

Research Report, February 19, 2016

Effect of Pre-Liminate™ with Sweet Potato Carrier on the Palatability of Dry Dog Food

Introduction

Probiotics are of increasing interest to food and feed manufacturers because of the health benefits to animals as well as humans. Probiotic premixes are added topically to pet foods after the formula has passed through heat processing because such processing would kill the probiotic microbes. It is important, therefore, to be sure that the probiotic premix on the surface of the pet food does not decrease its palatability. Sweet Potato is an attractive carrier because it is not a grain and should not decrease the palatability or market appeal to consumers.

Objective

To study the effect of topical Log10[®] probiotic premix (Pre-Liminate™) application on the palatability of a commercial dog food kibble.

Experimental Design

Treatment Variables: Untreated kibble vs. the same kibble treated with sweet potato/probiotic premix.

Response Variables: Acceptance behavior and daily consumption by dogs.

Replications: 20 dogs, two consecutive days.

Procedures

1. The Pre-Liminate™ formula used was D2.2, consisting of food grade sweet potato, dried fermentation products (*Lactobacillus* spp. and *Bifidobacterium* spp.), and silicon dioxide (flow agent).
2. Dried commercial dog kibble was obtained from a commercial pet food producer. Kibble was treated with Pre-Liminate™ at the rate of 14.5 g per 80 lb. of kibble (.04%). Kibble and premix were mixed in a 3.5 cubic foot polyethylene rotating cement mixer fitted with a cover having a small opening for adding the premix during mixing. Total mixing time was 15 minutes.
3. Samples of the untreated and treated kibbles were tested for the presence of the probiotic microorganisms.

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4. Untreated and treated kibbles were fed simultaneously to 20 dogs in a commercial kennel. The dogs weighed an average of 30 lb. Each dog was offered 400 grams of each type of kibble simultaneously in different bowls for each of two consecutive days. Bowl position was inverted on the second day to account for possible position bias.
5. Data were recorded for each dog each day, as follows:
 - a. First type of kibble approached.
 - b. First type of kibble consumed.
 - c. Daily consumption of each type of kibble.

Results

1. Treated kibble samples tested by standard methods in the Log10® laboratory had 6.4×10^5 cfu/g of *Lactobacillus* and 1.9×10^6 million cfu/g of *Bifidobacterium* for a total of 2.5 million cfu/g. The total activity was equivalent to 2.5 billion cfu/kg *Lactobacillus* and 1.1 billion cfu/lb *Bifidobacterium*. Back calculating from those numbers indicated that the rate of premix application was approximately 0.04%. This rate exceeds the rate of .002 to .004% recommended by Log10® for the premix used in this study.
2. The dogs showed no difference between untreated and treated kibble in any response variable.
 - a. Kibble treated with probiotic premix was approached first on 14 out of 40 observations but consumed first on 22 of the 40 observations.
 - b. Average daily consumption of untreated and treated kibble is shown in Table 1. These data were analyzed statistically, and there was no difference.

**Table 1. Effect of treating dog food with Pre-Liminate™ and sweet potato on palatability.
(Average daily consumption by individual dogs, pounds per day)**

Day	Treatment with Premix ^a		Average
	Untreated	Treated	
1	.492	.507	.501
2	.389	.610	.499
Average	.440	.558	

^aThere were no statistically significant differences between treatments.

Conclusions

Topical treatment of commercial dog food kibble with Pre-Liminate™ at a rate greater than recommended had no effect on the palatability of the kibble when tested on 20 dogs. There was no difference in first approach, first consumption, or daily intake between treated and untreated kibble. Pre-Liminate™ Formula D2.2 may be applied topically in manufacturing dog food kibble without concern about a negative effect on the palatability of the dog food.