

PROBIOTICS AS PROTECTIVE AGENTS AGAINST ENTEROBACTERIA

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Salmonella is one of the major causative agents of foodborne diseases, morbidity and mortality worldwide. Salmonella enterica serovar typhimurium (S. typhimurium) produces in mice an infection with similar pathogenesis and clinical manifestations than S. typhi in humans. Probiotics influence the innate and adaptive immunity and the activity of the intestinal microbiota. This knowledge allowed us to propose the use of probiotic bacteria against Salmonella infection. On this topic, the mechanisms mediating this protection are not yet established. We determine the effect of the oral administration of probiotic bacterium L. casei CRL-431 on the biological and immune mechanisms involved in the prevention and treatment of the S. Typhimurium infection, using BALB/c mice. Oral administration of probiotic to healthy mice, induced activation of gut immune cells in a regulated state. The continuous L. Casei CRL-431 administration (previous and post-infection) protected mice challenged with S. Typhimurium. The mechanisms involved were: a) The modulation of innate immune response by increased TLR expression on epithelial and immune cells. b) Epithelial cell activation, evidenced by increases in secretion of IL-6 and MCP-1. c) Increased number of macrophages, dendritic cells and IgA (+) cells in lamina propria of the small intestine, and increased secretion of total S-IgA. d) Reduction of inflammation, with reduced TNF-alpha levels and myeloperoxidase activity, less PMN infiltration in lamina propria and regulation by IL-10. e) Increased phagocytic activity in macrophage isolated from Peyer's patches, spleen and peritoneum, correlated with an increase of IFN-gamma. The results showed that L. casei CRL-431 induces biological and immune mechanisms, which confer resistance to S. typhimurium infection, showing lesser severity of the infection. The safety of continuous administration of this probiotic strain, allows us to suggest its use as an adjuvant of the mucosal immune system in the prevention, and during Salmonella infection.

Key words: Salmonella infection, probiotics, mucosal immune system.