

BILE SALT DECONJUGATION AND ENZYMES PRODUCTION BY *Bifidobacterium* STRAINS.

MARTINS, B.T.C.R.¹; VIEIRA, A.D.S.¹; ALBUQUERQUE, M.A.C.¹; BEDANI, R.¹; SAAD, S.M.I.¹
¹Departamento de Tecnologia Bioquímico-Farmacêutica, Faculdade de Ciências Farmacêuticas-
Universidade de São Paulo (Av. Profº Lineu Prestes, 580, Bloco 16, Butantã, 05508-000, São
Paulo-SP/Brasil.

Keywords: API ZYM, Probiotics, Hydrolases of bile salts, enzyme activity

Bifidobacterium spp. are Generally Recognised As Safe (GRAS) and some strains are considered probiotic, since they demonstrate scientifically proven health benefits. Among the various mechanisms involved in their beneficial effects, the expression of some hydrolytic enzymes and hydrolases of bile salts is noteworthy. The aim of this was to investigate the ability of the strains *Bifidobacterium animalis* subsp *animalis* BB-12 (BB-12), *B. longum* BB-46 (BB-46), and *B. longum* subsp *infantis* BB-02 (BB-02) to produce hydrolytic enzymes, using the API ZYM system and also the deconjugation of the bile salts glycolic acid (GA), sodium taurodeoxycholate (TDS), acid sodium taurocholic (TS), and sodium glycodeoxycholate (GDS) in concentrations of 0.5% (w/v). The strains studied showed 11, 10, and 9 types of enzymes activity, respectively, for BB-12, BB-46, and BB-02. The 3 strains showed production of the enzymes esterase (C4), esterase lipase (C8), leucine arylamidase, naphthol-AS-BI-phosphohydrolase, β -galactosidase, and N-acetyl- β -glucosaminidase. None of the *Bifidobacterium* spp. strains tested showed lipase (C14), trypsin, β -glucuronidase, and α -mannosidase activity. BB-12 was able to produce the greatest variety of enzymes, whereas the activities were much lower, except for the naphthol-AS-BI-phosphohydrolase activity. BB-46 was the only strain to exhibit ability of deconjugation of the TS and AG bile salts, and a high production of α -galactosidase and β -galactosidase. All strains had their growth inhibited in the presence of GDS bile salt. The results demonstrated that BB-46 strain showed the best and highest enzymes activity profile among all the *Bifidobacterium* strains studied. Additionally, the BB-46 strain was able to deconjugate two of the four bile salts evaluated, which might contribute for its survival during passage through the gastrointestinal tract, therefore contributing with the host's health. Financial support: FAPESP, Brazil (Projects 2013/50506-8 and 2013/19346-4)