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Enterococcus mundtii ST4SA and *Lactobacillus plantarum* 423 excludes *Listeria monocytogenes* EGDe from the gastro-intestinal tract as shown by bioluminescent studies in mice

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*L*isteria monocytogenes is an opportunistic food-borne pathogen which can be life-threatening to individuals with a *L*weakened immune system. The aim of this study was to reveal if the probiotic strains *L. plantarum* 423 and *E. mundtii* ST4SA colonizes the gastro-intestinal tract (GIT) of mice and whether strains 423 and ST4SA could exclude *L. monocytogenes* from the GIT. The *mCherry* fluorescence gene and a gene for chloramphenicol resistance were cloned into the pGKV223D LAB/E. coli expression vector and stably expressed in *E. mundtii* ST4SA. The same two genes were integrated into a nonfunctional region on the genome of *L. plantarum* 423 by homologous recombination. Mice were gavaged with *L. plantarum* 423, *E. mundtii* ST4SA and a combination of the two strains for 6 consecutive days and orally infected with a bioluminescent strain of *L. monocytogenes* (strain EGDe) on the last day of treatment. *Listeria monocytogenes* EGDe was excluded from the small intestine of *L. plantarum* 423-treated mice 4 hours after infection and from the large intestine 2 hours later. No bioluminescent and thus metabolically active cells of L. monocytogenes EGDe were recorded in the GIT of mice treated with *E. mundtii* ST4SA. *Lactobacillus plantarum* 423 and *E. mundtii* ST4SA colonized the colon the strongest. The ability of *L. monocytogenes* EGDe to colonize the GIT was reduced by pre-treatment with *L. plantarum* 423 or *E. mundtii* ST4SA. The most rapid decline in *L. monocytogenes* EGDe cell numbers was recorded in mice pre-colonized with *E. mundtii* ST4SA suggesting that *E. mundtii* ST4SA is the most effective in controlling the growth of *L. monocytogenes* EGDe in the GIT.

Biography

Winschau Fayghan van Zyl has completed his BSc in Molecular Biology and Biotechnology at the University of Stellenbosch and obtained the degree in 2011. In 2012, he obtained his BSc (Hons) in Microbiology, also at the University of Stellenbosch. He obtained his MSc degree in Microbiology and is currently enrolled as PhD student at the University of Stellenbosch in the research laboratory of Professor L M T Dicks. His research is focussed on lactic acid bacteria and host-microbe interactions.

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