

Key Facts About Protein Metabolism in the Dog

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Dietary protein has been the source of debate for years. Now, the results of more recent objective studies have improved our understanding of this subject, causing the scientific and veterinary communities to re-evaluate some long-held beliefs. Research has shown the benefit of higher protein diets in the following areas of nutritional management: immune system integrity; weight loss; senior dog nutrition; large breed puppy nutrition.

Proteins are made up of individual units called amino acids. There are approximately 20 different amino acids needed by the dog. Ten of these amino acids must be provided in the diet. Metabolic functions are supported by the redistribution of amino acids from the skeletal muscle, dietary amino acids and other tissues. When an animal's diet is inadequate in protein, the body is forced to draw on protein reserves from lean body mass. This compromises the animal's body condition and causes the process of protein turnover to slow, lengthening the time it takes to manufacture immune proteins. The end result of inadequate protein intake is an animal at greater risk of infection.

Historically, animals in need of weight-loss programs were fed a calorie-restricted, low-fat diet, usually reduced in protein. While this approach may have facilitated weight loss, it resulted in excessive loss of lean body mass, which is counterproductive to long-term weight maintenance. Lean body mass is the primary determinant of basal energy metabolism and accounts for 95% of the animal's metabolic rate. Moreover, basal energy metabolism is generally higher in individuals with greater amounts of lean body mass compared to those with large proportions of fat mass. A weight-loss regimen incorporating high levels of protein helps maintain lean body mass, which leads to optimal weight loss and encourages long-term weight maintenance.

Decreasing dietary protein levels for senior dogs may not be appropriate. Older dogs appear to be less efficient in metabolizing dietary protein in compared to younger animals. In order to maintain protein reserves and maximize protein turnover rates, research shows that older dogs require more dietary protein than their younger counterparts. Older dogs required about 50% more protein than their younger counterparts to maintain protein turnover.

It is understood that large breed puppies have unique nutritional needs. Current research indicates that lower calorie but moderate to high protein levels are most appropriate for large breed puppies. The key to normal skeletal and muscle growth in large breed dogs is calorie restriction, calcium and phosphorus level management and adequate protein intake to promote endogenous protein production and growth.