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Identification of potential probiotic candidates to prevent oral candidiasis

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Studies focused on antifungal activity of *Lactobacillus* may contribute to the discovery of new therapeutic strategies for *Candida* infections. In the previous studies of our research group, we isolated and identified *Lactobacillus* spp. from the oral cavity of caries-free subjects to seek for strains with antifungal activity against *Candida albicans*. Firstly, the effects of 30 clinical isolates of *Lactobacillus* were evaluated on the number of viable cells of *C. albicans* in biofilms and on hyphae formation by in vitro assays. The results demonstrated that *L. paracasei* 28.4, *L. rhamnosus* 5.2 and *L. fermentum* 20.4 were the strains with the highest antimicrobial activity on *C. albicans*. These strains were able to reduce the biofilms by decreasing the total biomass, changing the morphological

architecture and downregulating the gene expression of *C. albicans* (ALS3, HWP1, EFG1 and CPH1). In the in vivo study, the injection of *L. paracasei* 28.4 into the *Galleria mellonella* increased the survival rate, the number of hemocytes and the expression of antifungal peptides, thus reducing the CFU of *C. albicans*. In *Caenorhabditis elegans*, *L. paracasei* 28.4 was also able to increase the survival of worms infected with *C. albicans* and reduce the filamentation. We conclude that *L. fermentum* 20.4, *L. paracasei* 28.4 and *L. rhamnosus* 5.2 have potential to be used as probiotics in the oral cavity to control *Candida* infections.

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