

Inclusion of Fresh Pork Pancreas in Raw Pork Meat-Based Diets for African Wildcats (*Felis silvestris tristrami*) does not Impact Macronutrient Digestibility

A.S. Leaflet R2869

Cheryl L Morris, Assistant Professor, Department of Animal Science; Kelly Kappen, Nutrition Manager, Omaha's Henry Doorly Zoo and Aquarium

Summary and Implications

Apparent total tract macronutrient digestibility was evaluated in 4 African wildcats (*Felis silvestris tristrami*) fed beef or pork-based raw meat diets. Diets were formulated to meet nutrient requirements of cats (NRC, 2006). Cats were fed isocaloric amounts of either control (standard beef raw diet) or pork-based raw diets containing 0, 3, or 5% added raw pancreas, in four 14-day periods. Protein digestibility was higher for pork diets compared with beef and inclusion up to 5% fresh pancreas did not increase macronutrient digestibility in healthy animals. Raw pork can be fed to exotic felids as a viable alternative to standard beef-based zoological formulations.

Introduction

Small exotic felids are frequently fed raw meat-based diets in managed environments, such as zoos. In addition, feeding raw meat-based diets to domestic companion animals (dogs, cats) is becoming more common. Many companion animal owners feeding raw meat diets indicate improvements in macronutrient digestibility when raw pancreas is included in the diet, particularly for senior animals or for clinical conditions including pancreatic insufficiency; however, data to substantiate these claims are lacking.

Materials and Methods

Two male and two female adult African wildcats (*Felis silvestris tristrami*) (average BW 3.8 ± 0.3 kg; average age 8.5 ± 0.5 years) from Omaha's Henry Doorly Zoo & Aquarium (Omaha, NE) were fed one of four dietary treatments in a randomized Latin square design experiment.

Periods consisted of diet acclimation (day 1 – 10) followed by total fecal collection (days 11 – 14). Dietary treatments were a standard raw beef-based zoological formulation as control (Beef) and three raw pork-based diets that contained 0, 3, or 5% added raw pork pancreas (P0, P3 or P5, respectively). Chemical compositions of diets are presented in Table 1. All diets were formulated to meet or exceed nutrient requirements of domestic cats (NRC, 2006). Cats were fed isocalorically to maintain body condition. Fecal scores were based on a scale: 1 = hard, dry pellets; 2 = dry, well-formed stools; 3 = soft, moist, formed stool (considered ideal); 4 = soft, unformed stool; and 5 = watery, liquid that can be poured. Results were analyzed using PROC MIXED of SAS® (SAS Inst. Inc., Cary, NC)

Results and Discussion

Cats maintained body weight and condition; however, consumed more pork. Digestibility coefficients across all nutrients for all diets were very high, particularly fat (Table 2). Inclusion of raw pancreas up to 5% of the diet did not impact digestibility of nutrients in healthy cats. Numerically, pork diets were better digested than beef diet; however, only crude protein digestibility was significantly different ($P = 0.02$). Raw pork-based diets were comparable to raw beef-based diets for African wildcats and may serve as an alternative protein source for exotic cats. There may be value in additional research supporting the use of pork and pork by-product meats for companion animal and zoo managed carnivores. Further research is needed to evaluate raw pork in diets for other zoo carnivores and companion animals to determine if differences in nutrient digestibility are species specific.

Acknowledgments

We gratefully acknowledge the participation and work provided by the animal keepers and staff of Omaha's Henry Doorly Zoo and Aquarium.

Iowa State University Animal Industry Report 2014

Table 1. Chemical composition of raw meat diets fed to African wildcats (DM basis)¹

Item	Beef	P0	P3	P5
DM, %	33.4	31.1	31.9	31.7
Organic matter, %	92.9	92.9	93.1	92.9
Crude protein, %	56.9	54.1	53.8	54.2
Crude fat, %	29.4	32.6	31.1	31.3
Crude fiber, %	2.8	3.0	3.1	3.0
Gross energy, kcal/g	6.3	6.3	6.4	6.3
Estimated ME, kcal/g	5.1	5.2	5.2	5.2

¹ Metabolizable Energy (ME) was estimated through calculation using NRC, 2006 formulas: ME = 9 kcal/g fat + 4 kcal/g protein + 4 kcal/g nitrogen free extract (NFE)

Table 2. Apparent total tract macronutrient digestibility and fecal scores of African wildcats fed raw meat diets ¹

Item	Beef	P0	P3	P5	SEM
DM intake, g/d	43.1 ^a	59.0 ^{a,b}	64.8 ^b	69.2 ^b	3.1
DM digestibility, %	88.3	87.0	88.4	89.5	1.3
OM digestibility, %	91.4	90.8	91.8	92.7	0.9
CP digestibility, %	93.8 ^a	95.0 ^{a,b}	96.4 ^b	94.8 ^{a,b}	0.7
Fat digestibility, %	97.5	98.6	97.6	98.6	0.5
GE digestibility, %	92.5	92.9	93.3	94.2	0.7
Fecal score	2.8	2.9	3.0	2.9	0.1

¹ Means in rows with different superscript letters, differ by P<0.05.