

PRODUCTIVITY OF BIOREACTOR INCREASED WHEN COUPLED WITH A PERVAPORATION SYSTEM

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A mutant of *Saccharomyces cerevisiae* was used for the production of a high fructose syrup from sucrose. A considerable amount of ethanol, which inhibits the growth and the production capability of the yeast, was also produced in this process. To decrease its inhibitory activity, a pervaporation unit was coupled to the bioreactor to keep the ethanol concentration low by its continuous removal. The study showed that the time required to process a medium with 30% sucrose is more than 30% shorter when the pervaporation unit was coupled to the bioreactor than in the same bioreactor, and under the same conditions, without the pervaporation unit. The fructose yield was in the range of 96%-99%, while the ethanol yield was around 78% of the theoretical value. Coupling the pervaporation unit in the earlier stage of the process showed considerable advantage with respect to the length of process and the ethanol yield. It was also noticed that the yeast was able to convert the equivalent of a 40% sucrose feed in 24 hours in the fed batch mode, compared to over 40 hours without ethanol removal.