

**APPLICATION OF DIFFERENT STRATEGIES
TO IMPROVE THE THERMOTOLERANCE
OF A YEAST STRAIN**

**S. Balakumar, Vasanthi Arasaratnam
and K. Balasubramaniam**

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

Thermotolerant yeast strains were found in distillery environment and cowdung samples. The spent wash disposal pit in the distillery was subjected to thermoadaptation cycles as the spent wash was disposed into the pit intermittently with high temperature. Further this was left to cool overnight. Hence the strain isolated from this environment showed highest thermotolerance of retaining 100% viability for 5h at 45°C. This strain was then subjected to regular thermal adaptation cycles to 50°C for 3h and the colony developed after 48h on the plate was further cultured and the cycle was repeated for 15 times. Due to the regular thermal adaptation programme thermotolerance was improved from 5 to 8h (for the retention of 100% viability) at 45°C. Thermo adapted strain showed rapid death rate after 30min incubation at 55°C, however retained 100% viability for 68h at 40°C. Mutation with UV radiation and ethylmethane sulphonate has improved thermotolerance (of 100% retention of viability) from 68 to 72h at 40°C. The viability of the strain has dropped to 50% of the initial viable cells by 120h due to the exposure to 40°C, while supplementation with oleic acid or soy flour has enhanced the thermotolerance to 58 and 64% respectively.