

STRESS PROTEINS EXPRESSION IN ENTRAPPED YEAST CELLS UNDER PROLONG STRESS

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Yeast cells are subjected to several stress conditions during batch-fermentations. On the other hand, nutrient limitations and microenvironment surrounding the cells after entrapment can be considered as other stress conditions. The transcriptional response of laboratory strains of *S. cerevisiae* to heat-shock or osmotic stress has been well studied. However, a better understanding of these mechanisms in cells submitted to repeated-batch fermentations for a long time could open the possibility to improve the fermentation process. In this work, we used stress proteins expression analysis to explore how *Hsp104* and *Hsp26* expression in free and calcium alginate entrapped yeast cells are affected in response to different changes in extracellular environment, including entrapment time, temperature and osmotic pressure, after several sucrose batch fermentations. Western blot analysis of stress proteins levels indicated that before first batch-fermentation both types of cells showed similar response to heat and osmotic stress. After 50 batches, *Hsp104* level in entrapped cells were higher than in free cells after heat-shock; but after 100 batches only free cells showed response at heat-shock and osmotic stresses. These observations indicate that the expression of *Hsp104* and *Hsp26* are considerable difference between free and entrapped cells and this expression depending on the stress condition.

Keywords: Stress proteins; cell entrapment; sucrose fermentation; yeast.
Acknowledgments: CNPq, CAPES, FAPESB.