Documents

Abosereh, N.A.[a] , Soliman, E.A.M.[a b] , Haggran, A.H.A.[a]

Effect of intrespecific hybridization between Saccharomyces cerevisiae and Saccharomyces boulardii on utilization of some carbohydrates

(2011) *Australian Journal of Basic and Applied Sciences*, 5 (10), pp. 114-120.

[a] Microbial Genetic Dept, National Research Center, Dokki, Cairo, Egypt
[b] Biological Science Dept, Fac. of Science, King AbdulAziz Univ, Saudi Arabia

Abstract
Protoplast fusion technique has facilitated the creation of new strain of yeast with interesting biotechnological properties. In this work, this technique was used to prepare new yeast strain between Saccharomyces cerevisiae and Saccharomyces boulardii. The main purpose of this study was enhancing its carbon source utilization and fermentation ability. In protoplast preparation process, Novozym™ 234 enzyme and sorbitol was used as lytic enzyme and osmotic stabilizer reagent, respectively. Protoplast regeneration efficiencies of Saccharomyces cerevisiae and Saccharomyces boulardii were 53.1% and 68.6%, respectively. Fusogenic reagent-polyethylene glycol 4000 (PEG 4000) was used to induce the fusion of protoplast. Galactose and lactose sugar assimilation and tolerance to copper sulfate, cycloheximide and benomycin were used as selectable markers for fusants selection. Sugar utilization of the fusants showed the mixed pattern between Saccharomyces cerevisiae and Saccharomyces boulardii. The hybrids, which appeared at a frequency of 1x10-1 (3.6%), presented characteristics of both parents, such as resistance to certain antifungal agents and the ability to grow with either galactose or lactose as the sole carbon source. Determination of the behaviour growth of selected fusants in comparison with parental strains in utilization of different carbon source gave a good behaviour growth strains as in fusant F2and F4 in case of lactose and in F3 in case of manitole. On other hand, the fermentation acttivity of fusants F1,F2,F3,F4 and F5 was ranged from 325 to 350 min while in parental strains was rangead from zero to 325 min. Comparison with parental strains, products of fusion shoud be stable during storage and shoud not revert to their primary forms. These hybrids may have important industrial applications as good fermenting strains.

Author Keywords
Carbon sources; Ferementation; Protoplast fusion; Saccharomyces boulardii; Saccharomyces cerevisiae

Document Type: Article
Source: Scopus