Effects of *Bifidobacterium longum* subsp. *infantis* CHCC2228 as a Treatment for Ulcerative Colitis in a Murine Model of Inflammatory Bowel Disease

Elian, S.D.A.¹; Souza, E.L.S.¹; Vieira, A.T.²; Teixeira, M.M.³; Arantes, R.M.E.⁴; Cartelle, C.T.⁴; Neves, M.J.⁵; Costa-Moreira, L.M.¹,⁵; Nicoli, J.R.¹; Martins, F.S.¹,*

¹Laboratory of Biotherapeutic Agents, Department of Microbiology; ²Department of General Biology; ³Department of Biochemistry and Immunology; and ⁴Department of Pathology, Institute of Biological Sciences, Federal University of Minas Gerais (UFMG), Belo Horizonte, MG, Brazil. ⁵Radiobiology, Centre of Development of Nuclear Technology/National Commission of Nuclear Energy (CDTN/CNEN), Belo Horizonte, MG, Brazil. *flaviano@icb.ufmg.br

**Introduction:** Inflammatory Bowel Diseases (IBD) are chronic inflammatory conditions, characterized by remissions and relapses, whose main manifestations are ulcerative colitis and Crohn's disease. Ulcerative colitis, one of the main forms of IBD has as standard treatment the use of corticosteroids and anti-inflammatory drugs. The use of antibiotics has also been reported, but the possible adverse effects must be taken into consideration and thus the use of probiotics emerges as a real possibility. **Aim:** In this study we evaluated the possibility of using *Bifidobacterium longum* subsp. *infantis* CHCC2228 as treatment for ulcerative colitis.

**Material and Methods:** For induction of colitis in female BALB/c mice, we replace the water by a 3.5% DSS (dextran sulphate sodium) solution for 7 days. During this time, the animals were evaluated for weight variation, fecal consistency and presence of bleeding; on the seventh day the animals were euthanized to collect the organs. **Results and Discussion:** Treatment with the probiotic resulted in clinical improvement of animals. The histological and morphometric analyzes showed a reduction of lesions and edema in the animals, but there was no increase in the production of mucin. The dosage of secretory IgA was significantly higher in the colitis group and reduced in the group treated with the probiotic. There was also a reduction in the inflammation of the colon, by the reduction of the infiltration of eosinophils and neutrophils, and KC/CXCL-1. The intestinal permeability, which is typically increased during the onset of IBD, was reduced after treatment with probiotic. There were no differences on rates of ROS generation. **Conclusions:** Based on these data it can be concluded that the bacterium *B. longum* subsp. *infantis* CHCC2228 has probiotic potential for the treatment of ulcerative colitis, but further studies should be conducted in order to verify the mechanism of action of the bacterium.

**Key words:** Inflammatory Bowel Diseases, Ulcerative colitis, Probiotic, *Bifidobacterium longum* subsp. *infantis*, KC/CXCL-1.

**Acknowledgments:** CAPES, CNPq, FAPEMIG, Chr. Hansen (Horsholm, Denmark).