Log10®

Inhibition of *Salmonella* spp. in Dry Pet Food Kibble Using Log10® Probiotic Blends

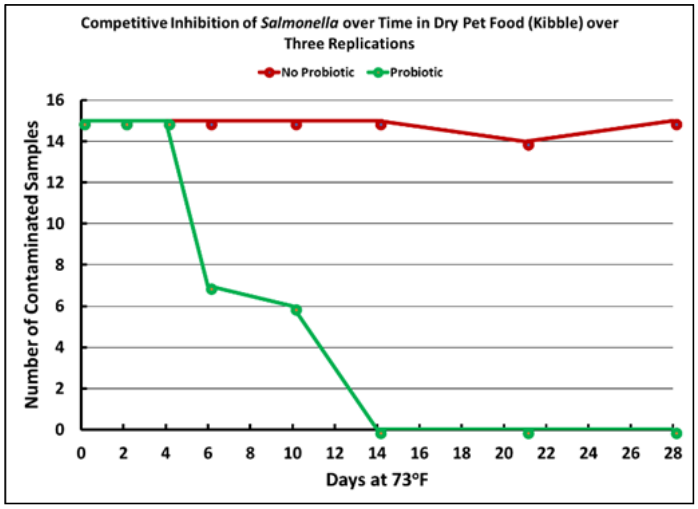
Research Experiment Summary: Commercially available dry pet food with different moisture contents (3-10%) were inoculated by dry inoculum application with several strains of *Salmonella* specific to the pet food industry (*S. schwarzengrund*, *S. infantis* and *S. livingstone)*. Dry Canine Pre-Liminate™ Formula D331 containing probiotic organisms selected for competitive inhibition and host specific traits were added to dry extruded pet food. The amount of probiotic added was achievable in common industry applications. All products were stored in their original packaging (commercial paper bags) at ambient temperature (73°C) for the duration of the study. Multiple replications and repetitions/pathogen were analyzed

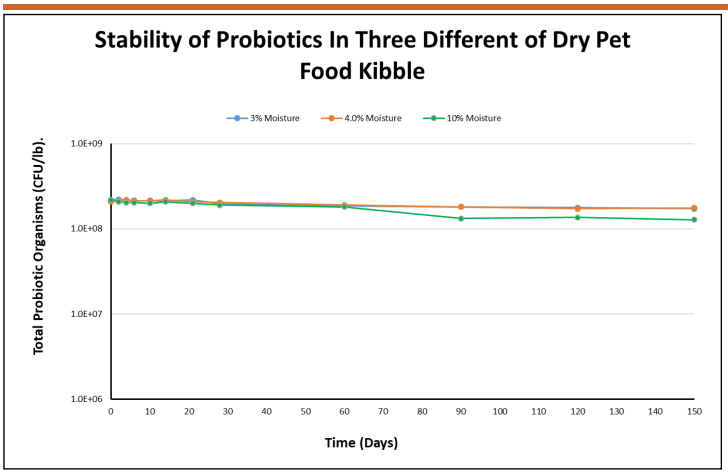
Results Summary: Evaluation of the three Log10® probiotic strains on dry kibble indicates that 6 days after treatment, high contaminations of *Salmonella* spp. could be inhibited. On Day 6, there were fewer samples testing positive (n=2-3) in probiotic treated kibble compared to kibble without probiotics (n=15). As time progressed, the number of samples testing positive for *Salmonella* spp. was reduced to 1-3 on day 10 and 0 for each moisture level kibble on day 14. In comparison, all of the untreated kibble (n=15) tested positive on day 14 and *Salmonella* remained present in the untreated product 28 days after inoculation. After fourteen days of storage, all three moisture levels of probiotic-treated kibble in all repetitions were free of *Salmonella* spp. showing probiotic use can be considered a valid preventive control for pathogen intervention in dry pet food kibble.

Effect of Probiotic and Time on *Salmonella* spp. in Thee Different Moisture Levels of Dry Pet Food Kibbles

	Number of Contaminated Kibble Samples[1]							
Probiotic Treatment	**Day 0**	**Day 2**	**Day 4**	**Day 6**	**Day**	**Day**	**Day**	**Day**
Untreated Rep 1	5	5	5	5	5	5	5	5
Untreated Rep 2	5	5	5	5	5	5	4	5
Untreated Rep 3	5	5	5	5	5	5	5	5
Untreated Total	15	15	15	15	15	15	14	15
Treated Rep 1	5	5	5	2	3	0	0	0
Treated Rep 2	5	5	5	3	2	0	0	0
Treated Rep 3	5	5	5	2	1	0	0	0
Treated Total	15	15	15	7	6	0	0	0

[1] 5-75g samples were pulled and analyzed each day of the study





Probiotic Stability: Storage data for probiotic inoculated kibble indicated that the *Lactobacillus* and *Bifidobacterium* remained stable (10^7- 10^8 CFU/lb.) over 150 days of storage at 73°F with no adverse effects noted related to the quality of the inoculated pet food products. Further research is ongoing to determine the length of time probiotic viability can be maintained.