



## Which pulses are high in protein?

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Gone are the days when people assumed protein only came from meat, dairy, and eggs. Whether you are following a vegetarian or vegan diet or simply want to increase your intake of plants, pulses can make a great protein-packed ally. From lentils and chickpeas to black beans and peas, there is a wide variety to choose from. This article explores the world of pulses and the varieties that stand out as protein champions.

### How much protein is in pulses?

Pulses such as lentils, chickpeas, black beans, and peas all provide a plant-based source of protein. Pulses typically contain 21-25% protein (dry weight) – almost double that found in cereals.<sup>1</sup> That is equal to 8.2 grams of protein per 100 grams for boiled pulses, on average (a portion of pulses is about 80 g).<sup>2</sup> The exact protein content in pulses varies with the specific variety and the conditions on how the crop was grown (e.g., germination, environmental conditions, use of fertilisers).

The amount of protein we need daily depends on our weight, physical activity, health status, and if you're pregnant/breastfeeding. On average, a healthy adult should eat at least 0.8 grams of protein per kilogram of weight.<sup>3</sup> For example, if someone weighs 60 kg, this means they should aim for a minimum of 48 g of protein a day (60 kg x 0.8 g = 48 g).

### Is the protein in pulses 'incomplete?'

You might have heard that the protein in legumes, pulses, or beans is not a 'complete protein.' A 'complete protein' commonly refers to a food source of protein that contains an adequate proportion of each of the nine essential amino acids (the building blocks of protein) that the human body cannot produce and thus must come from our diet. Although plants contain all essential amino acids, some levels are generally lower than others, known as their limiting amino acid. For example, pulses are generally lower in the amino acid methionine (and higher in the amino acid lysine), while the reverse is true for rice. As a result, you may often hear the recommendation to eat beans and rice together because, by including them both, the limiting amino acid methionine in pulses is complemented by the rice and the limiting amino acid lysine in rice is complemented by the pulses.

However, this does not mean that we have to eat these foods together in every single meal. In fact, it has been shown that that it is the overall intake of amino acids over the course of a day that determines the ability of a diet to meet essential amino acid needs. As long as you eat enough calories in a day and a variety of foods from day to day, you can meet all your amino acid requirements. It has also been found that the body maintains a pool of essential amino acids that can complement dietary intakes when intake is not sufficient, implying that plant-based diets meeting daily energy requirements also fulfil essential amino acid needs.<sup>4,5</sup>

## What are examples of high-protein pulses?

Whether you are opting for beans, lentils, soy, or chickpeas, all pulses are renowned for their high protein content. Plus, including a variety of pulses in our diet not only provides a substantial amount of protein (including the nine essential amino acids) but also contributes essential vitamins and minerals, fibre, and has a range of other health and environmental benefits. That is why it is important to experiment and try new pulses in your diet.

Below are some examples of how much protein you can get from 100 grams of (boiled) pulses.<sup>2</sup>

<b>Pulses, boiled from dry</b>	<b>Protein per 100 g</b>
Soybeans	10.6
Green and brown lentils	8.8
Green peas	8.4
Yellow split peas	8.4
Red kidney beans	8.3
Green split peas	7.9
White beans	7.8
Red lentils	7.7
Chickpeas	7.6
Mung beans	7.6
Brown beans	6.1
White baked beans in tomato sauce, canned	5.7

## Which pulses are high in protein?

(boiled, from dry)



Source: Dutch Food Composition Database (NEVO), 2021.



### Soy

Soy is a legume that contains a good balance of essential amino acids and tends to be well-digested by our body. Soy-based foods high in protein include tempeh (cooked) (10.3 g of protein per 50 g serving), edamame beans (frozen) (9.8 g of protein per 80 g serving), tofu (steamed) (8.1 g of protein per 100 g serving), soy yoghurt (plain) (5 g of protein per 125 ml serving), and soy drink (unsweetened & fortified) (4.8 g of protein per 200 ml serving). When choosing soy-based alternatives to dairy, opt for those that are fortified with vitamins and minerals and contain no added sugars.

### Lentils

Lentils, available in various colours such as brown, green, red, and yellow, contain on average approximately 7 grams of protein per serving (80 g). Lentils make an ideal addition to soups, stews, salads, and even veggie burgers.

### Chickpeas

Chickpeas are a staple in many cuisines and a beloved component of dishes like hummus and falafel. Chickpeas contain approximately 6 grams of protein per serving (80 g). Snack on roasted chickpeas, toss them into salads or whip up a creamy hummus for a tasty and protein-packed treat.

### Peas

While peas may be small in size, they are big on protein content. A serving (80 g) of peas contains approximately 7 grams of protein, making them a valuable addition to side dishes, stir-fries, and pasta dishes. Peas are not only nutritious but also add a vibrant burst of colour to your meals.

### Beans

Red kidney beans, white beans, mung beans, brown beans... there is so much variety to choose from!

Whether you're indulging in a comforting bowl of bean chilli, crafting a hearty bean salad, or preparing a flavourful bean stew, these pulses all offer a significant amount of protein.

## **Summary**

Adding more pulses to your plate is an easy way to get more plant-based protein into your diet. From the earthy flavours of lentils to the versatility of chickpeas, pulses offer a spectrum of flavours and textures that can be seamlessly integrated into a variety of dishes. While you might have heard the protein in pulses is 'incomplete' and we have to eat them together in a meal with, for example, rice, this is not necessarily the case. All pulses (and other plant foods typically consumed as sources of protein) contain all the essential amino acids, and we are capable of getting enough protein from plant sources if we consume sufficient calories from a variety of nutrient-dense foods. So, enjoy your soybeans, lentils, chickpeas, and beans without compromising on protein.