

# Proteins in Pet Food

Proteins are essential macro-nutrients that act as building blocks in living tissue such as muscles and organs of all living creatures and can produce energy when digested. Proteins also have functional roles (e.g. enzymes, hormones and antibodies) in vital processes in the body and therefore need to be consistently replaced. This can be accomplished by regularly consuming foods that contain protein.

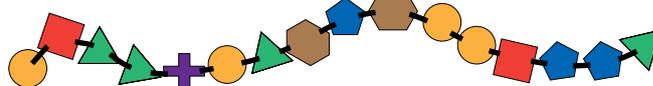


## Structure of Proteins

Proteins are large molecules made up of much smaller units called amino acids. Although there are only about 20 different amino acids found in dietary proteins, the number of sequences in which they can be arranged is vast. This results in the wide variety of proteins found in nature.

Illustration of amino acids:

A long chain of amino acids with a particular sequence will determine a specific protein



## Quantity and quality of proteins

Proteins are required in the diet of all pets including dogs and cats, but each species of animals will need different amounts and different types of amino acids, and the recommended amounts may vary for different breeds and life stages. While proteins can be sourced from different origins (animal and plant based)<sup>1</sup>, it is the amino acid requirements of the pet that needs to be met. **FEDIAF Nutritional Guidelines** indicate minimum and maximum levels of nutrients, including amino acids, needed in cats' and dogs' diets.

### Minimum recommended Protein Levels for Dogs\*

Unit: Grams per 100gr dry matter

Adult Dog – based on activity level		Early Growth (<14 weeks) & Reproduction	Late Growth (≥ 14 weeks)
Low activity (MER of 95 kcal/kg <sup>0.75</sup> )	Moderate activity (MER of 110 kcal/kg <sup>0.75</sup> )		
21	18	25	20

### Minimum recommended Protein Levels for Cats\*

Unit: Grams per 100gr dry matter

Adult Catg – based on activity level		Growth & Reproduction
Neutered/indoor cats (MER of 75 kcal/kg <sup>0.67</sup> )	Active cats (MER of 110 kcal/kg <sup>0.67</sup> )	
33.3	25	28/30

\*Please note, these tables are only given as a starting point. Please refer to FEDIAF Nutritional Guidelines ([www.fediaf.org/self-regulation/nutrition/](http://www.fediaf.org/self-regulation/nutrition/)) for the comprehensive tables of nutrient and consult a veterinary nutritionist regarding an individual pet.

## Understanding the 'protein percentage'

It is a legal requirement to show the protein percentage as well as fat, fibre, ash and moisture under Analytical Constituents on pet food labels. However, it is not possible to compare the protein levels of different products unless we work out how much protein the animal is actually consuming (i.e. grams of protein per day), taking into account feeding amounts as well as the water content of the product. Please see overleaf how this calculation can be done.

## Comparing protein levels of wet and dry pet food based on Dry Matter

To compare the percentage protein of a wet\* food and a dry food, we need to allow for the fact that a wet food contains much more water. This schematic picture shows that recommended feeding amounts of wet food are much more than dry food because of their water content.



### IMPORTANT Note:

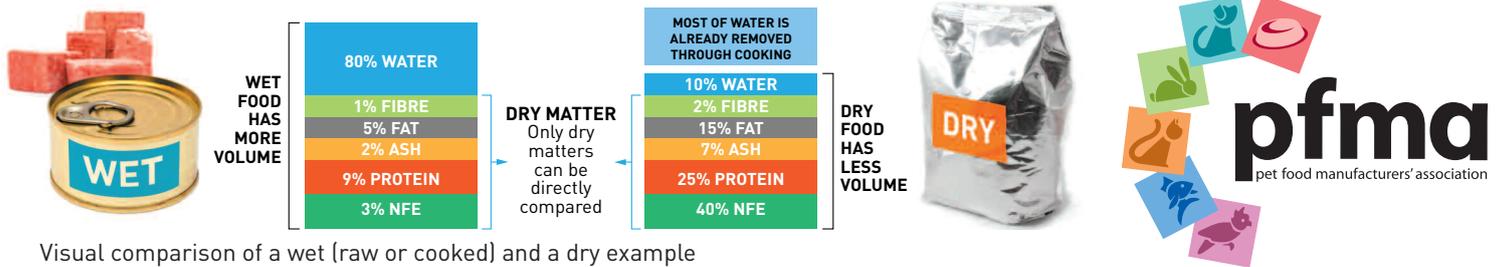
In this factsheet the term 'wet food' refers to both commercially raw and cooked pet food products with water content of 60% or more.

<sup>1</sup> More information on sources of protein in pet food can be found at: [www.pfma.org.uk/ingredients-factsheet](http://www.pfma.org.uk/ingredients-factsheet)

Any questions about sources of protein in a particular product should be directed to the manufacturer.



# Protein Levels in Pet Food



Visual comparison of a wet (raw or cooked) and a dry example

Any food containing high levels of water will declare relatively low percentages of proteins, fats, etc, compared to that of a dried food, but because you feed more of the wet product, your pet will receive the required nutrients.

Wet food is made of around 60-80% water and the rest is called 'dry matter' which includes all the nutrients. A direct comparison of nutrients in a wet and a dry product is not possible unless a dry matter comparison is conducted.

To do a dry matter comparison we use the following equations:

$$100 - \% \text{ moisture} = \% \text{ dry matter of the product}$$

$$\frac{\% \text{ protein}}{\% \text{ dry matter}} \times 100 = \% \text{ protein in the dry matter}$$

## Example for a wet product:

$$100 - 80 = 20\% \text{ dry matter of the product}$$

$$\frac{9}{20} \times 100 = 45\% \text{ protein in the dry matter of this product}$$



**Analytical Constituents**  
Protein 9%, Fat content 5%  
Ash 2%, Crude fibres 1%  
Moisture 80%

## Example for a dry product:

An average dry food contains up to 10% water, so 90% of the food is "dry matter". So if the analysis on the label says it contains 25% protein, using the same equation as above, the protein content of dry matter is:

$$\frac{25}{90} \times 100 = 28$$



**Analytical Constituents**  
Protein 25%,  
Fat content 15%, Ash 7%  
Fibres 2%, Moisture 10%

So from the label, the wet food appears to be much lower in protein (9%) than the dry food (25%), but when you take into account the water content, the wet product turns out to have a much higher protein content (45%) compared to the dry product (28%) in this example.

## How daily feeding amounts determine protein levels

It is important to allow for the feeding guide to work out exactly how much protein an animal gets from its food. If you compare two dry dog foods, not only may they have differing protein percentages but they could also recommend different feeding amounts. In order to work out the actual amount of protein the dog is consuming on a wet or dry diet, you must do the following conversion:

### For example:

	% protein of dry matter	Recommended feeding amount (gr/day)	Protein consumed (gr/day)
<b>Diet A</b>	20%	800	$\frac{800 \times 20}{100} = 160$
<b>Diet B</b>	30%	500	$\frac{500 \times 30}{100} = 150$

So we can see that even though diet A declares a lower protein percentage than diet B, because the feeding amounts of diet A are more, the protein consumed is also more than diet B.

**Please Note:** Recommended feeding amounts are carefully calculated to meet the nutritional and energy requirements of the average pet of the given weight.

Information on energy (calorie) requirements and content of pet food can be found at [www.pfma.org.uk/calorie-factsheet](http://www.pfma.org.uk/calorie-factsheet)

For more pet food topics please visit [www.pfma.org.uk/fact-sheets](http://www.pfma.org.uk/fact-sheets)

