Geriatric Nutrition of Companion Animals

What is “Geriatric”?

Aging is a biologic process that results in progressive reduction of one’s ability to maintain oneself under stress, leading to increased vulnerability to disease.

Goldston and Hoskins
“Geriatrics and Gerontology of the Dog and Cat”

Age Chart

Diseases Associated with Older Pets

- Cancer
- Heart Disease
- Dental Disease
- GI Disease
- Liver Disease
- Pancreatic Disease
- Skin Disease
- Urinary Tract Disease
- Skeletal Disease
- Endocrine Disease

Research: Protein and Canine Kidney Disease

<table>
<thead>
<tr>
<th>Researcher (Affiliation)</th>
<th>% Dietary Protein</th>
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</thead>
<tbody>
<tr>
<td>Bovee (UPenn)</td>
<td>8, 18, 26, 54%</td>
</tr>
<tr>
<td>Bovee (UPenn)</td>
<td>19, 27, 56%</td>
</tr>
<tr>
<td>Robertson (UPenn)</td>
<td>19, 27, 56%</td>
</tr>
<tr>
<td>Finco (UGA)</td>
<td>17, 34%</td>
</tr>
<tr>
<td>Finco (UGA)</td>
<td>16, 24, 50%</td>
</tr>
<tr>
<td>Polzin (UMinn)</td>
<td>8, 17, 44%</td>
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<tr>
<td>Churchill (UMinn)</td>
<td>22, 39%</td>
</tr>
</tbody>
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High Protein Diets and Kidney Disease?
Facts:
- High dietary protein has not been shown to contribute to the development of kidney disease.
- High dietary protein does not overwork the kidneys because the excretion of excess urea is a passive process.
- It has not been shown that restricting dietary protein prevents kidney disease in otherwise healthy dogs or in dogs with renal failure.

Feeding Healthy Older Pets
Protein-Former Beliefs

Older dogs should be protein restricted.

Effect of Dietary Protein on Body Lean in Aging Pointers

![Graph showing the effect of dietary protein on body lean in aging Pointers.](Kealy, 1998)

Studies in Senior Dogs
- In Labrador Retrievers 2-13 yr
  - Age-related decrease in lean body mass.
- In dogs 7 yr & older
  - Maintenance Energy Requirement decreased by 20%.
- Older, active dogs do not experience a decrease in MER.
- Protein turnover decreases.

Effect of Dietary Protein on Body Fat in Aging Pointers

![Graph showing the effect of dietary protein on body fat in aging Pointers.](Kealy, 1998)
Protein Turnover

- Higher rate means amino acids are ready when needed
- Higher rate = faster response
- Rate reduced if dietary protein intake low
- Rate maximized if intake high

Protein Reserves

- Body protein stores are source of amino acids
- Used to respond to stresses such as injury or infection
- Muscle and skin are the major protein reserves in the body

Feeding Healthy Older Pets

- Senior canine research – 40 years
  - Age-related reduction in protein turnover
  - Older dogs need more protein than young adults (50% more!)
    - Maintains protein reserves and lean body mass
    - Prepares body for stress and challenges
  - Good quality protein essential
  - Calorie intake affects protein needed in diet
Feeding Healthy Older Pets

- Purina geriatric canine research
  - Decline in physical activity as healthy dogs age
  - Senior dogs = age-related decline in maintenance energy requirements
  - Intake of calories and fat must be individualized

Senior canine diets should provide a minimum of 27% ME from protein

Feeding Healthy Older Pets

- Senior canine diets should provide a minimum of 27% ME from protein

Cats versus Dogs

- Cats are strict carnivores and require a high protein, low carbohydrate diet
- Cats have unique metabolic characteristics
- Cat liver cell enzymes always turned "on" for gluconeogenesis
- Dogs can down-regulate with low protein intake, spare lean tissue

Cats need higher protein intake

- Senior feline diets should contain a minimum of 34% calories as protein
- 1/4 more protein than dogs

Cats versus Dogs

- Inactive, even as younger cats, no changes in activity levels in aging
- Unlike people and dogs, cats do not have an age-related decline in maintenance energy requirements
- No change in lean or fat body mass

Senior feline diets should provide a minimum of 34% ME from protein

Cats versus Dogs
**Purina® Ulti-Pro™**

- All Purina canine senior diets have higher levels of protein - research
  - Purina Veterinary Diets®
  - Pro Plan® diets
  - Heritage brands

**Purina® Senior Feline Diets**

- Cat Chow Senior®
  - for healthy cats 7 years and older
  - same protein level as Cat Chow® (35% DM)
  - comparable calories to Cat Chow
  - added taurine for healthy heart and vision

**Purina® Senior Feline Diets**

- Pro Plan® Cat Senior Formula
  - for healthy cats over 7 years old
  - same protein level as Pro Plan® Adult (35%)
  - real chicken as first ingredient
  - similar amount of calories as Adult
  - added antioxidants
  - vitamin A and n-6 fatty acids for skin and coat
  - adequate mineral levels (Mg, P)
  - highly digestible

**Senior Diets Competitor’s Viewpoints**

- Iams®/Eukanuba®
  - Iams® Senior Plus Joint Maintenance Formula
  - added chondroitin sulfate
  - reduced calories (dog and cat)
  - no protein restriction
  - antioxidants vitamin E and beta carotene
  - omega-6:omega-3 ratio “optimal”
  - beet pulp and FOS for GI health
  - easy to chew kibble

**In Summary…**

- Higher protein does not cause kidney disease in healthy senior pets
- Lower protein does not prevent kidney disease and may be harmful
In Summary…

• Higher protein levels are essential for healthy senior dogs
  – many functions of protein in body
  – reduced protein turnover with aging
• Individualize senior caloric needs

Feeding Healthy Older Pets

• Univ. Georgia
  – 31 healthy dogs at 7 to 8 years of age
  – Uni-nephrectomized (greater risk, tissue studies)
  – Four year study
  – 15 dogs on a 34% protein diet (moderate-high)
  – 16 dogs on a 18% protein diet (low)
  – euthanasia and necropsies

Feeding Healthy Older Pets

• Results
  – 6 of the low protein group died
  – 1 of the high protein group died
  – no renal function decline in either group
  – mild kidney lesions both groups (same degree)

Feeding Healthy Older Pets

• Conclusions
  – No kidney function decline w/ higher protein in senior diet
  – Older dogs need not have decline in kidney function as they age
  – Lower protein diets, even of high quality protein, may alter the immune system (affected by protein intake)

Feeding Healthy Older Pets

• Conclusions
  – *geriatric dogs should not be routinely subjected to dietary protein restriction*
  – *one cannot extrapolate studies from one species to the next!*