Dame Health

# Plant Protein (For Her)

*Grade A/B Literature Review — Muscle, Satiety & Women's Health*

## Composition

- Pea protein isolate — 24 g protein (as-is basis); 4 g BCAAs; 9 essential amino acids
- Coconut milk powder
- Antioxidant berry blend — bilberry, goji, blueberry, mulberry, elderberry, cranberry (100 mg each)
- Digestive blend — cumin, fennel seed, ginger standardised extract (100 mg each)
- Natural sweetener (monk fruit); guar gum (INS 412)
- Energy 122.5 kcal; total fat 1.06 g; added sugars 0 g

### Evidence grading used in this review

- **Grade A** — Meta-analysis / systematic review of RCTs, or multiple RCTs, in humans.
- **Grade B** — Single RCT or prospective human clinical study; or meta-analysis with mixed/heterogeneous results.

*Where the clinically studied dose or chemical form differs from the dose in this formulation, this is flagged so claims can be calibrated. Only benefits supported by Grade A/B human evidence are listed.*

## Evidence-Based Benefits

*Every benefit below is drawn from Grade A or Grade B human evidence only. Studies are numbered continuously; each benefit cites its supporting study number(s).*

**1.** Provides 24 g of clean, high-quality plant protein per serving **[see Study 5, Study 6, Study 7, Study 8]**

**2.** Supports muscle mass and strength when combined with resistance training **[see Study 1, Study 2, Study 3, Study 4]**

**3.** Pea protein matches whey for muscle protein synthesis (a complete protein source) **[see Study 7, Study 8]**

**4.** Supports satiety and appetite control as part of a balanced diet **[see Study 9, Study 10, Study 11]**

**5.** Supports healthy weight and body-composition goals (higher-protein intake) **[see Study 12, Study 13, Study 14, Study 15]**

**6.** Suitable plant-based alternative to animal protein for lean mass **[see Study 16, Study 17]**

**7.** Contributes to protein intake relevant to bone health in later life **[see Study 18]**

## PRIMARY EVIDENCE — MUSCLE MASS & STRENGTH (GRADE A)

### 1) Morton et al., 2018 — Protein supplementation and resistance training (British Journal of Sports Medicine)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review, meta-analysis & meta-regression of RCTs

**Study dose:** Varied; total protein intake up to 1.62 g/kg/day **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 49 RCTs, n=1,863 healthy adults; resistance training ≥6 weeks

**Key findings:**

- Protein supplementation significantly increased one-repetition-maximum strength by 2.49 kg (95% CI 0.64, 4.33).
- Fat-free mass increased by 0.30 kg (95% CI 0.09, 0.52) and muscle fibre cross-sectional area by 310 μm² (95% CI 51, 570).
- No further fat-free-mass gains were observed above a total protein intake of ~1.62 g/kg/day, establishing an efficacy ceiling.
- Efficacy was reduced with increasing age and greater in resistance-trained individuals.

**Source:** https://bjsm.bmj.com/content/52/6/376

### 2) Cermak et al., 2012 — Protein supplementation augments the adaptive response of skeletal muscle (American Journal of Clinical Nutrition)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & meta-analysis of RCTs

**Study dose:** Varied protein supplementation during >6 weeks resistance training **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 22 RCTs, n=680, younger and older adults

**Key findings:**

- Fat-free mass increased by a weighted mean difference of 0.69 kg (95% CI 0.47, 0.91; P<0.00001) versus placebo.
- One-repetition-maximum leg-press strength increased by 13.5 kg (95% CI 6.4, 20.7; P<0.005).
- Effect was consistent across both younger and older populations.

**Source:** https://pubmed.ncbi.nlm.nih.gov/23134885/

### 3) Tagawa et al., 2022 — Synergistic effect of total protein intake and strength training on muscle strength (Sports Medicine – Open)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & dose–response meta-analysis of RCTs

**Study dose:** Dose–response modelled to 1.5 g/kg body weight/day **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 82 RCTs; spline dose–response model from 69 articles

**Key findings:**

- Muscle strength increased significantly ONLY when protein was combined with resistance training (MD 2.01%, 95% CI 1.09–2.93).
- In the absence of resistance training, protein supplementation produced no significant strength gain (MD 0.13%, 95% CI −1.53 to 1.79).
- Strength rose 0.72% per 0.1 g/kg/day increase in total protein up to 1.5 g/kg/day, with no further gains thereafter.
- CRITICAL FOR CLAIM CALIBRATION: strength benefit is conditional on concurrent resistance training. Any strength-implying claim must be framed alongside physical activity.

