

Title: Beer's industry by-product may protect *Lactobacillus paracasei* subsp. *paracasei* F19 from *in vitro* gastrointestinal stress throughout storage of probiotic blackberry fermented milk

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Barley has been related to promotion of probiotic growth and increased resistance of certain strains to gastrointestinal stress simulated *in vitro*, mainly due to the presence of potential prebiotics compounds. The current study evaluated the addition of Brewer's Spent Grain (BSG) flour in probiotic blackberry fermented milk (FM) regarding the viability of the microorganisms throughout storage and their resistance to gastrointestinal stress simulated *in vitro*. The strains studied were *Streptococcus thermophillus* TH-4 and *Lactobacillus paracasei* subsp. *paracasei* F19. Four formulations were evaluated: FM1 (TH-4); FM2 (TH-4 + BSG); FM3 (TH-4 + F19); FM4 (TH-4 + F19 + BSG). The FM were submitted to an *in vitro* assay simulating the passage through the gastrointestinal tract, and the viability of the microorganisms was determined before and after the *in vitro* assay on selective agar. The viability of F19 and TH-4 remained above, respectively, 8.6 and 8.2 log CFU·mL^{-1} during the 28 days of storage. Regarding the resistance to gastrointestinal stress simulated *in vitro*, without BSG (FM3) the resistance of F19 significantly decreased between days 1 and 28 ($p \leq 0.05$); meanwhile, in the presence of BSG (FM4), the survival of F19 kept stable throughout storage ($p \geq 0.05$). On the other hand, TH-4 showed no survival after the simulation. Therefore, BSG showed a tendency on stabilizing the resistance of F19 against gastrointestinal stress simulated *in vitro*, and all FM have potential as probiotic foods since probiotic counts were always above 10^{10} CFU in a daily portion of 100 mL. **(Up to 250 words)**

Biography

Carolina Battistini is a Food Engineer, Master in Chemical and Biochemical Process Engineering, and is conducting her PhD in Food Science at the School of Pharmaceutical Sciences of the University of São Paulo. She has 7 years of experience in the development of probiotic fermented foods. In 2014, she participated in the Formula Santander Program for International Mobility, performing an internship at the Center for Biotechnology Fine Chemistry (CBQF) of the Portuguese Catholic University in Porto. She is a scholar researcher at the Division of Gastroenterology and Hepatology of the Department of Medicine of the University of Illinois at Chicago. **(Up to 100 words)**