

# YEAST

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The following is a summary of recently completed research.

1. Basso, L.C., Lopes, M.L., Basso, T.O., Fonseca, A.J. and Amorim, H.V. 1998. The relative importance of killer activity for the industrial fuel ethanol fermentation process.

The fuel-ethanol industry in Brazil is based on yeast reuse during a continuous season over 200 days with batch fermentation using 10-15% (v/v) of yeast resulting in fermentation time around 6-7 hours. Yeast is separated by centrifugation and reused in a subsequent fermentation, comprising nearly 3 fermentation cycles per day. We could demonstrate that yeast strains of *Saccharomyces cerevisiae* traditionally used in distilleries (baker's yeast and others selected strains - M-300A, IZ-1904 and NF, a non-flocculent strain), were not able to survive the intensive recycling of the industrial process, being totally replaced by wild strains of *S. cerevisiae* after a 20-40 days period. It has been suggested that the killer phenomenon could play an important role since by this type of antagonism killer strains could dominate at least in wine spontaneous fermentation. In the present work, by means of the karyotyping

technique, we follow up the yeast populations from 16 distilleries where the introduced starter strains (baker's yeasts Fleischmann and Itaiquara and selected strains PE-2, VR-1 and IZ-1904) were completely replaced by wild strains. These wild strains (139) were examined for their killer activities and only 4,3% showed to be killer upon a sensitive strain (*S. cerevisiae* AH-22) and none of them showed any killer activity on the replaced starter strains. Most of the wild strains and the introduced starters presented the neutral character in relation to each other. These results suggested that the killer activity would not be of significant importance in ensuring competitiveness of dominant strains in the industrial fermentation. Such competitiveness and dominance could be related to the capability of some wild strains to survive the stressing conditions of the industrial fermentation process.