ABSTRACT

Two hundred and twenty-six strains of *Saccharomyces cerevisiae* were isolated by serial dilution and streak plate method from different fruits and soil samples. These strains were screened for invertase production. Invertase activity ranged between 0.04-1.1 U/ml. The isolate In_{86} gave maximum production i.e., 1.1 U/ml and selected for improvement. The parental strain AB-09 was exposed to ultraviolet (UV) radiations. Hundred and eighty-four mutants were screened for invertase yield, however, UV induced mutagenesis did not produce any stable mutant. Strain In_{86} was then subjected to chemical mutagenesis using N-methyl N-nitro N-nitrosoguanidine (MNNG). Seventy-four mutants were isolated. Out of which the one that was obtained by exposure to 0.06 mg/ml of MNNG concentration for 45 min. showed a 3-fold increase in invertase productivity i.e., 3.5 U/ml. The MNNG-mutated strain (B-49) was further mutated by exposure to ethyl methane sulphonate (EMS). The mutant E-25 with a 1.5 fold increased invertase productivity was obtained as a result of EMS mutagenesis. This mutant showed invertase activity of 5.4 U/ml. The mutant E-29 was grown on different concentrations of 2-deoxy D-glucose (2dg) to ensure mutant stability. After optimization of sucrose concentration (5.0 g/l), incubation period (48 h), pH (6.0) and inoculum size (2% V/V), enzyme production reached 27.0 U/ml with 5-fold increase. Thus, invertase activity increased from the *parental strain (1.10 U/ml)* by 24.55 folds. Kinetic parameters such as $Y_{x/s}$ (2.3 g /g substrate) and Q_p (1137.5 U $l^{-1}h^{-1}$) were quite significant for this mutant at 48h of incubation.