

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

HOW OLD IS YOUR PET?		■ SENIOR		■ GERIATRIC												
AGE	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
WEIGHT IN POUNDS	0-20	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96
	21-50	42	47	51	56	60	65	69	74	78	83	87	92	96	101	105
	51-90	45	50	55	61	66	72	77	82	88	93	99	104	109	115	120
	>90	49	56	64	71	78	86	93	101	108	115	123				

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

High Protein Diets and Kidney Disease?

Research: Protein and Canine Kidney Disease

<u>Researcher (Affiliation)</u>	<u>% Dietary Protein</u>
Bovee (UPenn)	8, 18, 26, 54%
Bovee (UPenn)	19, 27, 56%
Robertson (UPenn)	19, 27, 56%
Finco (UGA)	17, 34%
Finco (UGA)	16, 24, 50%
Polzin (UMinn)	8, 17, 44%
Churchill (UMinn)	22, 39%

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

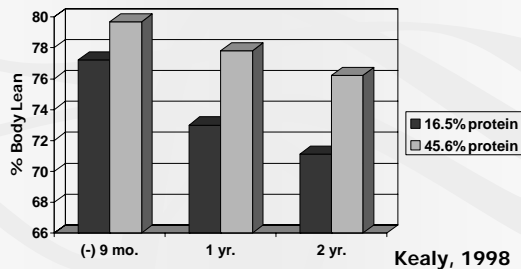
7

Feeding Healthy Older Pets *Protein-Former Beliefs*

Older dogs should be protein restricted

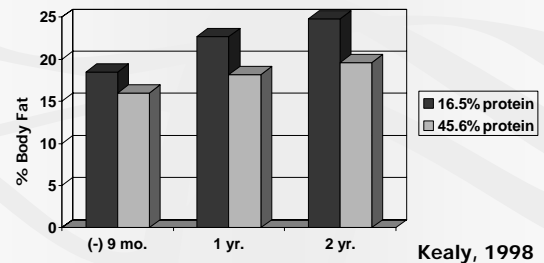


Effect of Dietary Protein on Body Lean in Aging Pointers



9

Effect of Dietary Protein on Body Fat in Aging Pointers



10

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

11





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

15

Protein Turnover

16

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

17

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

18

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

19

Feeding Healthy Older Pets

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

20

Feeding Healthy Older Pets *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

21

Feeding Healthy Older Pets *Cats versus Dogs*

Cats need higher protein intake

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

22

Feeding Healthy Older Pets *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

23

Feeding Healthy Older Pets

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

24

Purina® Ulti-Pro™

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

25

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

26

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

27

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

28

Senior Diets Competitor's Viewpoints

- Hill's®/Science Diet®
 - traditional protein theories
 - lower protein for senior dogs so as to promote kidney health and increase longevity
 - high quality protein compensates
 - high fiber (GI health)
 - added taurine
 - senior cat diets with less calories

29

In Summary...

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

30

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

31

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

32

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)

33

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)

34

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!*

35