H304 Introduction of Amylase Genes into Distillery Yeast by Rare-Mating

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Respiratory deficient mutant strain of polyploid distillery *Saccharomyces* sp. KL and *S. diasticus* haploid K114 transformant secreting both α-amylase and glucoamylase were rare-mated by crossing plate method. Totally 9 hybrids were obtained and 8 of the 9 hybrids showed amylase activity judged by halo formation on a starch-containing agar medium. The 8 hybrids were tested for fermentation with liquefied (not treated with any glucoamylase) tapioca slurry containing 18% (w/v) reducing sugar. The best starch-fermenting hybrid H3 produced more ethanol (6.53%, w/v) than a parental strain K114 transformant (4.51%, w/v). And the other parental strain KL, which has no amylase activity, produced the lowest amount (1.83%, w/v) of ethanol. The cell size of H3 strain was much larger than that of K114 transformant and showed elongated shape compared with that of KL strain.