

ISOLATION OF YEASTS WITH INCREASED CAPACITY OF FERMENTATION FROM TEQUILA INDUSTRY IN MEXICO

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Keywords: yeasts, ethanol, yields, pentoses.

Introduction. Among the major challenges to increase ethanol yields is to obtain the most adequate yeast strains. With this goal, we isolated yeasts from samples taken from the Magellan Handicraft Cooperative Society in the mountain chain of Pénjamo, a tequila factory since about 200 years ago. Samples were from places to store agave residues and fluids from different stages of tequila production. The purpose of the present work was to isolate and select yeast that had high yields of ethanol from tequila industry.

Methods. Initial screening was done in YPS medium (20% sucrose, 8% ethanol) to isolate carbenicillin resistant yeasts (1). The isolated colonies were grown in YPS medium supplemented with 2, 4, 6 and 8% ethanol at 28°C. Then they were grown in 10 ml YPS just with 2% sucrose to evaluate ethanol production. The initial inoculum was set at $DO_{600} = 0.4$ and incubated at 28°C for 48 hours with gently agitation. The supernatants were obtained by centrifugation at 3000 rpm for 30 minutes at 4°C. Selected and isolated yeasts were identified by PCR utilizing ITS primers (Internal Transcribed Spacer) (2) and sequenced later on.

Results. Ethanol production from isolated strains after 24 hours was compared to that obtained from a commercial strain of *Saccharomyces cerevisiae*. We selected 7 isolated yeasts and all have been identified as typical fermenting yeast such as *Saccharomyces cerevisiae*, *Lachancea thermotolerans* and *Torulaspora delbrueckii*.

Conclusions. Yeasts with increased capacity of fermentation were isolated from tequila industry in Guanajuato, México. Our goal is to increase more the ethanol yield in some selected yeasts by genetic manipulation, in order to utilize xylose efficiently in pentose pathway.

References.

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