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Body builders



By Marcia King

Every day you set down the food bowl — and stoop and scoop later. What happens in between? How does your dog turn his food into more dog?

Nutrition refers to the process of ingesting and using food. Nutrients comprise the fuels in food that provide energy, drive growth, and repair damage. Your dog needs six basic nutrients: protein, fat, carbohydrates, vitamins, minerals, and water. Read on to discover how each one builds your dog's health and vitality.

1. Protein plays a major part in your dog's health, aiding in many functions. Explains Joe Bartges, DVM, American College of Veterinary Internal Medicine and American College of Veterinary Nutrition diplomate, "Protein is used to heal wounds, to provide muscle strength, bone strength, and mass, to help maintain normal nerve and muscle function, and to make cells." It does all this by "form [ing] enzymes that metabolize food into energy and hormones that regulate various body functions, such as salt and water balance," explains Bartges, also a professor of medicine and nutrition at the University of Tennessee's Department of Small Animal Clinical Sciences.

About the Author

Marcia King is an award-winning writer and lifelong Sheltie fancier. Specializing in canine, equine, and veterinary topics, Marcia has been writing for Fancy Publications since 1987. In her free time, she enjoys indoor and outdoor gardening, orienteering, reading true-life adventure books, and watching BBC America. Marcia lives with her husband and Shelties in a 1919 converted cottage overlooking Lake Erie.



Dogs that receive too little protein may exhibit poor growth, weight loss, dull coat, muscular wasting, and even death. Too much protein can stress the liver and kidneys if they're already damaged. Most important, though, too much protein probably means too little of something else in the diet.

2. Fat is an excellent source of energy. "Fat contains approximately twice as much energy per gram as protein or carbohydrates," says Andrea J. Fascetti, VMD, Ph.D, and ACVN and ACVIM diplomate. "As a high-energy source, fat is particularly beneficial for dogs that have difficulty keeping weight on, are fussy eaters, or do a lot of exercising," says Fascetti, also an assistant professor of nutrition at the University of California, Davis. Additionally, fat contributes to palatability in food, is essential for healthy skin and coat, provides the body with necessary fatty acids, and helps with the absorption of fat-soluble vitamins.

Insufficient fat in the diet can result in many problems, including dry skin, a dull coat, poor reproduction, and inadequate development and growth in puppies. On the other hand, too much fat — that is, energy that your dog stores rather than uses — leads to obesity and health disorders associated with extra weight. These can include

Nutrient balancing act

Equally important to the nutrients your dog receives is the balance or proportion of nutrients he receives, and that varies according to your dog's individual needs. Explains Joe Bartges, DVM, ACVIM, ACUN, "Utilization of nutrients depends on the metabolic status of the dog — physiologic (e.g. healthy adult, pregnancy, growth, etc.) and pathologic (e.g. kidney failure, liver failure, diabetes, etc.)."

That is, the balance of nutrients your dog needs depends on his stage of life and whether he faces any health problems. A growing puppy, middle-aged hunting dog, and senior dog with a thyroid condition will all need different nutrient ratios.

You can be assured that a dog food formula containing an AAFCO (Association of American Feed Control Officials) statement on the label means that food is nutritionally complete and balanced. But because you can now find formulas developed for different lifestyles and therapeutic conditions, that balance may vary in order to address a dog's unique needs and

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diabetes, pancreatitis, the exacerbation of hip dysplasia and knee problems, and kidney disease. Your dog probably responds to fat's high flavor, but it's up to you to monitor his intake.

conditions (more about those formulas next month). That's why it's important to periodically discuss with your veterinarian the type of formula you're feeding your dog in order to ensure that your dog receives the nutrients he needs — and deserves.

3. Carbohydrates, made up of sugar, starches, and dietary fiber (such as that found in grains and vegetables), provide energy and aid in glucose production. Glucose, in turn, is "the most efficient source of energy for the body," Bartges says.

Dogs use readily digestible sugars and starches for quick energy, Fascetti says. Or, they store them. "If not entirely needed to meet the animal's energy needs, carbohydrates are laid down as fat used at other times when energy is not as readily available, either during exercise or prolonged periods between meals," Fascetti explains.

Dietary fibers help move food through the intestinal tract and provide bulk, helping an animal feel full without extra calories. It's unknown what insufficient carbohydrates can do, but excess carbohydrates are stored as fat and can lead to obesity.

4 & 5. Vitamins and minerals contribute to many processes, including metabolic functions, energy production, electrolyte balance, and fluid balance, Fascetti says.

Without enough vitamins and minerals, a dog could suffer from impaired organ function, fatigue, muscular weakness, poor growth, dry skin, hair loss, an impaired immune system, and poor skeletal formation.

But be careful: Too many vitamins and minerals can cause a myriad of problems. These range from poor absorption of vitamins and minerals already present in the diet to skeletal abnormalities in growing dogs, kidney damage in dogs with reduced kidney function, liver damage, weight loss, reduced appetite, anemia, and other maladies.

6. Water: You might not think of it as such, but water is an essential nutrient, too. Water makes up about 60% of an adult dog — and puppies contain even more! "Water is extremely important, and death occurs more quickly with water deprivation (dehydration) than with nutritional deficiencies," Bartges notes. Besides drinking, dogs get water by ingesting protein, fats, and carbohydrates in food.

Is your dog building too much body?

Finding the right balance of nutrients in your dog's diet pays off not only in a glossy coat and strong muscles, but in a healthy weight, too. And that can keep your best friend around a little longer. Dogs that don't carry excess weight have an extra advantage when it comes to resisting orthopedic and other diseases. "Joint problems rarely occur in dogs who are in good condition," says Joe Wakshlag, DVM, an instructor in clinical nutrition at Cornell University's College of Veterinary Medicine in Ithaca, N.Y.

For optimal health, don't wait until your pooch gets porky to reassess his diet. Keep him in shape through a proper balance of nutrients — and exercise — from an early age.

But how will you necessarily know if your dog packs a few extra pounds?

"A veterinarian friend of mine told his clients, 'I want your neighbors to think you are a little bit cruel,'" Wakshlag recalls. "On a well-conditioned dog, you should be able to feel ribs and maybe even see the last few ribs. You should feel a prominent vertebral column, and you should be able to feel prominent points of the hips."

So, if you feel more padding than frame when you place your hands on your dog's back, hit the trails — slowly at first — and read the label on your dog's food. It might be time to look for less fat and fewer calories overall. — *Keith Bush*

From dog to dog, nutrients act in the same way to build tissue, muscle, and bone and to support body functions. But the proportions of each that your dog needs may differ from what your neighbor's dog needs. If you think your dog could benefit from changes in his diet to balance his nutrient consumption, cut out the label on his bag of food, and make an appointment with your veterinarian.

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