

Bile resistance and bile salt deconjugation activity of *Bifidobacterium pseudocatenulatum* G4 in a simulated colonic pH.

ABSTRACT

The ability of *Bifidobacterium pseudocatenulatum* G4 to survive and tolerate bile acids exposure and its bile salt hydrolase activity was investigated. The growth rate of *B. pseudocatenulatum* G4 (10^6 , 10^8 and 10^{10} cfu/ml) decreased in the presence of 2.0% oxgall compared to the control (without oxgall), however, the colonic concentration of bile acids (0.1%) did not show any significant effect ($p < 0.05$) on the growth rate of this strain in three different simulated colonic pH (5.7, 6.2 and 6.8). Bile salt hydrolase activity, which is the measurement of enzyme activity responsible for bile salt deconjugation, was quantified by high pressure liquid chromatography (HPLC) assay. *B. pseudocatenulatum* G4 demonstrated high deconjugation rate (82 to 100%) in TPY broth supplemented with 0.25 mM and 5.0 mM of all six different types of bile acids including: taurocholic acid (TCA), glycocholic acid (GCA), taurochenodeoxycholic acid (TCDCA), glycochenodeoxycholic (GCDCA), taurodeoxycholic acid (TDCA) and glycodeoxycholic acid (GDCA). Overall, the percentage of deconjugation activity was higher in TPY medium supplemented with 0.25 mM bile acids compared to TPY broth with 5.0 mM bile acids. Also, *B. pseudocatenulatum* G4 showed good tolerance to bile acids. Generally, *B. pseudocatenulatum* G4 deconjugated glycoconjugated bile acids in higher amount compared to tauroconjugate ones. *Bifidobacterium pseudocatenulatum* G4 demonstrated good tolerance of bile acids suggesting that it would be capable of surviving in the colon and deconjugating bile salts if used as a probiotic.

Keyword: *Bifidobacterium pseudocatenulatum* G4; Bile resistance; Colonic pH; Deconjugation; Glycoconjugate; Growth rate; Hydrolase; Oxgall; Probiotic; Secondary bile salt; Tauroconjugate.