lot before buying is to enter the exact product name on the directory, match the lot where shown, and save the page.

Then request the certificate of analysis for the lot. A strong certificate of analysis shows product name, batch or lot number, specific method such as USP, AOAC, HPLC or ICP-MS, named ISO/IEC 17025 lab, numeric results with units and basis, and pass or fail limits. Heavy metal entries need pass or fail limits and results with a clear basis in ppm, microgram per gram or per serving, for lead, cadmium, mercury and arsenic. Microbiology entries should cover total plate count, yeast and mold, and pathogens with limits fitted to the product matrix.

What exact lead, cadmium and microbial limits a specific brand uses cannot be stated here, since limits vary by specification and retailer. Ask the brand to state the specification beside each result. Red flags include PASS without numbers, a report only for metals when microbes are missing, no method, no lab name, no lot match, or results without units and basis. A complete page can still leave questions, and an incomplete page answers none.

Context helps read metals without alarm or dismissal. Plant powders tend to carry a higher heavy metal burden than animal powders in reviews, yet a risk assessment found hazard indexes below 1 and modeled blood lead below guidance at one or three servings per day. A human health risk assessment in PMC found all modeled hazard indexes below 1 for arsenic, cadmium, mercury and lead at one or three servings per day, with lowest values in whey powders. The same risk assessment found all modeled adult blood lead levels below the CDC guidance value of 5 micrograms per deciliter. Those modeled results describe the studied products and intakes, not a promise about any tub.

Long term effects stay open in places. A narrative review links whey to possible liver, kidney, gut, acne and bone effects in some settings, while other researchers refute liver and kidney harm, leaving long term effects open. Reviews call for more research on chronic high dose whey use in sedentary people and sensitive groups. A buyer with kidney or liver disease, a history of severe acne, or an older parent in the house should point to a professional and keep powder as one part of food, not the base.

Set one daily serving within a varied diet

Use powder to supplement whole foods such as chicken, fish, tofu, eggs and legumes, not as the main source. Most people should aim for 0.6 to 0.9 grams of protein per pound (1.4 to 2.0 grams per kg) per day, or 20 to 40 grams per meal. How much powder an individual needs daily stays personal, since needs vary by weight, age, diet, training, and kidney or liver health.

A practical path is one sensible serving inside food already eaten. Add up protein from meals first, then add powder only for the gap on training days or low appetite days. Keep the same product and the same scoop for a month so the household can judge tolerance, taste and cost per gram of protein. When you bring a tub home, keep the lot number and test page with the receipt.

Caution belongs with specific readers. Older adults often need steady protein across meals and a clinician check on kidney function before raising intake. People with kidney or liver conditions need medical guidance before regular use. People prone to acne or gut upset need a slower trial and a note on lactose, since concentrate carries more lactose than isolate. When doubt remains, a dietitian or physician can set the daily target and review the label and certificate together.

07

The checklist

-
- ☐ Copy serving grams and protein grams, then divide for protein share
-
- ☐ Confirm first ingredient names the protein and its form
-
- ☐ Check 20 to 30 g protein and 100 to 150 calories fit the serving
-
- ☐ Look for all nine essential amino acids with amounts
-
- ☐ So for recovery, look for 5 g or more BCAAs and 2 to 3 g leucine.
-
- ☐ Flag added taurine, glycine or creatine beside high protein
-
- ☐ Search NSF Certified for Sport, Informed-Choice or USP listings
-
- ☐ Request lot matched certificate with method and lab named
-
- ☐ Require numeric metals results for lead, cadmium, mercury, arsenic
-
- ☐ Require micro results for plate count, yeast, mold, pathogens
-
- ☐ Reject PASS without numbers, units, basis or limits
-
- ☐ Set one daily serving and log total protein from foods first
-

08

Sources and further reading

- Plant-Based Protein vs. Whey Protein: Which Is Better? · [healthline.com](https://www.healthline.com)
- How Protein Powder Brands Verify Protein Claims and Investigate Concerns Amino Spiking · [bscg.org](https://www.bscg.org)
- A human health risk assessment of heavy metal ingestion among consumers of protein powder supplements · [pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)
- Good vs. Bad Supplement CoAs: How to Read a Certificate of Analysis (and Fix Yours) — Blue Ocean Regulatory Inc. · [blueoceanregulatory.com](https://www.blueoceanregulatory.com)
- Investigating the Health Implications of Whey Protein Consumption: A Narrative Review of Risks, Adverse Effects, and Associated Health Issue · [pmc.ncbi.nlm.nih.gov](https://pubmed.ncbi.nlm.nih.gov)
- How to Understand and Use the Nutrition Facts Label · [fda.gov](https://www.fda.gov)

For information only, not medical advice. Statements about supplements have not been evaluated by the Food and Drug Administration, and no product here is intended to diagnose, treat, cure or prevent any disease. Ask a doctor or pharmacist before starting a supplement, especially if you are pregnant, nursing or taking medication.



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Kristen produces the interviews at Seed to Capsule: the research, the supplier maps, the follow-up calls. She asks for the name of the farm early in every conversation, and writes it down before the founder can change the subject.
