Insect meals as novel protein sources in wet pet foods for adult cats

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Background

- As the human and pet population increase, the human and pet food industries will experience a greater demand for animal-based protein sources.
- Finding alternative proteins that are nutritional adequate and safe for companion animals may contribute to diversification of protein sources and lower the demand for animal-based protein in pet food products.
- However, limited information is available on the nutritional value of insects for pet animals.

Objectives

- Evaluate three different insect meals, 1) Speckled cockroach (SC; *Nauphoeta cinerea*), 2) Madagascar hissing cockroach (MC; *Gromphadorhina portentosa*) and 3) superworm (SW; *Zophobas morio* larvae), added at the expense of chicken meal (CON; control diet), as protein sources in retorted feline diets.

Materials and Methods

- Twenty-eight adult cats were used in a completely randomized design.
  - Mean age = 2.1 ± 0.03 yr; mean BW= 4.9 ± 0.8 kg
- Four retorted diets were prepared at the FSHN Pilot Plant at U of I. The chemical composition of the insect meals and retorted diets are shown in Tables 1 and 2, respectively.

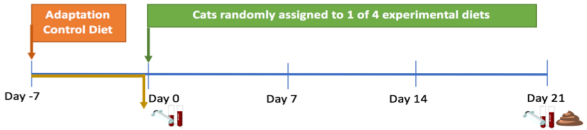


Table 1. Chemical composition of select insect meal sources

	Insect meal sources		
Item	SC	MC	SW
Dry matter, %	92.3	92.1	93.5
	%, Dry matter basis		
Organic matter, %	96.1	94.9	96.9
Crude protein, %	61.3	85.6	53.4
Acid Hydrolyzed fat, %	33.1	14.3	34.8
Gross energy, kcal	6.6	5.6	6.8

Table 2. Chemical composition of retorted experimental diets

	Experimental diets			
Item, %	CON	SC	MC	SW
Dry matter	24.4	22.3	22.3	20.4
	%, Dry matter basis			
Organic matter	93.1	93.1	90.9	91.3
Crude protein	43.6	39.5	44.4	39.1
Acid Hydrolyzed fat	23.6	26.7	24.0	27.4
Gross energy, kcal	5.9	6.1	6.0	6.3

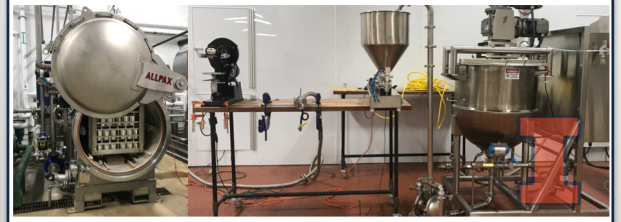


Figure 1. Apparent total tract digestibility (ATTD) of experimental diets

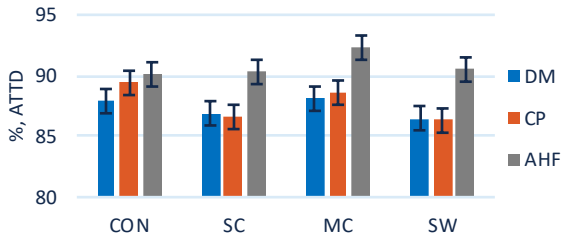
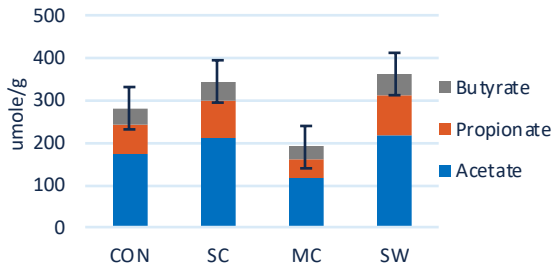


Figure 2. Fecal metabolite concentration of cats fed experimental diets



Conclusions

- Overall, select insect meals had no negative effects on macronutrient digestibility, fecal characteristics and metabolites, and overall health of adult cats.
- Diets containing insect meals were comparable to chicken-based diet. Insect meals are adequate ingredients in retorted feline diets.