

热激法修饰瑞士乳杆菌的参数优化与特性研究Parameters Optimization and Properties for *Lactobacillus helveticus* by Heat-shock Treatment

隋欣 任发政 鲁言文 陈历俊

中国农业大学

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摘要: 采用不同热处理温度(67、70℃)与时间(10、15、20s)对瑞士乳杆菌(*Lactobacillus helveticus*)进行热激修饰,研究处理前后与干酪加工相关的菌体特性,同时对热激修饰条件参数进行优化。研究表明,菌体经70℃、10?s热激处理后,菌体存活率、动态产酸能力、蛋白水解能力等指标符合热激要求,经修饰后的菌株适宜作为干酪促熟酶源。采用扫描电镜对细菌表面微观结构的观察结果表明,热激处理使菌体形态、膜表面发生明显改变,菌体表面发生萎缩、褶皱与底端溶解等变化。The effects of different heat-shock treatments on biochemical properties and microstructure of *Lactobacillus helveticus* were determined. The strain was subjected to heat-shock treatment at 67℃ and 70℃, holding time was 10s, 15s and 20s, respectively. The biochemical properties related to cheese ripening such as cell residual viability, lactic acid productivity, and proteolysis activity were monitored. The results suggested that the modified cells using heat-shock parameter of 10s at 70℃, gave the best results upon inhibiting lactic acid productivity and the remaining proteolysis activity. Moreover, SEM photographs showed the changes of surface structure on cell membranes, and elucidated the relationship with heat-shock treatment.

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