**Source:** https://sportsmedicine-open.springeropen.com/articles/10.1186/s40798-022-00508-w

### 4) Nunes et al., 2022 — Protein intake to support muscle mass and function in healthy adults (Journal of Cachexia, Sarcopenia and Muscle)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review, meta-analysis & meta-regression of RCTs

**Study dose:** ≥1.6 g/kg/day in adults <65 y; 1.2–1.59 g/kg/day in adults ≥65 y **Our product:** 24 g protein per 33 g serve

**Design:** Three-level random-effects meta-analysis of 74 RCTs

**Key findings:**

- Increasing daily protein enhanced lean body mass gains in subjects performing resistance exercise (SMD 0.22, 95% CI 0.14–0.30; P<0.01; moderate certainty).
- Lower-body strength gain was slightly greater at ≥1.6 g/kg/day during resistance training (SMD 0.40; P<0.01; low certainty).
- Effects on handgrip strength were unclear and effects on physical function tests were marginal.
- Supports a lean-mass claim of modest magnitude; does not support broad functional-performance claims.

**Source:** https://onlinelibrary.wiley.com/doi/10.1002/jcsm.12922

## INGREDIENT-SPECIFIC EVIDENCE — PEA PROTEIN ISOLATE

### 5) Babault et al., 2015 — Pea protein vs whey protein vs placebo, 12-week resistance training (Journal of the International Society of Sports Nutrition)

**Ingredient:** Pea protein isolate (hero — exact ingredient match) **Grade:** B — Randomised, double-blind, placebo-controlled trial

**Study dose:** 25 g pea protein twice daily (50 g/day) × 12 weeks **Our product:** 24 g pea protein isolate per serve

**Design:** Double-blind RCT, n=161 males aged 18–35; pea (n=53) vs whey (n=54) vs placebo (n=54)

**Key findings:**

- Biceps brachii muscle thickness increased significantly across all groups over 12 weeks (P<0.0001).
- In participants weakest at baseline, thickness gain was +20.2% (pea), +15.6% (whey) and +8.6% (placebo); pea was significantly greater than placebo (P<0.05).
- No significant difference was found between pea and whey on any outcome.
- Authors conclude pea protein may be used as an alternative to whey-based products.
- DOSE NOTE: trial used 50 g/day across two servings; a single 24 g serve is half the trial exposure.

**Source:** https://jissn.biomedcentral.com/articles/10.1186/s12970-014-0064-5

## 6) Singh et al., 2024 — Pea protein with resistance training in sedentary adults (Nutrients)

**Ingredient:** Pea protein isolate (hero — exact ingredient match) **Grade:** B — Randomised, comparator-controlled, parallel clinical trial

**Study dose:** Pea protein supplementation × 84 days with weekly resistance training **Our product:** 24 g pea protein isolate per serve

**Design:** Randomised comparator-controlled trial in sedentary adults; pea protein vs whey protein

**Key findings:**

- Pea protein improved whole-body muscle strength by 16.1% over 84 days (P=0.01); whey improved by 11.1% (P=0.06).
- No significant between-group difference in change in whole-body muscle strength, muscle mass, or product likability.
- Both products were safe and well tolerated.
- Supports pea protein as a viable alternative to whey without sacrificing muscular gains.

