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Will They Survive?

Within the livestock industry, today there is an increase in the use of probiotics, both to treat illness by reestablishing bacterial cultures in the digestive tract, and as a method of maintaining digestive health and boosting the immune system. The concern addressed in this experiment is that the bacteria in the powdered probiotic products are dehydrated and essentially “freeze dried” in a process called lyophilization. The purpose of this experiment is to determine if the bacterial cultures found in powdered livestock probiotic products actually survive to produce live colonies. Lyophilized cultures need to be stored under refrigeration to keep the cultures viable. Considering that most powdered livestock probiotics are not refrigerated, the number of cultures that will actually form viable colonies will be substantially lower than that on the label. The data for this experiment was collected by culturing four different probiotic powders to determine the amount of viable bacterial cultures. Using the probiotic labels as the basis for calculations, the amount of each powder that would contain 10 million CFU (Colony Forming Units) was inoculated into growth media, and then serial dilutions done to obtain measureable amounts of cultures. Bacterial growth was measured using OD 600 and plate counts. Two different tests were performed. The Immediate Test measured the bacterial growth resulting from serial dilutions directly after inoculations. The 24 Hr Test incubated the inoculated bacteria for 24 hours before the serial dilutions. The data collected showed that for all four brands tested there was less bacteria in the Immediate test than in the 24 hour tests. Likewise, the 24 hour T/Y test produced more bacteria than the 24 hour N test. The data collected from this experiment only partially supports the hypothesis. The data collection method did not allow for an accurate colony count, but did allow for a comparison between brands of probiotics. All four brands did produce some bacteria, with brand 2 being the best overall performing brand. The data does indicate that there was a significant increase in bacterial growth when the probiotic powders were allowed to hydrate and incubate for 24 hours prior to serial dilution. More testing needs to be completed to get conclusive results.