

A newly isolated yeast as an expression host for recombinant lipase

ABSTRACT

Pichia guilliermondii strain SO isolated from spoiled orange was developed for use as an alternative expression host by using *Pichia pastoris* as the model of the experiment. This is the first study to report on the capability of *P. guilliermondii* SO as a host to express thermostable T1 lipase from *Geobacillus zalihae*. Alcohol oxidase and formaldehyde dehydrogenase promoters were present in the yeast genome. Interestingly, the recombinant yeast [SO/pPICZ α B/T1-2 (SO2)] took only 30 h to reach optimal production with minimal methanol induction [1.5% (v/v)] in YPTM medium, as compared to *P. pastoris*, which took longer to reach its optimal condition. The purification yield of the His-tagged fusion lipase was 68.58%, with specific activity of 194.58 U/mg. The optimum temperature was 65°C at pH 9 in glycine-NaOH buffer, and it was stable up to 70°C in a wide pH range from pH 5 to 12. In conclusion, a newly isolated yeast from spoiled orange has been proven suitable for use as an expression host.

Keyword: *Pichia guilliermondii*; Expression; Thermostable lipase; Alcohol oxidase; *Geobacillus zalihae*; Yeast; *Pichia pastoris*; His-tagged fusion protein; Methylophilic yeast; Local host