

# Academic review of optimal protein intake, sustainable dietary sources and the effect on appetite in ageing adults.

With an ageing population, food solutions are urgently needed to promote health and independence later in life. The evidence-based review summarised following findings regarding optimal intake of sustainable proteins in ageing adults:

- **QUANTITY:** The Reference Nutrient Intake (RNI) for protein (0.75 g per kg of body weight) may be insufficient in inhibiting age-related loss of muscle mass and strength (sarcopenia), and intake exceeding this amount might be preferential.
- **DISTRIBUTION:** Consumption of two to three meals a day, each containing ~25-30 g of protein is optimal for the stimulation of 24-h muscle protein synthesis (MPS).
- **SUSTAINABILITY:** Nearly 2/3 of total daily protein intake in British diet is animal-originated. The ever-growing demand for foods naturally rich in protein is part of an ecological debate around whether more sustainable sources should be encouraged, such as plant proteins.
- **SOURCES:** Animal-based foods have complete composition of essential amino acids, with high digestibility (>90%) and bioavailability. Solutions to maximise essential amino-acids content of plant foods include: amino-acid complementation and consuming higher amounts of plant-based products on a more frequent basis.
- **AMINO-ACID COMPOSITION:** Leucine is the amino-acid that plays a key role in MPS. The highest amounts in plant foods are found in dried seaweed (4.95g/100g), dry-roasted soy beans (3.22/100g), roasted pumpkin seeds (2.39g/100g), dry-roasted peanuts (1.53g/100g), cooked lentils (1.29g/1 cup) and barley flour (0.71g/100g). The recommended amount is 2.8-4g of leucine/meal.
- **APPETITE:** Protein is more satiating than other nutrients. Available data points towards the positive effects of replacing animal proteins with plant-originated in normal weight and overweight/obese individuals. More studies are needed to rule out the effect of protein-induced satiety and subsequent compromised energy intake in underweight adults.
- **PALATABILITY:** Meals high in animal proteins are scored higher than high-protein vegetarian alternatives. Regular exposure to meat alternatives can positively influence product's liking over time. It is crucial to explore and evaluate potential methods to increase the palatability of plant-based foods.

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