

EFFECT OF PROBIOTICS IN PREVENTION OF INFECTION: FROM ANIMAL MODELS TO CLINICAL TRIALS IN BRAZIL

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Our group has concerned itself with the study of the effect of probiotics on the resistance to infections, using experimental models. Here, we will mainly focus on evidence that the UFVH2b20 strain of *Lactobacillus delbrueckii* var. *bulgaricus* may be considered a probiotic and has protective effects on mice against a variety of bacterial infections. Germ free, mono-associated and conventional mice were used. Mice were treated with probiotics and challenged with *Escherichia coli*, *Salmonella enterica* serovar Typhimurium or *Listeria monocytogenes* and the outcome of infection was measured as mortality, quantification of bacteria in target organs and systemic or local cytokine production. *L. delbrueckii* increased clearance of *E. coli* and production of systemic inflammatory cytokines. This strain also protected mono-associated and conventional mice against infection with *S. enterica* serovar Typhimurium. Mono-associated mice were more resistant to *L. monocytogenes* as measured by mortality and the number of bacteria in spleens and liver. In addition, mono-associated mice challenged with *L. monocytogenes* showed increased production of inflammatory cytokines (interferon-gamma and tumor necrosis factor-alpha) and nitric oxide. Interestingly, IL-10 levels were not altered by mono-association or infection. Another probiotic, *Bifidobacterium*, was also able to protect mice against salmonellosis. Finally, our group showed that an association of *Bifidobacterium* and *Streptococcus thermophilus* protected infants against diarrhea by antibiotic administration. *L. delbrueckii* UFVH2b20 and other probiotics protect mice against infection, apparently by eliciting the upregulation of production of inflammatory cytokines. The mechanisms of protection against diarrhea conferred by probiotics in humans are still unclear.

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