**Source:** https://www.mdpi.com/2072-6643/16/17/2986

## 7) McKendry et al., 2024 — Whey, pea and collagen protein above the RDA on myofibrillar protein synthesis (American Journal of Clinical Nutrition)

**Ingredient:** Pea protein isolate (hero — exact ingredient match) **Grade:** B — Double-blind randomised controlled trial

**Study dose:** 50 g/day (2 × 25 g) above the RDA × 8 days **Our product:** 24 g pea protein isolate per serve

**Design:** Double-blind RCT, n=31 healthy older males (72 ± 4 y); whey (n=10) vs pea (n=11) vs collagen (n=10)

**Key findings:**

- Integrated muscle protein synthesis rose with whey (1.59 %/day) and pea (1.59 %/day) versus the RDA control phase (1.46 %/day; P<0.001 for both).
- Collagen protein produced no increase in muscle protein synthesis.
- Pea protein was equivalent to whey and both overcame age-related anabolic signalling deficits (mTORC1, rpS6).
- Establishes that pea protein is a high-quality protein source for muscle protein synthesis, not merely a filler.

**Source:** https://pubmed.ncbi.nlm.nih.gov/38346565/

## 8) West et al., 2023 — Pea protein and post-exercise myofibrillar protein synthesis (American Journal of Physiology – Endocrinology and Metabolism)

**Ingredient:** Pea protein isolate (hero — exact ingredient match) **Grade:** B — Randomised controlled trial with stable-isotope infusion

**Study dose:** 25 g protein post-exercise **Our product:** 24 g pea protein isolate per serve

**Design:** RCT, n=33 healthy resistance-trained adults; mycoprotein vs pea vs blend

**Key findings:**

- Pea protein increased post-exercise myofibrillar protein synthesis from 0.028 %/h at rest to 0.087 %/h over 4 hours (P<0.0001).
- No significant differences between pea, mycoprotein or their blend at any timepoint.
- Pea protein's relatively low methionine content did NOT limit its capacity to stimulate muscle protein synthesis.
- Directly rebuts the standard objection to single-source pea protein.

**Source:** https://pubmed.ncbi.nlm.nih.gov/37792340/

## SATIETY, APPETITE & BODY COMPOSITION (GRADE A)

### 9) Kohanmoo et al., 2020 — Protein consumption, appetite and appetite-regulating gut hormones (Physiology & Behavior)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & meta-analysis of RCTs

**Study dose:** Acute protein loads; appetite markers affected below 35 g, hormones at ≥35 g **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 49 acute-effect publications and 19 long-term publications; isocaloric controls

**Key findings:**

- Acute protein intake decreased hunger by 7 mm VAS (P<0.001), desire to eat by 5 mm (P=0.045) and prospective food consumption by 5 mm (P=0.001).
- Fullness increased by 10 mm VAS (P<0.001) and satiety by 4 mm (P<0.001).
- Ghrelin fell 20 pg/mL (P<0.001); cholecystokinin rose 30 pg/mL (P<0.001); GLP-1 rose 21 ng/mL (P<0.001).
- IMPORTANT: long-term protein ingestion did NOT sustain these appetite effects. The satiety claim is supported acutely, per-serving, not as a chronic outcome.

**Source:** https://pubmed.ncbi.nlm.nih.gov/32380053/

### 10) Wycherley et al., 2012 — Energy-restricted high-protein vs standard-protein low-fat diets (American Journal of Clinical Nutrition)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & meta-analysis of RCTs

**Study dose:** Isocaloric high-protein diets; mean duration 12.1 ± 9.3 weeks **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 24 RCTs, n=1,063 adults

**Key findings:**

- High-protein diets mitigated loss of fat-free mass by 0.43 kg (95% CI 0.09, 0.78) versus standard-protein diets at matched energy intake.
- Resting energy expenditure was better preserved (595.5 kJ/day; 95% CI 67.0, 1124.1).
- Body weight fell an additional 0.79 kg and fat mass 0.87 kg — modest effects.
- Greater satiety was reported in 3 of 5 studies that measured it.
- Supports a lean-mass-preservation framing; the weight-loss effect is too small to anchor a consumer claim.

