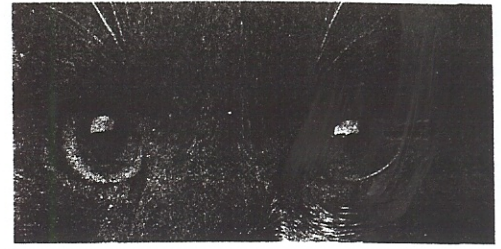


Something to Chew On!



Your Information Source on Pet Nutrition

By Dr. Chip Coombs, D.V.M.

Although not often considered by consumers as an essential ingredient of a balanced pet food, the role of fibre is both complex and important. The fibre content of a pet food is usually arrived at by proximate analysis whereby protein, fat, minerals and moisture are removed, leaving a nitrogen-free extract consisting of monosaccharides (e.g. glucose), available polysaccharides (e.g. starch) and unavailable polysaccharides (e.g. cellulose). Fibre is a non-starch plant polysaccharide that resists hydrolytic breakdown by digestive enzymes in the mammalian gut.

The term "fibre" which appears on a pet food label refers to "crude fibre" (defined as that portion of a diet which is not soluble in either hot alkali or acid). However, it is oftentimes easier to think of fibre as either insoluble and relatively inert (e.g. cellulose) or soluble (e.g. pectins, carrageenan and other gums) in water. Foodstuffs commonly found in dry pet foods, which are high in soluble fibre, would include oats and oat bran, whereas insoluble fibre is commonly associated with the cereal grains such as wheat and wheat bran. Typical crude fibre levels in pet foods range from 2.5 - 5% and can vary as high as 24% in some specialized therapeutic foods. Levels below 2.5% would likely impede normal bowel function. C.V.M.A.'s recommended levels of fibre for optimum nutrition in a healthy pet vary between 3.5% and 6.0%.

Fibre serves many functions in a diet. One important role is the absorption of water, with soluble fibre having a greater capacity than insoluble. Fibre also acts as a bulking agent, both on its own and in conjunction with its water holding capacity, which increases colonic motility and muscle tone, with the presumption of healthier tissue. Consequently, fibre may be helpful in the

resolution of constipation in some pets by increasing faecal mass and by softening stool through increased water absorption and retention.

Traditional thinking allowed that dietary fibre had no nutritional value. However, research in dogs has shown that, through the process of fermentation in the colon, soluble fibre can, to varying degrees, provide a source of metabolizable energy. In addition to energy, this fermentation produces a variety of short chain fatty acids (SCFA). One such SCFA, butyrate, is a key source of energy for colonic epithelium, implying a role for some types of soluble fibre in the treatment of inflammatory bowel disease. SCFAs also lower intraluminal pH, thus minimizing certain bacterial overgrowths, such as Salmonella. Lower intraluminal pH will also minimize the uptake of ammonia through the colonic mucosa.

It is important to appreciate that many of the properties associated with fibre have been based upon work done in humans and rats. The inclination to extrapolate and draw inter-species conclusions may be unreliable, as there are significant anatomical and physiological differences involved. For example, there are claims that excessive fibre levels potentially compromise the bioavailability of certain micronutrients, such as zinc, calcium and iron. Yet some studies have contradictory conclusions and the implications for pet foods have been largely

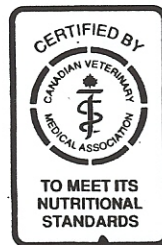
uninvestigated. Research in dogs has shown cellulose tolerance levels of 10 - 15 % of the diet without any adverse effects on the digestion of nutrients. However, fibre can tie up the availability of the amino acid taurine in cats, which may suggest the need for a higher dietary taurine content in cats on high fibre diets.

Studies on humans have implicated fibre as compromising the activity of pancreatic enzymes, although fibre appears not to impair enzyme secretion. While research in dogs is limited, at this time, high fibre diets are considered inappropriate for dogs with exocrine pancreatic inefficiency.

Fibre affects the transit time of food through the gastrointestinal tract, although the impact varies with fibre type. The use of higher than normal fibre content in the diets of diabetic cats is based, in part, upon the assumption that, by utilizing a fibre source that adds bulk to the food and increases retention time within the intestine, the result will lead to lower postprandial peaking of blood sugar levels. Again, such assumptions are based largely upon human research and the effectiveness in human diabetics is coming under greater scrutiny.

