

交叉学科

C离子束诱变产生甜高粱汁酒精酵母高产菌株的研究

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摘要

利用100 MeV/u C离子束对高产酒精酵母菌株进行了辐照诱变的研究。采用红四氮唑作为筛选指示剂,得到了5株产酒能力有所提高的突变酵母菌。利用甜高粱汁的发酵结果表明,T4突变菌株的产酒精能力比原始出发菌株提高了18.6%,且发酵液中的残糖含量也有所降低。随后对T4菌株在甜高粱汁中的最适宜发酵条件做了初步探索,结果表明:最适发酵温度和pH值分别为30℃和4.5。通过10 l发酵罐的验证试验表明:在同样发酵条件下,T4菌株的发酵率和产酒精能力都比原始出发菌株提高了12%。

Five mutants with high ability of producing alcohol were selected out by using TTC as an indicator after irradiation of the alcohol yeast with 100 MeV/u carbon ions. The fermentation experiment in sweet sorghum juice showed that the alcohol production ability of mutant T4 strain increased 18.6% compared to the control strain. The residual sugar content in the juice was decreased too. After that, the optimum fermentation conditions of the T4 strain in sweet sorghum juice were investigated. The results showed that the optimum temperature and pH value for fermentation were 30 °C and 4.5, respectively. The verification experiment was fermented in a 10 l bio reactor and the obtained data indicated that the fermentative rate and the ability of producing alcohol in T4 strain was higher than that in the control strain under the same fermentation condition.

关键词 [重离子束](#) [酒精酵母](#) [甜高粱汁](#) [发酵](#)

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