EFFECT OF CO-CULTURING YEAST STRAINS ON CELL DENSITY

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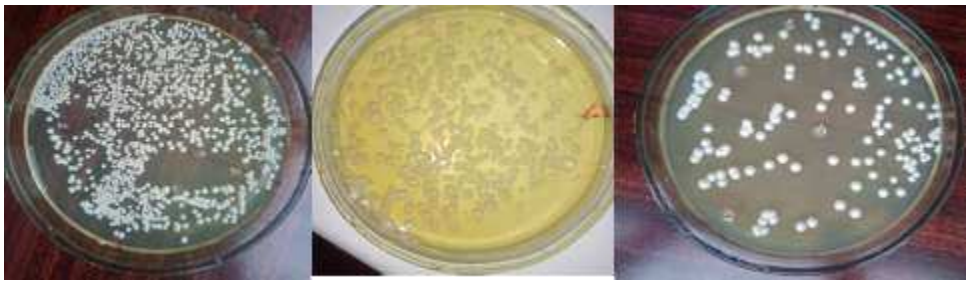
Yeasts are well-known microorganisms that are widely used in various industries including biotechnology because of their huge potential to produce different substances consuming by people.

We performed the co-culturing of *Saccharomyces cerevisiae* strains isolated from brewery products. The *S. cerevisiae* straini combination was tested by applying both sequential culture and co-culture strategies. Co-culturing *S.cerevisiae* with other yeasts is targeted to optimize ethanol production, shorten fermentation time, and reduce process cost.

Two strains were grown separately in liquid YPED medium at 28 ºC for 2 days and after were analyzed for purity and morphological features using a light microscope. Then two strains were mixed in equal concentrations and cultured in the fresh liquid YEPD at the same conditions as before. Two strains were also cultured independently as a control. To evaluate viable microorganism number a serial dilutions of yeast cell suspension were carried out. The last cell dilution of each experimental variant was plated onto the Petri dish with solid YEPD and after the incubation for 3 days colonies were counted on the plates. CFU was calculated using the formula:

CFU/ml = (no. of colonies x dilution factor) / volume of culture plate

The results of the study revealed that morphological features of yeast strains differed. The first strain formed white colonies of solid consistency while the second one was represented by translucent- milky slimy colonies (Fig. 1a, b). It may reflect the differences of exopolysaccharide production between two strains. The amount of viable cells after incubation yeast strains independently was not drastically differed in the comparison with CFU value of co-culturing variant that was 10 times less. It should be noted that mostly yeast white colonies were observed on the plates with mixed culture (Fig. 1c).



a **b** **c**

Figure 1. Photo of *S. cerevisiae* strains on YEPD agar plates: a — strain N1; b — strain N2; c — mixed culture, strains (N1+N2).

Thus results obtained in our research show inhibitory effect of yeast co-culturing on the cell density and growth supression of one yeast strain by another.