

Research Update: Grain-Free Diets Have High Nutrient & Amino Acid Digestibility

Nutrient and Amino Acid Digestibility of Grain-Free Dog Foods Using the Precision-Fed Cecectomized Rooster Assay^{1,*}

Practice Implications:

Commercial **high-protein, grain-free dog diets are highly digestible, and nutritionally balanced as per AAFCO Nutritional Standards**. Let your clients know research and innovation guides everything we do at Champion and we test our foods throughout the manufacturing process for nutritional accuracy, digestibility and palatability.

Background:

- High-protein, grain-free (HPGF) extruded dog diets (>32% protein) are increasing in popularity, but few have compared the digestibility of these diets to others containing different ingredients or nutrient concentrations.

Objective:

- Determine the nutrient and amino acid (AA) digestibility of commercial HPGF extruded dog foods using the precision-fed cecectomized rooster assay.

Methods:

- Four extruded diets were tested in this study, including three HPGF diets and one moderate-protein grain-based (MPGB) diet.
 - HPGF1:** Chicken Based diet 1 (Orijen Original, Champion Petfoods) (44% protein on a dry matter basis)

- HPGF2:** Chicken-based diet 2 (44% protein on a dry matter basis)
- HPGF3:** Chicken-based diet 3 (35% protein on a dry matter basis)
- MPGB:** Chicken-based moderate-protein grain-based diet (31% protein on a dry matter basis)
- The cecectomized rooster assay is widely used for pet food analysis and was used to assess amino acid and standardized macronutrient digestibility.
- 16 cecectomized roosters (4 roosters/substrate) were randomly assigned to each diet. After feeding, excreta were collected for 48 hours.
- Substrates and rooster excreta were analyzed for chemical composition, macronutrient digestibility and standardized amino acid (AA) digestibility.

Key Findings:

- In general, the Orijen Original (HPGF1) diet had the highest AA digestibility, with all diets being moderately to highly digestible.
- Sulphur amino acid digestibility of the Orijen Original (HPGF1) diet was greater than and/or equal to that of the traditional grain-based diet (MPGB).

Table 1. Selected standardized amino acid (AA) digestibilities (%) of commercial kibble diets using the precision-fed cecectomized rooster assay.

AA	HPGF1	HPGF2	HPGF3	MPGB	SEM	P-value
Indispensable AA						
Methionine (%)	88.05 ^a	87.22 ^{ab}	80.59 ^c	83.57 ^{bc}	0.92	0.0003
Selected Dispensable AA						
Cysteine (%)	56.97	59.68	47.16	61.32	3.70	0.08
Serine (%)	73.96 ^a	72.68 ^a	71.65 ^{ab}	63.78 ^b	1.97	0.01

^{a-d} Within a row, means lacking a common superscript differ (P<0.05); n = 4 roosters per treatment.

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1. Oba PM, et al. Nutrient and Amino Acid Digestibility of Grain-Free Dog Foods Using the Precision-Fed Cecectomized Rooster Assay. Poster presented at: AAVN Clinical Nutrition & Research Symposium; June 10th-11th, 2020.; Virtual Conference.