Adopting Lactobacillus and Organic Acids as Alternative Treatments to Necrotic Enteritis

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Necrotic enteritis (NE), caused by Clostridium perfringens (CP), is a re-emerging disease in chickens due to the removal of growth promoters (low level of antibiotics) from poultry feed by major poultry companies. Therefore, an alternative treatment without using antibiotics to treat this disease is essential. It has been shown that the abundance of probiotic bacteria, such as Lactobacillus species, can protect humans and animals against pathogens. My hypothesis was the use of probiotic bacteria or change of pH environment can inhibit the growth of C. perfringens. The objective of my study was to evaluate the effectiveness of Lactobacillus johnsonni and acetic acid to inhibit the growth of CP. The procedure was to assess the inhibitory effects of L. johnsonii and pH on CP by an agar well diffusion assay. Supernatants collected from L. johnsonii grown at 37 C for 4 days showed the greatest inhibitory zone than the supernatants collected from one, two, or three-day incubation. Acetic acid at pH 4 and 4.5 exhibited greater inhibitory zones than pH 5 and 6. The presence of mucin in culture medium facilitate the growth of CP than that of absence of mucin. The conclusion is that L. johnsonii inhibits the growth of CP and pH 4 and 4.5 enhance the inhibitory effect against CP. The use of L. johnsonii as a probiotic, as well as organic acids, can potentially prevent and treat necrotic enteritis in chickens.

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