Impact of dietary protein on cat health and wellbeing

Cats need nutrients that are found in animal flesh – they are obligate carnivores. Domestic cats don’t have to go to the trouble of hunting for their food, as scientists, animal nutritionists, and pet-food companies have formulated a range of foods that contain all the nutrients they need. Cats are desert-adapted animals, and their physiology is highly adept at conserving water by concentrating urine through reabsorption of body water. Concentrating urine to maintain body water leads to a predisposition towards urinary and kidney stones; however, appropriate feline nutrition takes this into account. Cats have retained many of their natural instincts to hunt, and they are exceptionally good at it. Feral cats and barn cats who do catch their own prey typically have a diet low in carbohydrates, high in protein, and with variable amounts of fat; these three macronutrients form the basis of a balanced cat food. Despite eating what might be considered a “wild” diet, however, excess dietary protein paired with inadequate hydration may exacerbate kidney disease. A challenge then in feline nutrition is to provide optimal amounts of dietary protein while helping support kidney health.

CAT NUTRITION – TAURINE AND ARGinine
Protein is broken down by the body into amino acids that can be used to build new proteins – which are used for muscle growth and reproduction, for example – or used as energy and for maintenance of blood glucose levels. As obligate carnivores, cats need two additional essential amino acids which are best supplied by animal food products: taurine, which helps maintain normal reproduction, kitten growth, heart health, and eye health; and arginine, which is important in the nervous system and helps regulate ammonia levels in the body.

When cats do not have enough dietary protein or specific amino acids, their bodies compensate by breaking down muscle tissue to meet their daily requirements. As cats age and their digestive systems and absorption become less efficient, their protein requirements increase. For this reason, cats over the age of 12 should benefit from increased levels of protein in their diet – but this can cause them other problems as excess dietary protein increases the risk of kidney disease, which cats are increasingly prone as they age.

The Association of American Feed Control Officials (AAFCO) recommends that cat food contains a minimum of 26% protein, with a minimum of 30% protein for growing cats or those in reproduction phases (a 4,000 kcal/kg food). Maintenance cat food therefore typically contains 30–45% protein, while protein level is decreased to 28% for sufferers of chronic kidney disease, and increased to 50–55% for some cats needing to lose weight or suffering metabolic-related diseases (Gros et al, 2016). Maintaining optimal macronutrient levels in this way can benefit cats’ overall health and wellbeing.

DIETARY PROTEIN EXPERIMENT
It has been reported (Backlund et al, 2010; Ephraim et al, 2020; Warwont et al, 2020) that dietary protein levels can affect the production of microbial-derived toxic metabolites – the product of metabolism by microbes – in the gut, which potentially contribute to kidney problems in cats. Previous studies by other researchers have examined the impact of dietary protein levels on adult cats’ gut microbiome (the community of microbes in the gut) (Lubbe et al, 2020) and also in kittens (Deusch et al, 2014; Hooda et al, 2013). These studies broadly found that the composition of major bacterial groups in the cat microbiome (Firmicutes, Bacteroidetes, Actinobacteria, and Proteobacteria) can be altered by the type of fibre (eg, soluble fibre prebiotics) and macronutrients (protein content) in the diet. The food in these evaluations, however, also differed in their levels of fat and fibre. The study (Badri et al, 2021) is the first to systematically analyse the effect of these different foods differing in their protein:carbohydrate ratios while maintaining the relative levels of individual amino acids and the animal to protein sources, all while keeping changes in the cats’ microbiome evident.

Maintaining optimal macronutrient levels can benefit cats’ overall health and wellbeing.

on these findings to discover how different formulations of cat food impact the metabolites of the feline gut microbiome as well as cats’ overall wellbeing. Their study (Badri et al, 2021) is the first to systematically analyse the effect of these different foods differing in their protein:carbohydrate ratios while maintaining the relative levels of individual amino acids and the animal to plant protein sources, all while keeping changes in the cats’ microbiome evident.

CATS don’t have to go to the trouble of hunting for food – animal nutritionists and pet-food companies provide everything they need.

Dayakar Badri, Matthew Jackson & Dennis Jewell
Behind the Research

Dayakar Badri, Matthew Jackson, and Dennis Jewell research the effects of varying dietary protein levels on healthy adult cats.

Research Objectives

Dayakar Badri, Matthew Jackson, and Dennis Jewell research the effects of varying dietary protein levels on healthy adult cats.

Detail

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References


Personal Response

Your research suggests that finding the right diet for some cats could be quite complex. What are the most important things owners should consider when choosing cat food?

IIIt’s important to know how to choose cat food with dietary protein levels appropriate for their age, body condition, and any other disease conditions, in consultation with clinical veterinarians. Our study showed that the quality of the protein is important as well. Quality means both the amino acid levels in the protein and the protein’s digestibility. Pet parents should also look to see that the food contains an adequate amount of carbohydrates for healthy microbial metabolism.

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