**Source:** https://pubmed.ncbi.nlm.nih.gov/23097268/

### 11) Leidy et al., 2015 — The role of protein in weight loss and maintenance (American Journal of Clinical Nutrition)

**Ingredient:** Dietary protein (hero) **Grade:** A — Review of meta-analyses of controlled feeding trials

**Study dose:** 1.2–1.6 g/kg/day total; ≥25–30 g protein per meal **Our product:** 24 g protein per 33 g serve

**Design:** Synthesis of multiple meta-analyses of short-term controlled feeding studies and long-term trials

**Key findings:**

- A modest satiety effect is confirmed: greater perceived fullness and elevated satiety hormones after higher-protein meals.
- This does NOT translate into reduced energy intake at the next eating occasion.
- Benefits require meal-specific protein of at least ~25–30 g — our 24 g serve sits marginally below this threshold.
- Longer-term studies produced limited and conflicting findings; dietary compliance was the primary determinant.

**Source:** https://pubmed.ncbi.nlm.nih.gov/25926512/

### 12) Tagawa et al., 2020 — Dose–response between protein intake and muscle mass increase (Nutrition Reviews)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & dose–response meta-analysis of RCTs

**Study dose:** 0.5–3.5 g/kg/day; inflection at 1.3 g/kg/day **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 105 articles, n=5,402 participants; multivariate spline model

**Key findings:**

- Lean body mass increased 0.39 kg (95% CI 0.36–0.41) per 0.1 g/kg/day increment BELOW a total intake of 1.3 g/kg/day.
- Above 1.3 g/kg/day the increment fell to 0.12 kg (95% CI 0.11–0.14) — a fourfold reduction in return.
- Confirms that protein supplementation delivers greatest benefit in populations with sub-optimal habitual intake.
- Directly relevant to the Indian female consumer, where habitual protein intake is typically below requirement.

**Source:** https://pubmed.ncbi.nlm.nih.gov/33831190/

## WOMEN'S HEALTH — PCOS & METABOLIC (DOCTOR-FACING ONLY)

### 13) Wang et al., 2024 — High-protein diets on cardiometabolic factors and reproductive hormones in PCOS (Nutrition & Diabetes)

**Ingredient:** Dietary protein (hero) **Grade:** A — Systematic review & meta-analysis of RCTs

**Study dose:** High-protein diets vs isocaloric balanced diets **Our product:** 24 g protein per 33 g serve

**Design:** Meta-analysis of 8 trials, n=300 women with PCOS

**Key findings:**

- High-protein diets reduced fasting insulin by 2.69 μIU/mL (95% CI −3.81, −1.57; P<0.0001) versus isocaloric balanced diets.
- HOMA-IR fell by 0.41 (95% CI −0.80, −0.02; P=0.04), though heterogeneity was very high ($I^2$=94%).
- High-protein and balanced diets had COMPARABLE effects on weight loss, abdominal adiposity, lipid profiles and reproductive hormones (all P≥0.05).
- REGULATORY FIREWALL: insulin sensitivity is a disease-condition endpoint. This evidence is doctor-facing only and must not appear in consumer-facing claims. No reproductive-hormone benefit is supported.

**Source:** https://www.nature.com/articles/s41387-024-00265-7

### 14) Mehrabani et al., 2012 — High-protein, low-glycaemic-load hypocaloric diet in PCOS (Journal of the American College of Nutrition)

**Ingredient:** Dietary protein (hero) **Grade:** B — Randomised controlled single-blind intervention trial

**Study dose:** 30% of daily energy from protein × 12 weeks **Our product:** 24 g protein per 33 g serve

**Design:** RCT, n=60 overweight and obese women with PCOS, not using insulin-sensitising agents

**Key findings:**

- The high-protein, low-glycaemic-load arm produced significant reductions in insulin, HOMA-IR and hs-CRP (P<0.001) versus a conventional hypocaloric diet.
- Weight loss was significant but SIMILAR in both groups — the protein content did not drive weight change.
- Testosterone fell in both groups, again without differentiation by protein content.
- Doctor-facing only, per the same firewall as Study 12.