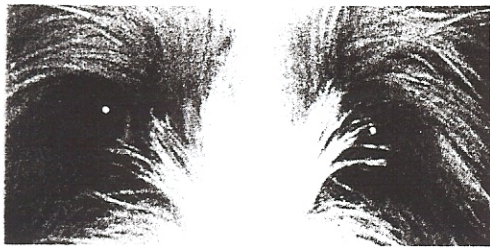
High fibre, low caloric density pet foods have been traditionally advocated for use in weight reduction programs based upon the principles of low caloric intakes and the feeling of satiety achieved through the effect of fibre on gastric distention. However, the resultant faecal mass achieved from some very high fibre diets can severely compromise owner compliance in the feeding of such diets.

For many pets, a diet with greater emphasis on restricted caloric density levels and less on insoluble fibre levels may be more successful in achieving the long term goal of weight reduction.

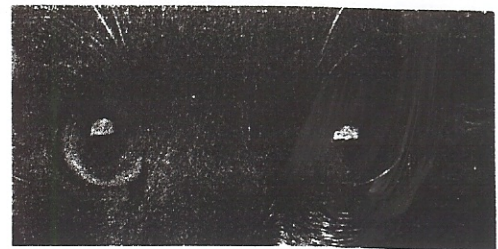


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Your Information Source on Pet Nutrition

Hypoallergenic Diets

By Bernhard P. Pukay, D.V.M.

In the last few years, commercially-formulated hypoallergenic diets have become increasingly popular and readily available to veterinarians and pet owners. This growth in the "special-diet" segment of the pet food market reflects a growing awareness of, if not necessarily an increased incidence in, the occurrence of adverse reactions by dogs and cats to commercial pet foods, including food hypersensitivity, dietary intolerance and idiosyncratic reactions.

Food hypersensitivity is defined as a nonseasonal pruritic skin disorder of dogs and cats that occurs when a pet eats a diet that contains an ingredient to which it is allergic. The major complaint and primary consistent finding is pruritus. Clinical features of food hypersensitivity in the dog and cat are well-documented in the veterinary literature.

Food allergies in dogs and cats are thought to account for approximately 5% of all skin cases and 15% of allergic dermatoses seen in clinical practice. The term "food allergy" is often mistakenly used to describe adverse reactions to food in general and should only be used to describe food sensitivities that have an immune-mediated basis.

The pathomechanism of food hypersensitivity remains poorly understood. In most cases, the offending allergen is a glycoprotein found in the diet. It is not known whether sensitization occurs in the intestinal mucosa or once the allergen is absorbed. In fact, it may be that glycoproteins become allergenic only after digestion or as a result of food processing (e.g. heating). However,

once exposed to an offending allergen, the ensuing immune response (predominantly IgA) reduces the amount of antigen that is able to cross the mucosal barrier.

In dogs, the most common offending allergens are beef, dairy products, chicken, wheat, eggs, corn and soy. In cats, the most common allergens are fish, beef and dairy products. However, pets can be allergic to foods other than these and to more than one kind of food.

The most reliable and accurate method of diagnosing food hypersensitivity is elimination diet trial-testing, incorporating a "novel" protein and carbohydrate source to which the pet is not normally exposed. Intradermal testing and serologic tests (RAST, ELISA) are considered worthless.¹

The test diet must be free of additives (preservatives, food colouring, flavouring). For this reason, commercial "hypoallergenic" diets are unreliable as an elimination diet and should not be relied upon. Instead, the test diet must be home-made. In dogs, commonly used ingredients include tuna fish (canned in water), rabbit, venison, turkey, duck, and lamb/mutton. In cats, frequently used ingredients include rabbit, venison, or strained lamb or ham baby food. These can be mixed with potatoes, rice or tapioca in both canine and feline diets. Since these diets are not adequately balanced nutritionally, vitamin, mineral

and essential fatty acid supplementation is necessary if a prolonged testing period is anticipated. For most dogs and cats, a test diet consisting of 1/3 protein, 2/3 carbohydrate, 2% corn oil (on dry matter basis), supplemented with a vitamin and mineral mixture, will meet the animal's nutritional and essential fatty acid requirements.

