The Latest Research on Senior Pet Nutrition

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Pets - Living Longer

• Pets are living longer due to improved nutrition and veterinary care
• In 2002 it was estimated that 30% to 40% of dogs and cats in the US were ≥ 7 yrs
• Today, 50% of dogs in the US are ≥ 6 yrs of age
What Age is a Senior?

• The age that a pet is considered a senior can vary with individual pet, species, & breed size
  – Large breed dogs ≥ 6 years
  – Small & medium breed dogs ≥ 8 years
  – Cats ≥ 8 years
Senior Pets and Health Concerns

- Certain health concerns become more common as a pet ages, such as:
  - Overweightedness or obesity
  - Osteoarthritis
  - Reduced immune function
  - Cognitive function loss
  - Dental disease
Senior Pets
Optimal Nutrition

• How can senior pet foods address these health concerns and best meet the needs of senior pets?
• Consider dietary modifications:
  – Distribution of macronutrients
  – Ingredient selection
  – Supplementation with key nutrients
Overweightedness/Obesity

- Studies conducted in 2005 & 2006 showed that 35% of cats and 34% of dogs in the US are overweight or obese.
- Many senior pets have reduced energy requirements due to a decrease in lean body mass and activity level.
  - Cats differ from dogs in that they are more likely to maintain energy needs with age; however, many cats entering their senior years are already overweight.
Overweightedness/Obesity

- Dogs greater than 8 yrs of age have been shown to consume approx 18% fewer calories than breed-matched dogs under 6 yrs of age


- Studies in cats have not shown a decline in energy needs & reveal that their ability to efficiently digest fat declines with age

Overweightedness/Obesity

- Obese pets are known to have an increased incidence of medical conditions, including:
  - Diabetes mellitus
  - Pancreatitis
  - Orthopedic disease
  - Dermatopathies


Overweightedness/Obesity

• One study in dogs has shown that maintaining a lean body weight throughout life reduces the onset of age-related diseases and increases lifespan by almost two years

Overweightedness/Obesity Nutritional Modifications

• Reduced Energy Density
  – Reduced fat levels
  – Added dietary fiber
  – Reduced kibble density
• High Quality Protein
  – Generally at levels equivalent to or slightly higher than adult maintenance food counterpart
Protein Requirements of Senior Pets

• Traditional approach was to reduce dietary protein levels in senior pet foods due to concerns of renal disease

• However, senior pets require higher protein levels to maintain lean body mass when compared to younger pets
Protein Requirements of Senior Pets

• One study compared protein requirements for senior dogs (12 to 13 yrs of age) to their younger counterparts (1 yr of age)

• Young dogs were more efficient, requiring 0.4g of nitrogen/kg bw/day to replace liver and muscle protein reserves versus 0.6 g nitrogen/kg bw/day in senior dogs

Overweightedness/Obesity

Nutritional Modifications

• L-carnitine
  – Vitamin-like substance that is important in the transportation and metabolism of fatty acids
  – Has been shown to increase the rate of weight loss in obese cats

Osteoarthritis

• With age, joints can wear down and be a source of discomfort
• Maintaining an ideal body weight can provide some relief to joints
• Certain nutrients can also help with joint health such as glucosamine, chondroitin sulfate, and long-chain omega-3 fatty acids (EPA & DHA)
Osteoarthritis
Weight Control

- A lifelong study in dogs has shown that becoming overweight increases the prevalence of hip and shoulder joint problems and increases the severity of elbow joint osteoarthritis when compared to lean control dogs.

Osteoarthritis Weight Control

• Maintaining a healthy body weight has also been shown to delay the onset of hip joint osteoarthritis, with overweight dogs showing evidence of hip disease on x-rays at six years of age versus twelve years for lean control dogs.

Osteoarthritis
Senior Cats

- Awareness of osteoarthritis in cats has increased in recent years
- One study evaluated a population of cats, finding that 33.9% had radiographic signs of degenerative joint disease (DJD)
- Those cats with DJD were significantly older than those without radiographic signs

Glucosamine & Chondroitin Sulfate (G&CS)

- Glucosamine & chondroitin sulfate (G&CS) are building blocks for the “cushion” in joints
- The “cushion” known as glycosaminoglycans are made from proteoglycans
- G&CS also has been shown in vitro to have anti-inflammatory effects and prevent breakdown of joint components
Glucosamine & Chondroitin Sulfate (G&CS)

- Studies in dogs and cats have demonstrated that supplementation of G&CS:
  - Promotes normal joint cartilage metabolism
  - Decreases the signs of pain
  - Improves the ability to bear weight
  - Increases activity


Omega-3 Fatty Acids
EPA & DHA

- EPA & DHA are found in marine fish, fish oil, and algal oil
- EPA & DHA serve as precursors for immune mediators that are less inflammatory
- EPA & DHA also reduce enzymes that breakdown connective tissue which can cause joint damage
Omega-3 Fatty Acids
EPA & DHA

• Four recent reports have demonstrated improved clinical conditions in dogs and cats with osteoarthritis when supplemented with long-chain omega-3 fatty acids
  
  
  
  
Immune Function

• Immune function is known to decline with age in senior pets
• Nutrition has a known role in maintaining immune function and multiple nutritional interventions have been evaluated as a means of boosting immune function
Immune Function
β-Carotene

• Dietary supplementation with β-Carotene has been shown to stimulate cell mediated and humoral immune response in dog, as well as reverse declining immunological responses in senior dogs


Immune Function
Vitamin E

• Vitamin E has a well defined antioxidant role within the body and may also indirectly enhance immune factors

• Increased dietary vitamin E levels helped to maintain lymphocyte proliferative activity in aged dogs.

Immune Function
Vitamin C

- Vitamin C plays an important antioxidant role within the body, including its role in recycling and reactivating vitamin E.
- Although vitamin C’s effects on the immune function in aging dogs has not been specifically evaluated, decreased vitamin C status is known to be associated with depressed cell-mediated immunity, poor bactericidal activity, and impaired macrophage mobilization.
Cognitive Function Loss

• As the nervous system ages, brain function can slow down
• This slowing is referred to as cognitive dysfunction where pets may start to show less interest in play and interacting
• Antioxidants may help slow this functional loss and help keep pets interested in life
Antioxidants

- Antioxidants can help prevent oxidative damage to cells
- Oxidative damage is theorized to be a leading cause of the signs of aging
- In addition to supplemented antioxidants, antioxidants from fruits and vegetables can be helpful in defending against oxidative damage
Cognitive Function Loss

- Feeding a diet supplemented with a broad spectrum of antioxidants and mitochondrial enzyme co-factors has been shown to reduce the age-associated decline in cognitive function.
  - Vitamins E and C, alpha-lipoic acid, L-Carnitine
  - Antioxidant rich food products from tomato, spinach, grape, carrot and citrus
Dental Disease

• Dental disease can cause discomfort and is common in elderly pets
• Dental chews, special coatings on food, and therapeutic foods available through vets are available to help with oral care
• The best prevention happens with daily teeth brushing which can be done regardless of what food is preferred and fed
Poorer Appetite and Reduced Sense of Smell

- Although many senior pets are overweight, many can be finicky eaters.
- This may be due to dental pain or a reduced sense of smell.
- The nervous system and the senses can lose some of their function with age.
- More palatable foods may be helpful if this is a concern.
The Future of Senior Nutrition Research

- Use of genomic screening techniques to recommend diets
- Nutrigenomic techniques to evaluate how nutrients and age effect genetic expression
- Further identification and characterization of canine and feline microbiota and the effects of age

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