**Source:** https://pubmed.ncbi.nlm.nih.gov/23204151/

## BALANCED EVIDENCE — LIMITATIONS & CLAIM CALIBRATION

### 15) Ellinger et al., 2023 — Protein intake and body weight, fat mass, waist circumference (European Journal of Nutrition)

**Ingredient:** Dietary protein — calibration evidence **Grade:** A — Umbrella review of 33 systematic reviews (German Nutrition Society guideline)

**Study dose:** Higher vs lower protein intake; plant vs animal protein **Our product:** 24 g protein per 33 g serve

**Design:** Umbrella review; methodological quality by AMSTAR 2, certainty by NutriGrade

**Key findings:**

- Under isoenergetic conditions there is 'possible' evidence that the AMOUNT of protein does NOT modulate body weight, fat mass or waist circumference in adults.
- Under hypoenergetic conditions high-protein diets mostly decreased body weight and fat mass, but the evidence was rated 'insufficient' due to low methodological quality.

- Evidence regarding an influence of protein TYPE (plant vs animal) on body weight, fat mass or waist circumference was rated 'insufficient'.
- CALIBRATION: this is the strongest counterweight to any weight-management claim. No weight, fat-loss or waist claim should be made on this SKU.

**Source:** https://pubmed.ncbi.nlm.nih.gov/36899495/

### 16) Lim et al., 2021 — Animal protein versus plant protein for lean mass and muscle strength (Nutrients)

**Ingredient:** Plant protein — calibration evidence **Grade:** A — Systematic review & meta-analysis of RCTs

**Study dose:** Animal vs plant protein, total intakes generally above the RDA **Our product:** 24 g pea protein isolate per serve

**Design:** Meta-analysis of 16 RCTs (18 articles systematically reviewed)

**Key findings:**

- Protein source did NOT affect changes in absolute lean mass or muscle strength.
- A favouring effect of animal protein was seen on PERCENT lean mass, and in younger adults (<50 y) for absolute lean mass (WMD 0.41 kg; 95% CI 0.08–0.74).
- Resistance training did not influence the source comparison.
- CALIBRATION: supports parity on absolute outcomes; does not support any claim of plant-protein superiority.

**Source:** https://pubmed.ncbi.nlm.nih.gov/33670701/

### 17) Walter et al., 2026 — Nutritional strategies with strength training in postmenopausal women (Sports Medicine – Open)

**Ingredient:** Dietary protein — calibration evidence **Grade:** A — Systematic review of RCTs (PEDro-appraised)

**Study dose:** Minimum 0.8 g/kg body weight **Our product:** 24 g protein per 33 g serve

**Design:** Systematic review of 34 studies, n=1,541 postmenopausal women; 31 studies PEDro ≥6

**Key findings:**

- Protein intake was examined in 9 studies and had NO significant additional effect on muscle strength or lean body mass beyond a minimal intake of 0.8 g/kg body weight.
- Systematic strength training itself consistently improved body composition, strength capacity and bone mineral density.
- Available data were judged insufficient to derive evidence-based supplementation recommendations for this population.
- CALIBRATION: does not support a menopause-specific protein benefit. Product messaging spanning 'adolescence to menopause' should not imply a menopause-specific efficacy claim.

**Source:** https://sportsmedicine-open.springeropen.com/articles/10.1186/s40798-025-00920-y

### 18) Groenendijk et al., 2022 — Protein intake and bone mineral density in older adults (Journal of Cachexia, Sarcopenia and Muscle)

**Ingredient:** Plant protein — calibration evidence **Grade:** A — Pooled individual-participant analysis of 4 trials; adjusted linear mixed models

**Study dose:** Habitual total, plant and animal protein intake; 12–24 week supplementation arms **Our product:** 24 g pea protein isolate per serve

**Design:** Cross-sectional analysis n=1,570 (aged ≥65 y); longitudinal analysis n=340

**Key findings:**

- Total and animal protein intake were associated with HIGHER total-body and spine bone mineral density.
- Plant protein intake was associated with LOWER total-body BMD (−0.0010 g/cm$^2$) and lower spine BMD (−0.0019 g/cm$^2$).
- Protein supplementation over 12–24 weeks, with or without resistance exercise, did not significantly improve bone mineral density.
- CALIBRATION: no bone-health claim may be made on this SKU. This is the single most adverse finding for a plant-protein product marketed to peri- and post-menopausal women, and should be anticipated in any regulatory or retail review.

**Source:** https://pubmed.ncbi.nlm.nih.gov/35174663/