In the past, veterinarians utilized a feeding trial of only 3 weeks duration to rule out food hypersensitivity but this has proven to be inadequate.² A home-made elimination diet must be fed for at least 10 to 13 weeks, in both dogs and cats, in order to truly rule out food hypersensitivities. During this time period, nothing else must be fed to the pet, including snacks, treats, rawhide chew toys, etc. Foraging must be eliminated as well.

If pruritus is reduced significantly or ceases completely while on the trial diet, provocative testing should be done. This involves feeding the offending diet again. Pruritus should recur within 48 hours, although pruritus may recur as late as 10-14 days post-feeding. A return of pruritus after provocative testing confirms the diagnosis of food hypersensitivity. A search for the offending ingredient(s) can then be instituted.

Once the diagnosis of food allergy has been made and the offending allergens determined, a commercially available "hypoallergenic" diet can be chosen.

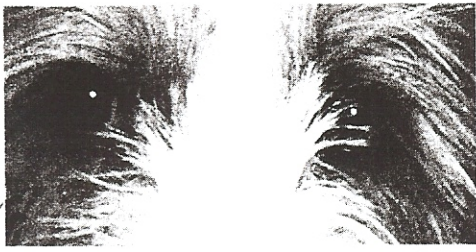
1 Scott, DW, et al. Small Animal Dermatology, 5th. edition. WB Saunders Co., Philadelphia. 1995:232

2 Rosser, EJ Jr. Diagnosis of food allergy in dogs. J.Am.Vet.Med.Assoc. 1993:203:259.



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Your Information Source on Pet Nutrition

Obesity

By Chip Coombs, D.V.M.

Obesity is one of the most common nutritional medical disorders affecting companion animals, with approximately 24-40% of pets being classified as overweight. Obesity is defined as an increase of over 20% above the optimum body weight. Reasons for this include a more confined and sedentary lifestyle for pets, availability of highly-palatable, energy dense pet foods and treats, and a strong human-animal bond which leads to overfeeding and snacking.

The fundamental cause of obesity is excess of caloric intake over energy depletion with the surplus being stored as fat. There are many factors mitigating this balance, including age, breed, sex, hormonal abnormalities, as well as external factors such as lifestyle, diet formulation and intake.

Hound breeds, Cocker Spaniels, Labradors and Shelties are some of the more common breeds affected. Neutered females, dogs older than 4 years of age and pets belonging to obese owners are more prone to excess weight gain.

The risk of certain health problems, such as diabetes mellitus, pyometra, pancreatitis, increases with obesity, as well as an exacerbation of existing clinical disease, such as arthritis and respiratory disease. There is also a correlation between insulin resistance and obese beagles and cats, whereby there may well be a decrease or elimination of a requirement for insulin with the occurrence of weight reduction.

Weight reduction can be achieved by lowering of energy intake, coupled with correction of concurrent medical conditions. Increased exercise is critical, but can be impractical in cats or difficult due to owners' lifestyles. Very often behavioural modification

techniques are necessary to eliminate inappropriate behaviour such as begging. For any weight reduction program to be successful, an owner must first acknowledge that a problem exists and then be committed to its correction.

Calorie reduction in dogs can be quite dramatic, utilizing complete starvation (contraindicated in cats due to the possibility of precipitating hepatic lipidosis). This is likely to be unacceptable to owners, would require vitamin/mineral supplementation, and result in an unwanted loss in lean body mass. Moderate weight loss can be achieved by feeding 10-20% fewer calories through less volume of regular food. Restricting calories also restricts protein, vitamins and minerals. However, most pet foods contain sufficient excesses for this degree of calorie restriction.

With grossly obese pets or less dedicated owners, a more severe calorie restriction may be necessary. Diets which have a more severe restriction of calories (25% or greater) must be specially formulated and fortified to avoid nutritional imbalances. Diet restriction must be introduced cautiously in obese cats as they can often only tolerate moderate calorie restriction. Furthermore, many low calorie/weight reduction diets may be unpalatable to some cats. It is important to ensure that the cat does, in fact, eat the diet when it is first introduced.

