

INFLUENCE OF DELETION OF *GIS1*, *HSP12* AND *HSP26* IN THE PHENOTYPE OF THE *fil1* *Saccharomyces cerevisiae* ADENYLATE CYCLASE MUTANT

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The initiation of fermentation in *Saccharomyces cerevisiae* is associated with a rapid drop in general stress resistance. Previously it was identified a mutant which is deficient in fermentation-induced loss of stress resistance (*fil1*), as a partially inactivating mutant in adenylate cyclase. The deletion of stress responsive genes; *TPS1*, *HSP104*, *MSN2* and *MSN4* in W303-1A strain, resulted in a dramatic drop in heat resistance in the wild type background but had much less effect in the *fil1* mutant. These results indicate that in addition to trehalose, Hsp104 and the Msn2/4-controlled genes other factors exist in *S. cerevisiae*, which can enhance stress resistance. In this work we investigated the role of transcription factor Gis1 and small heat shock proteins, Hsp12 and Hsp26, in resistance of *fil1* mutant. Gis1 can bind PDS and STRE like sequences in vitro and also overlap with Msn2/Msn4 function. Hsp12 and Hsp26 accumulate in yeast cells exposed to heat shock and other types of stress and cells enter stationary phase. We showed that independent deletions of these genes decrease the resistance of *fil1* in response to oxidative and osmotic stress.