ISOLATION OF A THERMOPHILE AND ITS IMPROVEMENT

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Different thermotolerent (45°C) bacterial and yeast strains were collected from cow-dung, sewage, soil, restaurant waste and distillery stillage. Fifteen different *Bacillus* strains were isolated and none of which produced alcohol. But a thermotolerent yeast strain showing 90% viability at 45° C for 10 h and zero viability at 55° C after 5 h was selected. Medium used for selection was YPD [(g l^{-1}) yeast extract, 10; peptone, 20 and glucose, 20). Viability was determined by methylene blue staining method. Strain improvement of this selected yeast strain was carried out. Strain was subjected to UV-mutation (254 nm, 6 cm and 10 min) and thermal shock at 55° C for 10 min. This cycle was repeated 10 times. After each UV and temperature treatment, strain was subcultured and 18 h old culture was used for subsequent treatment. Finally an yeast strain with 100% viability after 5 h at 55° C was obtained. Glucose fermentation was carried out with parent and improved yeast strains at 30, 37, 40 and 45°C using YPD containing 140 gl^{-1} glucose. The parent strain gave the alcohol yields of 92.9 and 57.1% at 37°C and 40°C respectively and above this temperature no alcohol production was observed. Improved strain gave 85.7% alcohol yield at 40°C which is 150.1% higher than that produced by the parent strain.