With the aid of a number of computer programs or nutritional texts, the daily

caloric requirements of the pet can be calculated and the appropriate amount of a specific food prescribed. The principle in all therapeutic diets is to offer a reduced energy density coupled with a compensatory supplementation of protein, vitamins and minerals. A number of different formulations are used by different manufacturers and the most effective has not been established. Some foods offer a lower fat content coupled with higher levels of complex carbohydrates, which not only lowers energy density but adheres to the concept that fat is more efficiently laid down as adipose tissue than carbohydrate. Other foods which are low in fat, coupled with high levels of indigestible fibre, rely in part on an earlier feeling of satiety to limit food intake. However, stool volume and palatability may be adversely affected. Alternative bulking methods involve higher water content in canned foods and a higher air content of dry foods.

As most dogs and cats will eat to meet their daily caloric requirements, calorie restriction remains the essence of success for weight loss. Although most cases of obesity can be corrected with proper owner compliance, early client education remains the best preventative measure. Overfeeding puppies and kittens may lead to an excess production of fat cells and a propensity for being overweight later in life. In puppies, overfeeding may also accelerate the growth rate, which in certain breeds may exacerbate any predisposition to certain skeletal diseases. Young pets should be fed an appropriate daily amount of a balanced food with a caloric density that will result in normal growth rates and lean body condition. For most adult pets, avoidance of ad libitum feeding and poor behavioural habits (e.g. begging), and regular exercise will provide a successful approach to the prevention of obesity.



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Your Information Source on Pet Nutrition

Feeding Large Breed Puppies

Chip Coombs, DVM

In recent years, considerable controversy has arisen concerning the most appropriate diet for large breed puppies (mature weight greater than 60 lbs.), particularly as these diets pertain to their ability to cause or prevent orthopaedic problems. In 1974 Hedhammer et al published data based on research on Great Dane puppies that concluded that there was a higher incidence of hip dysplasia in puppies fed a high protein, high energy, high mineral diet. Despite a number of flaws with this work, including an inability to subsequently reproduce its findings or to isolate the relative influence of a number of parameters examined, its impact on the controversy remains. Veterinarians are confronted daily by clients who have been told by breeders that puppies should only be fed adult food. For some, the whole concept of growth as a distinct life stage has come into question.

The most rapid growth phase for a puppy occurs during the first 6 months of age. During this phase they have a greater protein requirement for the formation of new tissue, yet this protein requirement must still be balanced with their energy intake. Their energy requirements are up to 3 times that of an adult's maintenance energy requirement (MER); from weaning to 3 months it is 2-3 x MER; 3-6 months 1.5-2 x MER. As a puppy matures beyond 6 months, the energy requirements gradually decrease to adult needs at maturity. This age of maturity varies, being as young as 8 months in small breeds or as late as 24 months in giant breeds. Puppies also have a greater need for essential nutrients on a body weight basis. Of all the food nutrients, energy (caloric) intake and calcium appear to play the greatest roles in the potential for exacerbating existing skeletal disorders.

It is widely accepted that too rapid a growth rate can lead to a number of skeletal disorders in a number of species. Excessive energy intake in the canine can result in a more rapid growth rate resulting in an overweight puppy, as well as the potential for exacerbating certain orthopaedic anomalies (e.g. hip dysplasia, osteochondritis and hypertrophic osteodystrophy). Excessive growth rates lead to an increase in both muscle mass and total body weight. These in turn lead to excessive stress forces on long bones which, in a puppy, are less dense and have a greater susceptibility to being remodelled. As bones of large breeds are relatively weaker than those of small breeds, they are inherently more susceptible to these stress loads.

In response to these concerns, the conclusion has been reached by some that the best preventive solution is to feed only maintenance food to large breed puppies. Feeding a balanced, yet lower energy dense food, will not negatively affect a puppy's adult size, rather the rate at which it achieves this size. However, puppies have less digestive capability and hence require a highly digestible food. Simply feeding more of a less digestible adult food will often "overload" the limited digestive capacity of a puppy leading to nutrient deficiencies. Because they are less energy dense, some adult foods contain more calcium than is required on an energy basis. Excess calcium can produce defi-

ciencies in other nutrients (e.g. zinc) as well as potentiating other disorders such as osteochondritis and wobblers syndrome.

