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通过原生质体融合改建酵母细胞的研究*V.酿酒酵母与糖化酵母种间融合杂种的遗传分析

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摘要 HU-KDF-185菌株是由单倍体糖化酵母与二倍体椭圆酿酒酵母经原生质体融合而获得的种间 三倍体融合杂种。遗传分析表明，该杂种在遗传上是稳定的，在一般情况下，其产孢率为13 .54%；但在特定预培养条件下，可提高到38.61%，即使在只含0.98%醋酸钾和0.186%KCl的HU -Li简易产孢培养基上，其产孢率也可达33.23%。用显微操作器解剖了202个4孢子子囊，得 到376个四分子单孢株，其孢子成活率达46.53%；四分子的交配型出现A、α、AA、αα4种 类型，没有发现有AAα交配型存在。四分子发酵可溶性淀粉的能力为1：2(发酵：不发酵)； 而遗传标记的分离比为野生型：营养缺陷型(包括his-,arg-,his-arg-)约为1：1。

关键词 种间融合杂种,糖化酵母,遗传分析

分类号

Studies of Reform of Yeast Cell by Protoplast Fusion* V. Genetic Analysis of the Interspecific Fusion Hybrid Between Saccharomyces cerevisiae and S. diastaticus*

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Abstract

The strain HU-KDF-185 tested is an interspecific triploid hybrid obtained by protoplast fusion of a diploid Saccharomyces cerevisiae and a haploid S. diasta ticus. The following aspects were shown in the genetic analysis:(1) The strain H U-KDF-185 was a stable hybrid genetically in terms of the genetic markers. (2)Th e sporulation rate (i.e. ascus forming rate) of the hybrid was 13.54% in general conditions, but it could increase to 38.61% in special condition of presporulat ion culture, and in the case of presporulation culture it also could reach 33.23 % even when the hybrid cells were cultured in a simple HU-Li sporulation medium containing only 0.98% potassium acetate and 0.186% KCl and 2% purified agar. 202 asci were dissected and there were only 376 single spore clones, which means th at spore viability was about 46.5%.(3)The genotype of these spore clones were de termined Mating type of tetrads from the hybrid HU-KDF-185 contained four types: a,α,2α, and aa, but no aaα maing type. Fermentability of the tetrads for solu ble starch was about 1:2(fermenter: non-fermenter), Genetic markers of the tetra ds showed that the prototroph: auxotroph was 1:1.

Key words Interspecific fused hybrid Saccharomyces diastaticus Genetic analysis

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