

# HOT TOPIC

The source of protein and protein quality



## In focus

Protein is an essential nutrient that can be provided by both plant and animal sources. Are there differences between plant and animal proteins and what is considered a good quality protein?

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## Protein and amino acids

Protein is an essential nutrient for both dogs and cats. During digestion, dietary proteins are broken down by enzymes into amino acids, commonly known as the building blocks of protein. The amino acids are then used to build new proteins in the body, e.g., for muscles, skin, coat and antibodies.

Proteins are made up of both essential and non-essential amino acids.

**Essential amino acids** cannot be produced in the body or in sufficient quantities and must be provided in a pet's diet.

Both dogs and cats require ten essential amino acids, and cats need an additional amino acid, taurine (an amino-sulphonic acid) found exclusively in meat and fish.

Dogs and cats also require twelve **non-essential amino acids**. These amino acids can be produced in the body or provided in the diet.

A nutritionally balanced diet typically contains both **essential** and **non-essential amino acids**.<sup>1</sup>

**ESSENTIAL AMINO ACIDS**

- Arginine
- Histidine
- Isoleucine
- Leucine
- Lysine
- Methionine
- Phenylalanine
- Taurine (Cats Only)
- Threonine
- Tryptophan
- Valine

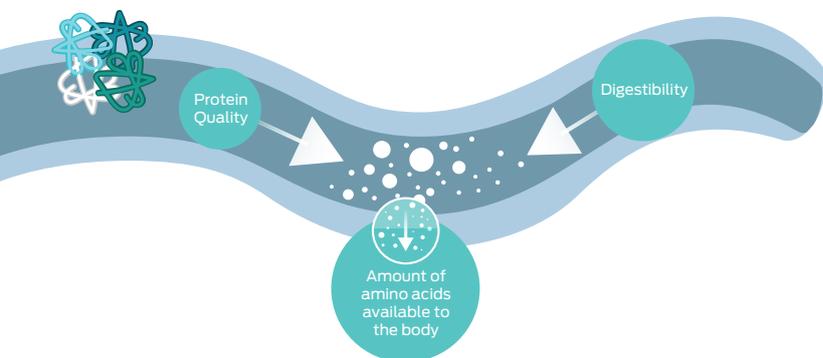
**What is a 'high quality' protein?**

When defining a high quality protein, both the **digestibility** and **bioavailability** are important.

A protein is defined as highly **digestible** when it is easily broken down into amino acids that can then be absorbed from the gut into the bloodstream and into the body's tissues and cells. Less digestible proteins are not as easily broken down during digestion, so fewer amino acids are available for absorption by the body. Undigested protein is excreted in the feces.

Proteins are defined as **bioavailable** when the amino acids they provide are available for use by body cells and tissues.

Both animal and plant sources can provide high quality protein when included in diets for pets. However, the processing and cooking (manufacturing) of these ingredients can also increase or decrease their **digestibility** and **bioavailability**,<sup>2</sup> and is taken into account during the manufacturing process.


**Are there benefits to feeding 'novel' protein sources?**

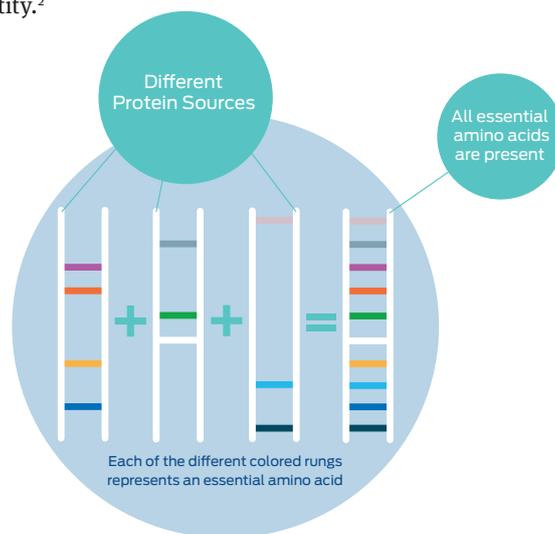
'Novel' (less commonly used) protein sources are sometimes thought to be more beneficial for pets than more frequently used protein sources found in pet foods, such as beef or chicken. However, pets require specific nutrients, i.e., protein and amino acids, not a specific source of protein. There is no additional health or nutritional benefit to feeding 'novel' proteins to healthy pets compared to more traditional sources.

'Novel' protein diets may be helpful in cases of suspected food intolerances or food allergies to avoid feeding proteins the pet has previously been exposed to. However, feeding 'novel' proteins will not prevent pets from developing a food allergy,<sup>3</sup> and there are no known benefits for healthy pets.

**Are animal-sourced proteins better than plant-sourced proteins?**

In general, the source of the protein is not as important as the amino acids that it provides to the pet. Each protein ingredient will provide a unique set of amino acids.

Most protein ingredients do not contain all the essential amino acids in the right proportions, e.g., most plant-sourced proteins lack one or more of the essential amino acids. Only meat and fish proteins contain taurine, which is essential for cats. However a combination of plant proteins, e.g., soya and corn can complement each other because the amino acids that are deficient in one are present in the other. Combining different protein ingredients in a pet food ensures the diet provides all the essential amino acids a pet needs, in the correct balance and quantity.<sup>2</sup>


**References**

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