

**Research Report, November 4, 2015**

## **Effect of Pre-Liminate™ on Stool Quality**

### **Introduction**

Probiotics have been demonstrated to improve stool quality of distressed or immunocompromised dogs. The positive effects of probiotics on the lower intestine is generally due to enhanced immune response by the animal and also the displacement and inhibition of pathogenic bacteria by the probiotic bacteria. The animals used in this study were healthy adult beagles with no obvious signs of GIT distress.

### **Objective**

To determine any effects of topical Pre-Liminate™ application on the stool quality of adult dogs.

### **Experimental Design**

Crossover design with 6 dogs fed control kibble for 9 days followed by treated kibble for 5 days.

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

Response Variables: Stool quality score, stool color, stool odor.

### **Procedures**

1. The Pre-Liminate™ formula used was D3.1, consisting of commercial food grade corn starch, dried fermentation products (*Lactobacillus* spp. and *Bifidobacterium* spp.), and silicon dioxide (flow agent).
2. Dried commercial dog kibble was obtained from a major manufacturer. Kibble was treated with Pre-Liminate™ at the rate of 0.04 lb. to treat 40 lb. of kibble. 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 10 minutes.
3. Samples of the untreated and treated kibbles were tested for the presence of the probiotic microorganisms. Treated kibble samples tested by standard methods in the Log10® laboratory had 9 million cfu/g of *Lactobacillus* and 7 million cfu/g of *Bifidobacterium* for a total of 16 million cfu/g. The total activity was equivalent to 16 billion cfu/kg and 7 billion cfu/lb.
4. Untreated kibbles were fed daily to 6 dogs in a commercial kennel for 9 consecutive days. Daily total food offered was 300 grams throughout the trial. The same 6 dogs were switched to probiotic treated kibbles on day 10 and fed for 5 consecutive days. Stool quality scores were assigned daily to each dog.

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5. Stool Quality consists of three variables: texture, odor, and color. Texture is evaluated using a 5 point scale, which is considered standard for companion animal feeding trials.

1=Liquid

2=Loose

3=Soft

4=Normal

5=Too Hard

Color is described as light, medium or dark brown. Odor is noted only if there is a distinct difference in the sample compared to the other dogs.

## Results

1. The dogs showed no difference between untreated and treated kibble in stool quality (Tables 1 and 2).
  - a. A stool quality score of 4 was observed for each dog each day regardless of treatment.
  - b. There were no differences noted in color or odor in any of the dogs regardless of treatment.
2. Daily food intake was similar between treated and untreated kibble (Table3).

## Conclusions

Topical treatment of commercial dog food kibble with a Pre-Liminate™ had no effect on the stool quality of the dogs. It is not ethical to induce distress in companion animal studies and it is difficult to effectively evaluate the effects of probiotics on stool quality in healthy dogs.

**Table 1. Stool Quality Scores of dogs fed commercial kibble**

Dog	Day								
	1	2	3	4	5	6	7	8	9
1	4	4	4	4	4	4	4	4	4
2	4	4	4	4	4	4	4	4	4
3	4	4	4	4	4	4	4	4	4
4	4	4	4	4	4	4	4	4	4
5	4	4	4	4	4	4	4	4	4
6	4	4	4	4	4	4	4	4	4

**Table 2. Stool Quality Scores of dogs fed commercial kibble + Log10<sup>®</sup> Probiotic**

Dog	Day				
	1	2	3	4	5
1	4	4	4	4	4
2	4	4	4	4	4
3	4	4	4	4	4
4	4	4	4	4	4
5	4	4	4	4	4
6	4	4	4	4	4

**Table 3. Daily Feed Intake (grams)**

Dog	Day <sup>1</sup>													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	300	300	300	300	300	300	300	300	300	300	300	300	300	300
2	282	300	300	300	300	300	300	275	227	300	201	300	300	274
3	300	300	300	300	300	229	171	300	228	300	248	171	208	300
4	300	300	300	300	300	300	300	300	300	300	300	300	300	300
5	300	300	300	300	300	300	300	300	300	300	287	300	300	300
6	300	300	300	300	300	300	300	300	300	300	155	244	166	230

<sup>1</sup>Day 1-9 kibble with no probiotic; Days 10-14 kibble + probiotic