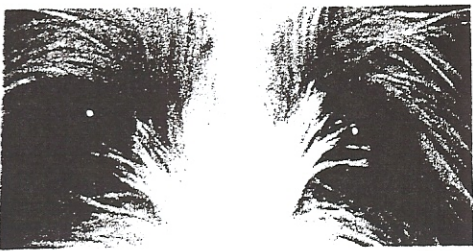
A more appropriate solution to feeding a large breed puppy an adult food is to feed appropriate amounts of a growth diet to maintain a normal growth curve for that breed. Free choice feeding, as is often recommended on pet food labels, is imprecise and should be avoided until a puppy reaches its mature skeletal size. It should be remembered that feeding guidelines provided by the manufacturer are averages only. Owners should be counselled to tailor a puppy's intake to the individual needs and activity level, always striving for a lean body weight (ribs easily felt). Puppies should be weighed regularly and their energy requirements calculated accordingly. Based on the energy density of the particular food, appropriate amounts can be fed in proportional feedings.

Additional considerations for owners are the frequency and intensity of exercise, as well as the need for vitamin supplements. Guidance from their veterinarian and common sense should prevail in encouraging owners to avoid exercising their puppy excessively. However, daily exercise is important for the proper development of bone structure, as well as for assisting in the maintenance of lean body weight. Vitamin or mineral supplements should be avoided with large breed puppies. Ultimately, the ideal way to avoid bone disorders is through appropriate breeding practices. Veterinarians remain a primary source for new owners to seek advice on the proper selection of breeders and their puppies.

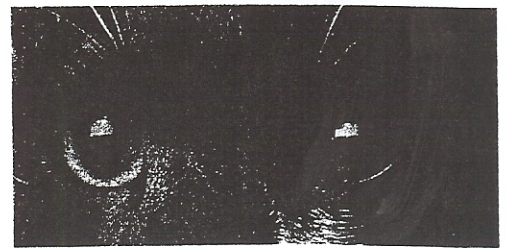


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Something to Chew On!



Your Information Source on Pet Nutrition

Feeding Puppy

By Dr. R. Glenn Brown, Nutrition Consultant

Because weanling dogs have greater needs and limited capacity compared to adults, puppy foods which contained greater concentrations of protein, fat, essential fatty acids and key amino acids were developed. This accomplished three things: 1) the animal's needs could be met by feeding smaller amounts than would be the case with a less dense product, 2) the animal grew more rapidly, 3) the animal became used to eating at a frequency roughly equivalent to that of an adult.

The concept of growth at the maximal rate for puppy has its roots in food-producing animal nutrition where rapid growth is desirable for commercial reasons. Since most food-producing animals barely reach maturity, the long term consequences of feeding for rapid growth were rarely, if ever apparent. In the case of humans and dogs, there is no market value requirement for such rapid growth. In fact, it has been shown that certain large breeds, which are predisposed to hip dysplasia and fed for maximal growth rate, may later develop crippling disorders. The classic work of Hedhammer et al.¹ indicated that overnutrition in early life could result in adverse skeletal changes 6-8 years later.

Concerns about overnutrition have led some to suggest that the appropriate scheme for feeding puppies is to not use a specially designed puppy food but to feed a typical maintenance dry food² ad libitum. Whether the animal will grow less rapidly as a result is debatable. The nutrient requirements of any animal are based on the availability of certain mass of nutrient and energy during any 24-hour period.

* The concentration of nutrients in a diet is simply a means to achieve that end. The mass of nutrients required will be obtained by either consuming more or less of a food depending on the nutrient density³. An active young dog will eat to meet its energy needs, and if this means several meals a day, the pup will have no hesitation in so doing. Since energy and protein needs for growth are met by means of increased food intake, the concept that pups will grow less rapidly loses its appeal. A product which contains 22% protein, as well as sufficient energy, will perform optimally. In some cases, the animal may simply have to eat more in order to take in a sufficient mass of nutrients to meet its needs.

It would be tempting to say that as a food becomes more nutrient dense, intake will automatically decline. Unfortunately, many dogs will eat to excess if given the chance. Because of this, if a puppy diet is fed, it will be necessary to practice meal feeding. On the other hand, feeding a diet of lower nutrient density allows for more latitude in feeding practice.

Is there any harm in ad libitum feeding? The answer is, generally not. However, the animal may become habituated to eating whenever it desires and this may make later switching to meal feeding of a denser diet difficult. The dog may beg for food whether it is hungry or not, simply out of boredom or habit.

