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OSMO-, THERMO- AND ETHANOL- TOLERANCES OF *SACCHAROMYCES CEREVISIAE* S_1

Sandrasegarampillai Balakumar, Vasanthy Arasaratnam*

Department of Biochemistry, Faculty of Medicine, University of Jaffna, Kokuvil, Sri Lanka.

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ABSTRACT

Saccharomyces cerevisiae S_1, which is a locally isolated and improved strain showed viability at 40, 45 and 50°C and produced ethanol at 40, 43 and 45°C. When the cells were given heat shock at 45°C for 30min and grown at 40°C, 100% viability was observed for 60h, and addition of 200gL^{-1} ethanol has led to complete cell death at 30h. Heat shock given at 45°C (for 30min) has improved the tolerance to temperature induced ethanol shock leading to 37% viability at 30h. When the cells were subjected to ethanol (200gL^{-1} for 30 min) and osmotic shock (sorbitol 300gL^{-1}), trehalose contents in the cells were increased. The heat shocked cells showed better viability in presence of added ethanol. Soy flour supplementation has improved the viability of *S. cerevisiae* S_1 to 80% in presence of 100gL^{-1} added ethanol and to 60% in presence of 300gL^{-1} sorbitol. In presence of sorbitol (200gL^{-1}) and ethanol (50gL^{-1}) at 40°C, 46% viability was retained by *S. cerevisiae* S_1 at 48h and it was improved to 80% by soy flour supplementation.

Key words: Thermo-tolerance, ethanol-tolerance, osmo-tolerance, viability *Saccharomyces cerevisiae*