

Optimal Nutrition for Older Cats

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Abstract: *Despite the aging of the feline companion animal population, no specific nutrient requirements have been established for older (aged >7 years) cats. This has led to wide variability in commercial “senior cat” diets. To recommend optimal nutrition for their older feline patients, clinicians should perform a nutritional assessment for each cat, including a thorough dietary history and an estimated body composition; identify medical conditions that could benefit from nutritional modification; and be aware of the differences in nutrient levels among senior diets.*

In human and veterinary medicine, aging of the population promises to dramatically change patient demographics and resources dedicated to older individuals. Currently, one in eight (12.5%) Americans is older than 65 years, and that number is estimated to grow to >19% of the population over the next 20 years.¹ The companion animal population is also aging. Studies published since 1999 have reported that 33% to 42% of cats in US or US and Australian households are at least 7 years of age.^{2,3}

The increase in the geriatric human population has prompted a tremendous growth in resources dedicated to these individuals. Likewise, interest in aging pets is rising among veterinarians and pet owners. The American Association of Feline Practitioners recently published senior care guidelines in which older feline life stages were defined as “mature” (7 to 10 years of age), “senior” (11 to 14 years), and “geriatric” (>15 years).⁴ The pet food industry has also responded to the aging feline population with more diets for older cats than ever before. However, with this increase in diet options, it has become increasingly difficult for owners and veterinarians to determine the optimal diet choices for older cats. For this article, older will be used to refer to cats >7 years of age.

Changing Nutritional Requirements With Age The Human Model

Research on the physiologic and medical changes affecting the nutrient requirements of older cats is limited. However, a large amount of research exists on nutrition-related changes in humans. Therefore, it is useful to look to the human literature as a starting point for discussion and to compare this information to existing knowledge about feline health.

Age-related changes in digestive ability can affect nutrient requirements in people. As a result, separate Dietary Reference Intakes were established in 2004 for people aged 51 to 70 years and those older than 70 years.⁵ Differences in the reference intakes for the oldest age group compared with those for younger age groups include a reduction in maintenance energy requirements

(MER) by up to 50% due to decreases in physical activity and changes in body composition; lower sodium, chloride, and fiber requirements; and higher requirements for calcium, vitamin D (for people aged >70 years), and vitamin B6.⁵

Another important and well-documented effect of aging in people is change in body composition, including changes in body weight and lean body mass. While many older people are overweight or obese (approximately 70% in one recent study from the United States⁶), a substantial proportion of elderly people are underweight. Underweight elderly people may be at increased risk of malnutrition, morbidity, and mortality.⁷

Another body composition change that contributes to increased morbidity and mortality in humans is sarcopenia. Sarcopenia is the age-related loss of lean body mass in the absence of disease, and it is often masked by a concurrent increase in fat mass.⁸ Due to its association with morbidity, mortality, and reduced ability to live independently, extensive resources have been dedicated to developing techniques to prevent and manage sarcopenia, including exercise programs, hormone replacement therapy, and nutritional modification.⁹

Cats

In contrast to people (and dogs),^{10,11} cats have been shown to have reduced ability to digest energy,¹² fat,¹²⁻¹⁴ and protein as they age.¹⁴ However, in most of these studies, not all cats showed these changes, so these alterations may not be universal among cats. The mechanism behind observed reductions in nutrient digestibility was not identified in these studies, and additional research is required.

As in people, body weight can change as cats age. One study¹⁵ showed that while fewer than 10% of cats <12 years old were underweight, the proportion of cats that were underweight started to rise at 12 years of age, with 50% of cats aged 15 to 25 years classified as underweight. Proposed mechanisms for the weight loss seen in aging cats include altered nutrient digestibility; changes in smell, taste, and appetite; and increased prevalence of dental disease.^{12-14,16,17}

Another possible reason for weight loss in older cats is alteration in energy requirements. Short-term studies have shown no change in MER with aging in cats,^{16,17} while longer studies have shown that MER decreases with age until approximately 11 years and increases thereafter.¹⁸ These findings from short- and long-term studies mirror the body composition findings of Harper¹⁷ and Scarlett et al,¹⁹ suggesting that reduced energy requirements in middle age result in weight gain while higher energy requirements after 11 years of age may contribute to weight loss.

Although sarcopenia is well documented in people, it has been minimally studied in companion animals. Two non-peer-reviewed studies support the presence of sarcopenia in dogs^{17,20}; research documenting body composition changes in aging cats is even more scarce. One abstract²¹ reported little change in lean body mass:fat ratio with age in cats, although only cats <10 years of age were included in the study. Thus, additional research is needed to better understand body composition in older cats.

The Senior Diet Dilemma

Given the limited amount of research on the nutrient requirements of senior cats, the Association of American Feed Control Officials (AAFCO)²² and National Research Council²³ have not established specific nutrient requirements for this population. The AAFCO nutrient profile minimum for protein in food for adult cats is 65 g/1000 kcal regardless of whether the cat is 2 or 12 years of age. Likewise, AAFCO feeding trials for senior cat diets must follow the protocol guidelines for adult maintenance diets, which require only that the cats be at least 1 year of age.²²

Some common characteristics of commercial senior cat foods include reductions in calories and protein, sodium, and phosphorus levels compared with adult maintenance diets. However, because no specific guidelines exist, nutrient profiles may vary widely among these diets. We surveyed 27 commercial diets marketed for older cats from two specialty pet stores, one discount mass merchandiser, and one grocery store. The average caloric density and protein, fat, carbohydrate, fiber, sodium, and phosphorus content of each diet were obtained from the manufacturer. Caloric, protein, fat, sodium, and phosphorus content ranged widely among diets (TABLE 1), with sodium and phosphorus content both varying by more than fivefold. The importance of these findings is that, depending on the diet a cat has been eating, a change to a senior diet may increase or decrease key nutrients. Also, clinicians may recommend a “senior diet” for patients with cardiac or renal disease, assuming that these diets are all reduced in sodium and phosphorus; however, this is not the case, as our survey demonstrates. In some diets, the levels of these nutrients are much higher than might be desirable for an individual cat. With regard to caloric density, although a lower-calorie senior diet may be beneficial for an overweight cat, the same diet could be detrimental for a thin cat.

