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Local and systemic immunostimulatory effects of probiotic lactic acid bacteria isolated from cattle in germ-free mice

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Lactic acid bacteria can be used as growth promoters in young calves, reducing the frequency of neonatal infections through immune system stimulation. Accordingly, three lactic acid bacteria strains isolated from vaginal, intestinal and airway mucosae of calves were evaluated for their ability to enhance the immune system both at the local and systemic levels in mice. Three groups of six germ-free mice (GF) were established and the animals were mono-associated with one vaginal, gastric and intranasal inoculums containing respectively, 106 CFUs of Weissella hellenica V1V-30 (Group 1-G1), 108 CFUs of Lactobacillus farciminis B4F-06 (G2) and 106 CFUs of L. fermentum V3B-08 (G3). GF mice were used as controls. At the tenth day, spleens were collected of all euthanized animals, besides the vaginal washes, intestinal fluids and lungs from G1, G2 and G3 respectively. The local immune stimulus was evaluated by ELISA, measuring the sIgA levels in vaginal washes (G1), intestinal fluids (G2) and lungs (G3). The systemic responses were assessed in spleens by qPCR, measuring the levels of IL-12, INF-γ, IL-4, IL-6, IL-10, TGF-β, TNF-α and iNOS. All isolates were able to increase the sIgA synthesis. In G1, animals had IL-12, IL-6 and TNF-α increased. In G2, IL-6 was stimulated and IL10, TGF-β and IL-4 were suppressed. In G3, TNF-α IL-12, INF-γ, IL-6, and iNOS was increased. All tested strains have good potential for the use as growth promoters once were able to stimulate a humoral mucosal response besides triggering in different ways, innate and adaptive immune responses.

Biography

Savio Sandes has completed his Master's degree in Genetics at Universidade Federal de Minas Gerais and currently is a Genetics student from the same institution. During his PhD studies, he develops a line of research that aims to get new probiotic strains for administration to animals of livestock interest.

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