长双歧杆菌BBMN68冷冻保护剂筛选与优化 Screening and Optimization of Cryoprotectants for Bifidobacterium longum BBMN68

刘松玲 蒋菁莉 刘爱萍 郭慧媛 冷小京 任发政

中国农业大学

关键词： 长双歧杆菌BBMN68 冷冻保护剂 发酵剂 优化

摘 要： 为提高长双歧杆菌BBMN68的冷冻保藏效果，以冷冻存活率和菌株活力为评价指标，分别评价了4个类型的18种冷冻保护剂。结果表明，脱脂乳、海藻糖、果糖、甘油、维生素C、L-Glu能对BBMN68有效保护。采用二次回归正交设计，对筛选得到的6种保护剂进行复配，得到复配保护剂的最优配方（质量分数）为：甘油3%、海藻糖5%、果糖5%、脱脂乳8%、维生素C 0.05%、L-Glu 0.05%。在复配保护剂的作用下，-80℃保藏期间BBMN68菌数稳定，活菌对数值始终保持在10.5lg(cfu/mL)；冷冻浓缩物作为直投发酵剂应用于酸奶中，在21d内菌数变化不大，始终保持在107 cfu/mL以上。 To improve the protective efficacy of Bifidobacterium longum BBMN68, various cryoprotectants were evaluated and optimized. Based on its viability and activity after frozen, the effects of eighteen cryoprotectants belonging to four different types were evaluated. Six of them including skim milk, trehalose, fructose, glycerol, Vitamin C and L-Glu were proved to be effective. Then the complex formulas made of the six kinds of the selected compounds was optimized by using a quadratic regression orthogonal experiment. And the optimized composition is as follows: skim milk 8%, trehalose 5%, fructose 5%, glycerol 3%, Vitamin C 0.05% and L-Glu 0.05%. With the protection of the optimized cryoptotectans, the stability of starters is good with a stable logarithm value about 10.5 lg(cfu/mL) during storage, and when applied in yoghurt fermentation it presents an excellent performance, with a total counts of culturable cells above 107 cfu/mL during 21 days of storage.

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