

Abstract

The toxic fermentation inhibitors such as furfural, HMF, weak acids in lignocellulosic hydrolysates pose significant problems for the production of second-generation biofuels and biochemicals. Among these inhibitors, Furfural and 5-(hydroxymethyl) furfural (HMF) are frequently produced during Lignocellulosic fermentation. In this study, we describe the molecular identification and characterization of *Candida tropicalis*. During fermentation it was also observed that inhibitors at different concentration showed effect on pH, O.D and growth of yeast. This was observed that yeast isolates GCU-ASF-SAG and GCU-ASF-SAL were metabolized furfural and HMF more as compared to mixed sugars during fermentation. In the absence and presences of inhibitors many volatile compounds (Esters, Weak acid, Alcohols and other compound) were detected with the help of GC-MS. GCU-ASF-SAG and GCU-ASF-SAL were collected from Kasur and Nowshra respectively, GCU-ASF-SAG and GCU-ASF-SAL were my best strains during my research work because it showed resistance towards inhibitors either in 2 g/l or 4 g/l concentrations and produce alcohols with high concentration % 85.24% and 62.48% were detected with the help of GC-MS. By introducing these strains into the industry we can produce ethanol even on synthetic substrate by cheapest way because at this concentration these showed resistance to inhibitors and produced high % alcohols. It is also further recommended that by increasing concentrations of inhibitors above 2 or 4 g/l we can checked either it showed resistance or not in ethanol formation.