

## **Trehalose Protects *Saccharomyces cerevisiae* Cells from Chronological Aging**

Ribeiro, T.P., Castro, F.A.V., Sá, R.A., Mariani, D., Panek, A.D., Eleutherio, E.C.A., Pereira, M.D.

Instituto de Química, Departamento de Bioquímica, UFRJ  
Rio de Janeiro, Brasil

Aging is a natural process that causes several dysfunctions and leads cells to death. This process seems to be related to the increase of oxidative stress by continuous ROS generation thus damaging lipids, proteins and DNA. The increase of longevity in aged cells is favoured by caloric restriction which is known to decrease ROS production. Trehalose is a disaccharide that possesses antioxidant properties protecting cells against oxidative stress generated by different treatments. Using *S. cerevisiae* cells, grown on high glucose and under caloric restriction, as a model of study we evaluated the damages caused by chronological aging, and the benefits of a trehalose treatment through determination of cellular viability, lipid peroxidation and Sod1 activity before and after trehalose treatment (10% / 1 h). According to our results, viability of *S. cerevisiae* cells was extremely affected after 24h of aging. However, after trehalose treatment, cells became more resistant to the aging process mainly when this treatment was performed in cells growing under caloric restriction. In relation to lipid peroxidation, the results showed an increase after 4h of aging while treatment with trehalose reduced significantly MDA levels in all aging intervals tested. Moreover, the treatment with exogenous trehalose increased the activity of Sod1 after 48 hours of aging. Taken together these results point to the important role of trehalose in protecting *Saccharomyces cerevisiae* from damages caused by chronological aging.

Keywords: Aging, Oxidative stress, *Saccharomyces cerevisiae*, Trehalose.