For those who may wish to underfeed a dog predisposed to dysplasia, is there any harm in feeding ad lib a maintenance diet which tends to be less energy dense? It is not a good idea to depend on reduced energy and palatability to promote under-eating, especially if the food is available at all times. Experience shows that a growing pup will simply eat frequently. If the animal is to be slightly underfed, it must be meal fed. For example, feeding 75-85% of the amount recommended will slow growth enough to prevent the worst manifestation of hip dysplasia. In this instance, the animal should be weighed regularly to determine its growth rate. Simply using a manufacturer's recommended feeding guide is not enough. It must be remembered that this is only a palliative measure and not a cure. It does serve to improve the quality of life for the patient and may result in a quasi-normal lifespan. As a general principle, all animals who suffer from skeletal weaknesses would profit from reduced stress on the system. If the rate at which weight is added exceeds the skeleton's ability to respond, the resulting strain will exacerbate the clinical manifestations of the disorder.

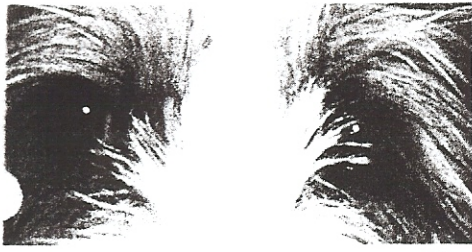
* **Regardless of how a puppy is fed, it should be examined regularly to determine if it is developing normally.**

- 1 Hedhammer, A et al. 1974 Overnutrition and skeletal disease: An experimental study in growing Great Dane dogs. The Cornell Veterinarian 64, Supple 5, pp160.
- 2 These products usually contain 22% protein, 7-9% fat and 1-2% essential fatty acids.
- 3 There is a reducto ad absurdum to this concept. It is possible to have a food so dilute that no animal can consume sufficiently. This objection is not realistic within the context of the present discussion.

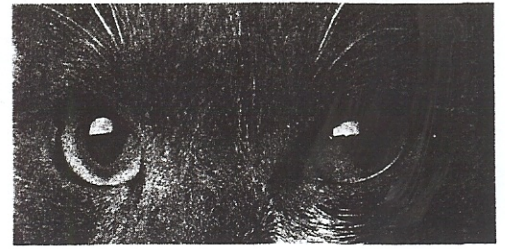


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Your Information Source on Pet Nutrition

Feeding the Young Cat

by Bernhard P. Pukay, D.V.M.

Despite the advances in nutrition research, little remains known about what exactly constitutes an optimal diet for the cat. While guidelines do exist regarding the minimum and maximum requirements for a feline diet, much still needs to be done to determine the effects of various excesses and deficiencies on feline nutrition.

The young cat is particularly susceptible to nutritional imbalances and feeding errors. Dietary habits established post-weaning in many ways determine the future health status of a cat. Pet owners must be made aware of the unique nutritional requirements found in the cat. Particularly significant are the differences in nutritional requirements between dogs and cats, such as the higher requirement for protein and the greater tolerance for fat in cats when compared to dogs. Similarly, unlike dogs, cats require a constant dietary intake of taurine as their ability to synthesise taurine is very limited. Other characteristics particular to felines is their inability to convert linoleic acid to arachidonic acid, beta-carotene to vitamin A, or tryptophan to niacin.

Weaning of kittens should generally start around 3 weeks of age, at which time they should be encouraged to eat solid food. This is accomplished by feeding finely diced moist cat food, dry food soaked in water or milk, or a gruel made with milk and/or meat baby food/cat food. The amount of milk in the

gruel is gradually reduced until only solid food is being fed. The ability to digest the lactose found in milk gradually lessens as kittens get older, and some cats may become intolerant to milk as adults due to a lack of the enzyme, lactase, which breaks down lactose. Kittens should be fully weaned by seven to eight weeks of age.

Following weaning, kittens should be placed on a high-quality, energy-dense diet. Whether or not kittens require a specialty kitten food remains debatable. While kittens fed cat food with protein levels in the 28% range will grow at acceptable rates and develop normally, levels in the 30-35% range can be recommended since growing kittens have higher protein requirements (approximately 10%) than adult cats. Calcium and phosphorous levels must also be within strict parameters in order to avoid excesses or deficiencies of these minerals which could cause bone deformities.