Some senior diets are supplemented with nutrients or ingredients that may have beneficial effects, such as antioxidants,²⁴ although much additional research is required before making global recommendations for their use in older cats.

Table 1. Nutrient Analysis for Key Nutrients in 27 Over-the-Counter Diets Marketed for Senior Cats

Nutrient	AAFCO Adult Minimum ²²	Representative Adult Diet ^a	Median Nutrient Content in Senior Diets (range)
Kilocalories per: Cup (n = 13) Can (n = 14)	— —	412	388 (326–499) 162 (146–191)
Protein (g/100 kcal)	6.5	9.0	9.2 (7.9–11.3)
Fat (g/100 kcal)	2.3	3.6	4.2 (3.5–9.4)
Sodium (mg/100 kcal)	50	150	106 (64–346)
Phosphorus (mg/100 kcal)	130	336	257 (111–606)
Crude fiber (g/100 kcal)	—	0.4	0.9 (0.3–2.1)

^aPurina Cat Chow Complete Formula, Nestlé Purina PetCare.

Often, the dietary recommendations for older cats must be individualized to manage underlying diseases. However, the wide variation among commercial senior diets highlights the need for establishment of the basic nutrient requirements of healthy older cats, which could serve as a starting point to guide dietary recommendations for healthy aging cats.

Managing Geriatric Cats: Nutritional Assessment and Intervention

The lack of specific nutrient requirements for older cats and wide variation in senior diets underscore the importance of individualizing diet selection based on a thorough nutritional assessment. A nutritional assessment should start with a complete diet history, including the following:

- Specific diet (including flavor; nutrient profiles vary between flavors within a brand)
- Quantity and frequency of meals, additional treats, table food, or supplements
- Foods used for medication administration

It is also important to ask owners about recent changes in diet, quantity fed, or appetite. The information from regular nutritional assessments can reveal important changes in body weight/condition or identify whether the current diet is appropriate for the cat’s medical condition. If the cat’s weight and body condition are optimal, no illnesses are present, and the cat is eating an appropriate complete and balanced diet for adult maintenance, there is no reason to change the diet of an older cat.

Reasons for changing a cat’s diet include changes in body weight/composition or medical condition. If the cat has a body condition score >5/9, achieving optimal body condition is recommended. The details of a successful weight loss program are beyond the scope of this article but should include reduction

Box 1. Clinical Pearls: Increasing Appetite in Geriatric Cats

- Identify and treat any underlying disease.
- Try a variety of diets with varying texture, including dry and canned foods.
- Warm food to help enhance its aroma. Sense of smell is an important factor in a cat's food selection and may change with age or disease.
- Consider adding palatability enhancers to the diet (e.g., chicken or fish broth, small amounts of cooked meat or fish). However, be aware of the nutrient modifications necessitated by underlying diseases (e.g., avoiding high-sodium foods, such as commercial broths or deli meats for cats with cardiac disease).
- Feed smaller, more frequent meals if food intake at a single meal is limited.
- Consider changing the feeding location or feeding from a new dish.
- If a diet change is required, make the transition gradually. Offering the new and old diets side by side for several days can help.
- Avoid offering new food during stress/illness (i.e., hospitalization) to avoid learned food aversions.
- Consider appetite stimulants (i.e., mirtazapine, cyproheptadine).
- Measure food intake to ensure that it meets estimated energy requirements.
- Consider feeding tubes if reduced appetite persists.

of calories from all sources, increased activity and environmental enrichment, and behavior modification of the owner and cat. In cats with a body condition score <5/9, it is imperative to first rule out underlying diseases that could account for the alterations in body weight or appetite. Once illness has been excluded, other factors to consider are whether daily calorie intake is sufficient to maintain the cat's weight (e.g., the owner may have started feeding a senior diet with a lower calorie density) and whether the feeding situation is limiting calorie intake (e.g., feeding an arthritic cat at an elevation to which it can no longer jump). Also, in people, smell and taste change with aging, and changes in these senses may alter food preferences in older cats.²⁵ Evaluation of all these factors can help in determining an optimal medical and nutritional treatment plan for an individual cat.

Another reason for changing an older cat's diet is the presence of disease. Many of the common age-related diseases in cats, such as chronic kidney disease, cardiac disease, and diabetes mellitus, can benefit from dietary modification. For these patients, the nutrients of concern for the disease and the individual cat must be considered carefully when formulating a nutritional plan to help manage the disease.

Whether from aging alone or underlying disease, older cats may have reduced appetites. Tips to address reduced appetite in older cats are listed in **BOX 1**.

Conclusion

Finding the right diet for an older cat can be a challenging task. Until nutrient guidelines for this population are established, it is

critical to base dietary recommendations on a thorough nutritional assessment of the individual cat, including diet history, body condition, appetite, and underlying diseases. Commercially available senior diets vary widely in nutrient composition and should be examined carefully before they are recommended for any patient.

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