

Analysis of Human Hsp27 Overexpression on the Longevity of *Saccharomyces cerevisiae*

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INTRODUCTION: HSPs (Heat shock proteins) are a class of proteins highly conserved from prokaryotes to humans. Most of HSPs are involved in the unfolded protein response, and act in folding or unfolding of polypeptides upon thermal stress. Human Hsp27 is an HSP that increases the catalytic activity of the proteasome, and the degradation of ubiquitinated proteins in response to stressful stimuli. Hsp27 is able to promote cell cycle progression by increasing the degradation of its target proteins. **OBJECTIVES:** Our research aimed to analyze the effect of overexpression of Hsp27 on the longevity of *Saccharomyces cerevisiae*. **MATERIAL AND METHODS:** In yeast there are two methods of studying aging, the replicative life span (RLS) assay that measures the number of replications of a mother cell, and the chronological life span (CLS) assay, that measures the amount of time cells remain viable in stationary-phase cells under conditions of nutrient starvation. By using a yeast strain overexpressing Hsp27 we performed RLS and CLS assays, and also a thermotolerance assay to address the involvement of this HSP on longevity. **RESULTS AND DISCUSSION:** Our results demonstrated that overexpression of Hsp27 was able to increase both RLS and CLS in *S. cerevisiae*. However, there was no increase of heat-shock resistance in these cells. **CONCLUSIONS:** We propose that this HSP extends longevity by modulating the ubiquitin-proteasome degradation of unfolded proteins. Hsp27 optimal levels could be determined in *S. cerevisiae* such that similar control of cellular machinery prolonging the lifespan would be observed in eukaryotic cells of more complex organisms.

Supported by: FAPESP

Key words: human HSP27, longevity, *Saccharomyces cerevisiae*