

Saccharomyces boulardii modulates the bovine herpesvirus type 5 vaccine immune responses.

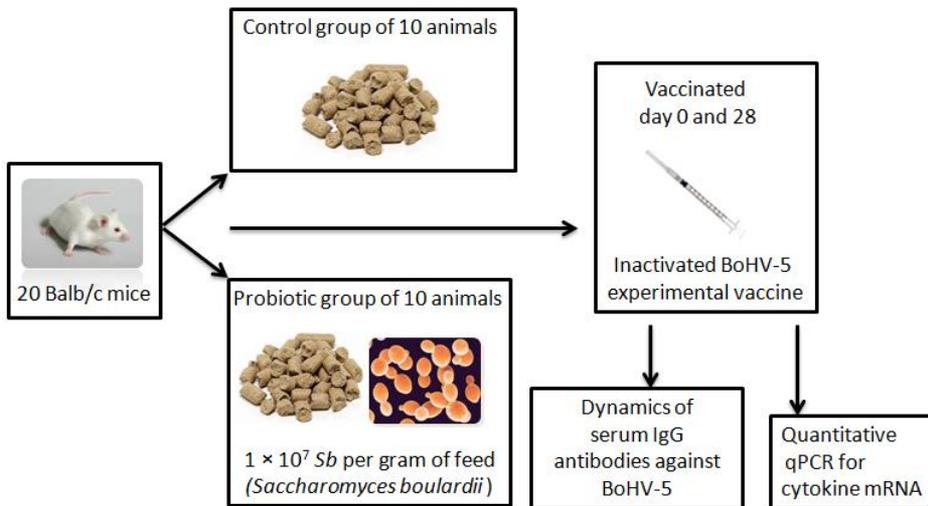
Talita Bandeira Roos¹; Luciana Farias da Costa de Avila²; Régis Tuchtenhagen Sturbelle²; Fernando Lopes Leivas Leite³; Geferson Fischer²; Fábio Pereira Leivas Leite² fabio_leite@ufpel.edu.br

Universidade Federal do Pará, PA, Brazil ¹, Universidade Federal de Pelotas, RS, Brazil². University of Minnesota, St. Paul, MN, USA³,

Abstract

There have been significant efforts toward the development of more efficient vaccines. Several efforts have been made to produce effective vaccines against bovine herpesvirus 5 (BoHV-5). We examined the use of the probiotic *Saccharomyces boulardii* (*Sb*) as a potential adjuvant to improve vaccine efficiency. We found that the supplemented animals exhibited an enhanced systemic IgG antibody response toward Th1 in favor of IgG2 and increased mRNA expression levels of the cytokines IFN- γ , IL-12, IL-17 and IL-10 in the spleen. These results suggest that *Sb* may provide a promising means for improving the efficiency of vaccines.

Material and Methods:



Conclusions:

The data obtained in this study allow us to conclude that *Saccharomyces boulardii* has an adjuvant effect on the vaccine immune response against BoHV-5 in mice, suggesting that this effect is mediated by cytokines (IFN- γ , IL-12, IL-17 and IL-10) modulated by *Sb* during the immunization process. Thus, the use of this probiotic can contribute significantly to improving the response elicited by conventional vaccines, particularly those that rely on cell-mediated immune responses.

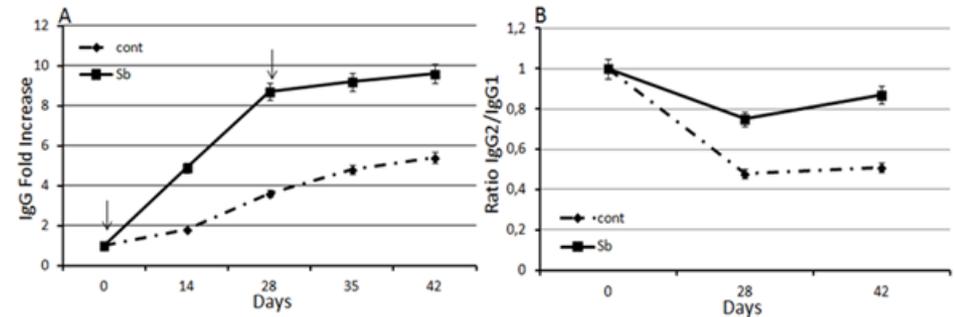


Figure 1. ELISA of serum IgG dynamics. (A) The data represent the means (+/- standard error of the mean) of the fold increase in the level of IgG against BoHV-5 from two independent experiments in animals supplemented with *Sb* and control mice. The arrows indicate vaccination. At all studied time points, a statistically significant difference ($p < 0.05$) was observed between the probiotic-supplemented and control groups. (B) The data represent the means of the IgG2a/IgG1 ratio against BoHV-5 in animals supplemented with *Sb* and control mice. At all studied points, a statistically significant difference ($p < 0.05$) was observed between the probiotic-supplemented and control groups.

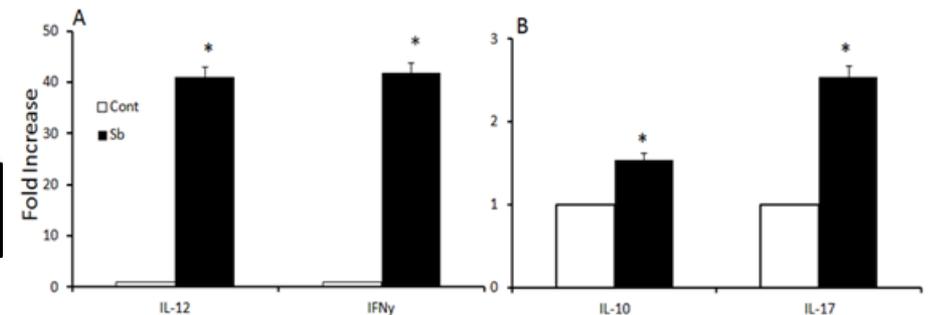


Figure 2. Effect of *Sb* supplementation on cytokine mRNA expression.

(A) qRT-PCR (DDCT) results of the fold increase in the IL-12 and IFN γ mRNA levels from splenocytes stimulated with *Sb* cells. (B) qRT-PCR (DDCT) results of the fold increase in the IL-10 and IL-17 mRNA levels from splenocytes stimulated with *Sb* cells. The asterisks (*) indicate a statistically significant ($p < 0.05$) difference between the *Sb* and Con groups.