

## 不同参数超临界CO<sub>2</sub>处理对乳酸菌活性的影响

### Effects of different parameters of supercritical CO<sub>2</sub> treatment on the microbial activity of lactobacillus

投稿时间: 2006-5-16 最后修改时间: 2006-12-11

稿件编号: 20070242

中文关键词: 超临界CO<sub>2</sub>; 乳酸菌; 菌体活性; 非水相介质

英文关键词: supercritical CO<sub>2</sub>; *Lactobacillus*; microbial activity; nonaqueous medium

基金项目: 广东省科技计划项目(B020)

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摘要点击次数: 360

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中文摘要:

为了研究超临界CO<sub>2</sub>作为非水相介质在生化反应工程中的作用,有必要考察超临界CO<sub>2</sub>处理对微生物活性的影响。本文以乳酸杆菌为试验菌种,进行了该菌在不同参数超临界CO<sub>2</sub>处理对菌体生长曲线、耐渗透压能力、耐酸能力、抑菌能力、降解胆固醇能力等活性指标影响的研究。结果表明:当提高超临界CO<sub>2</sub>压强或延长超临界CO<sub>2</sub>处理时间,乳酸杆菌的活性指标会发生如下变化:生长曲线的最大菌体浓度降低,但菌体的生长速率差异不大;菌体的耐渗透压能力、耐酸能力降低;所得的抑菌圈比较明显,但抑菌圈直径减小;平均胆固醇降解率降低,而且长时间处理对降解效果的影响比高压强处理的明显。因此,在工程应用中需要研究一定的弥补措施。

英文摘要:

In order to study the role of supercritical CO<sub>2</sub> as a nonaqueous medium in the engineering of biochemical reactions, it is necessary to probe the effects of supercritical CO<sub>2</sub> treatment on microbial activity. *Lactobacillus* was selected as testing target, and the effects of different supercritical CO<sub>2</sub> treatment on the microbial activity including growth curve, the ability of osmotolerant, the ability of aciduricity, the inhibition ability and the ability of cholesterol-degrading were researched. Results show that when pressure is raised or treatment time is extended, the parameters of microbial activity happen some alterations as follows: The maximum cell concentration fall, meanwhile the growth velocity of each group of germs do not share too much differences. The ability of osmotolerant and aciduricity of germs decrease. The inhibition zones of each group are all obvious, but the diameters reduce. The average rate of cholesterol-degrading is restrained, and the effects which is made by germs treated with long time are greater than those made by germs treated with high pressure. Consequently certain measures which make up for these influences could be studied to apply in the engineering.

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