

ABSTRACT

The interest in utilization of bio-ethanol as an energy source has stimulated studies on efficient fermentation technology for ethanol production. Bio-ethanol production from renewable agricultural resources has attracted considerable attention in recent years. For an increased yield of ethanol production by fermentation, an ideal microbial strain is required. Ideal microorganism used for ethanol production must have rapid fermentative potential, improved flocculating ability, appreciable osmo-tolerance, enhanced ethanol tolerance and good thermo-tolerance. Among the different microorganisms yeasts are the most essential microorganisms used in industrial fermentation for bio-ethanol production from various substrates.

Current study involved isolation and characterization of tolerant strains of Non-*Saccharomyces* yeast from local fermentative environment. 15 strains were isolated of which 3 strains were brought forward for studying their fermentative abilities and tolerance towards different concentrations of weak acids (formic acid & acetic acid) added as inhibitors. All three strains GCU-ASF-BY.F, GCU-ASF-BY.M and GCU-ASF-BY.T showed increase growth and ethanol production without inhibitors.

When inhibitors were added, with formic acid (2g/L & 4g/L) decreased yeast growth was seen even within 24 hours of incubation. Formic acid strongly inhibited cell growth and ethanol production but strain GCU-ASF-BY.T was more tolerant as compared to other two strains as it produced alcohol even under strong inhibitory effect of formic acid. Acetic acid showed positive effect on fermentation ability of yeast with both concentrations i.e. 2g/L & 4g/L. All yeast strains showed increased cell growth and ethanol production with acetic acid but GCU-ASF-BY.T was the most tolerant strain and with best fermentative abilities as it produced more varieties of alcohol and higher concentration of alcohol was also produced by this strain which was of 84.76%.