Owners must be made aware of the tendency for cats to become habituated to a single food or flavour very early in life. If fed only one type of food or flavour, imprinting can be severe enough to result in some cats choosing to starve rather than switch diets later on in life. To avoid habituation, kittens should be exposed to a wide variety of foods, flavours, and

textures early on in life (preferably before six months of age). Nutritional deficiencies (and excesses) are also less likely to manifest themselves later on in life if a variety of diets are fed. Introduction to a new food should be gradual so as not to cause digestive disturbances.

Vitamin supplementation is rarely indicated in young cats and may be contraindicated in some. Most pet foods tend to contain an excess of vitamins to allow for storage losses and supplementation may serve to upset the balance of nutrients in the diet.

Label recommendations regarding how much and how often to feed should be used as a guideline, but cannot be relied upon exclusively when feeding kittens. Level of activity, health status, endoparasitic status, quality of the diet and many other factors also determine the quantity that needs to be fed. The criteria of normal weight gain and physical development are the best way to determine that the kitten is well-nourished. Pet owners should be advised not to restrict feeding in growing kittens, but rather feed ad libitum whatever the kittens are able to consume. Neither excessive growth rate nor obesity due to overeating are problems in growing kittens.

After six months of age, young cats do not need to be fed a kitten diet, but can be fed a diet suitable for adult cats. As well, the frequency of feeding can be reduced.

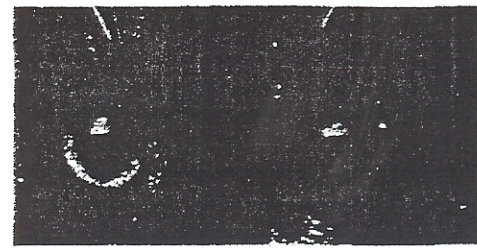


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Your Information Source on Pet Nutrition

Feeding the Geriatric Dog and Cat

By Bernhard P. Pukay, D.V.M.

The nutritional requirements of aging pets have been the subject of much discussion in recent years, particularly with the introduction of therapeutic specialty diets. Even though there is little experimental information on the nutritional requirements of senior dogs and cats, commercial diets are nevertheless currently available on the market designed specifically for the geriatric pet. These diets differ from adult maintenance diets in that they contain altered protein and fat levels, fibre content, and vitamin/mineral levels. Whether or not these changes are necessary in older pets remains to be seen.

Aging results in numerous changes in the geriatric dog and cat that have a direct effect on their nutritional requirements. These changes occur in all the organ systems, causing a decline in body functions and a decreased ability to maintain homeostasis. As pets get older, long-term exposure to endogenous and exogenous oxidants results in the production of oxygen-free radicals and oxidative damage to cells. Aging is associated with a decline in immune competence and, since nutritional deficiencies and excesses

can modify the immune response in animals, the nutritional make-up of the senior diet must take these factors into account.

As pets get older, there is a decrease in total energy needs because of reduced physical activity and a decline in the basal metabolic rate. For this reason, it is usually recommended that older animals be fed fewer calories per unit of body weight than a younger animal in order to maintain a constant body weight. However, the energy intake must be based on the individual needs of the pet rather than reducing the caloric intake in all geriatric pets regardless of health status or body mass.

Most older pets, regardless of health status, will benefit from some nutritional guidelines. For example, because food intake is often reduced in the older pet, the percentage of protein may need to be increased modestly in order to maintain an adequate protein intake per unit of body mass. There is presently no evidence to indicate that protein restriction in the normal pet will

prevent development of renal disease. Similarly, in those pets that have a reduced food intake, moderate increases (e.g. 25-50%) in the concentrations of vitamins and minerals in the diet may also be beneficial. Increased dietary fibre in the geriatric diet can be helpful but may not be indicated in all senior pets. Current studies indicate that the digestive system of older dogs and cats is affected very little by age and older pets are no less efficient in extracting nutrients from food than younger animals.

Aging brings with it numerous changes which adversely affect normal body functions. However, it is important to realize that these changes do not necessarily affect all pets at the same time. There is currently no evidence to suggest that all geriatric pets would benefit from a specially-formulated therapeutic diet designed specifically for older animals. Above all, it is important for the practitioner to distinguish between the normal, healthy geriatric pet and one that exhibits clinical signs related to diseases due to the aging process before making any recommendations regarding dietary manipulation.



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