

**EFFECT OF PROBIOTIC BACTERIA *Lactobacillus acidophilus* and *Bifidobacterium lactis* ON THE GROWTH OF *SALMONELLA* IN MILK**

**S. Indula<sup>1</sup>, P.S. Fernando<sup>2</sup>, J.K. Vidanarachchi<sup>3</sup>, C.S. Ranadheera<sup>1</sup>,  
P.H.P. Prasanna<sup>1</sup> and M.G.C.R. Wijesinghe<sup>1</sup>**

<sup>1</sup>*Department of Animal and Food Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura, Sri Lanka*

<sup>2</sup>*Veterinary Research Institute, Gannoruwa, Peradeniya, Sri Lanka*

<sup>3</sup>*Department of Animal Science, Faculty of Agriculture, University of Peradeniya, Peradeniya, Sri Lanka*

Probiotics are live microbes, which beneficially affect on the consumers when ingested in sufficient amounts. Probiotics demonstrate antagonistic properties towards pathogenic microbes through production of antimicrobial compounds. This property can be strain specific. Since dairy products play a predominant role as carriers of probiotics to the consumer, this study was conducted to evaluate the effect of probiotic bacteria *Lactobacillus acidophilus* (L) and *Bifidobacterium lactis* (B) on pathogenic *Salmonella* (S) growth in milk under mono and different co-culture combinations. Sterilized milk samples (20 mL) were inoculated with 10<sup>7</sup> cfu of each bacterium as monoculture, co-culture and triple co-culture combinations (L, B, S, L+B, L+S, B+S, L+B+S). Treatments were arranged in Completely Randomized Design and titratable acidity, pH and viable microbial counts were obtained at different intervals (0, 3, 5 and 24 h) while incubation at 37 °C. Increase of titratable acidity and gradual pH reduction were observed during incubation of all milk samples despite the culture composition. *Bifidobacterium* and *Lactobacillus* co-culture combination (L+B) showed the lowest pH and highest titratable acidity at the end of incubation period (4.11 and 0.55%, respectively). *Lactobacillus acidophilus*, *Bifidobacterium lactis* and *Salmonella* counts have increased during incubation in milk. However, significantly higher growth of *Salmonella* was observed when milk samples were mono-cultured (S) and co-cultured with *Lactobacillus acidophilus* (L+S) ( $p < 0.05$ ). There was no significant increase ( $p > 0.05$ ) in *Salmonella* counts when milk samples were co-cultured with *Bifidobacterium lactis* and *Lactobacillus acidophilus* (L+B+S) and incubated up to 5 h. A similar non significant trend was observed for *Salmonella* counts, when milk samples were co-cultured with bifidobacteria (B+S). Therefore, probiotic bacteria such as *B. lactis* may have potential in suppressing the growth of pathogenic *Salmonella* spp. in milk.

**Keywords:** *Bifidobacterium*, *Lactobacillus*, Milk, Probiotics, *Salmonella*