Optimization of culture conditions of soymilk for equol production by Bifidobacterium breve 15700 and Bifidobacterium longum BB536

ABSTRACT

This study analyzed the effect of pH (X1), temperature (X2) and inulin amount (X3) on transformation of isoflavones (daidzin and daidzein) to equol in soymilk fermented with Bifidobacterium spp. All responses significantly ($p < 0.05$) fitted into quadratic models with coefficients of determination (R2) close to 1 (0.935–0.989). At 24 h of fermentation, amounts of daidzin and daidzein were influenced by all factors. While at 48 h, all factors affected daidzin and only temperature affected daidzein. Equol production was influenced by pH and temperature in 24 h and by all factors in 48 h fermentation. The optimum conditions for equol production were pH 8, 30 °C and 0.5% inulin. Model validation demonstrated there was no significant ($p > 0.05$) difference between the experimental and predicted values, suggested the suitability of established models in explaining the daidzin and daidzein transformation to equol as a function of pH, temperature and inulin.

Keyword: Equol; Bifidobacterium; Inulin; Transformation; Daidzin; Daidzein