

ACID pH RESISTANCE IN SACCHAROMYCES

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Most *S. cerevisiae* strains grow at pH values of 2.5 – 8.5 and the kinetics of growth are not affected between pH 3.5 and 6.0 because of the tight control of intracellular pH. In this work we describe the behavior of probiotic *S. boulardii* and *S. cerevisiae* strains submitted to simulated gastric environment. Our results evidence the highest tolerance of *S. boulardii* and that NaCl or pepsin do not affect cells viability significantly. Cell death is not related to the decrease in internal pH. The membrane ATPase basal activity seems to help the cells to counteract the decrease in internal pH. The buffer capacity of yeast cells is also important for pH homeostasis. Measurements of trehalose and glycogen showed that mobilization of these sugars plays an important role in survival of cells, supplying ATP during stress. Furthermore, it was found that sodium protects the cells against the harmful effect of acid. Assessment of mitochondrial membrane potential by flow cytometry in response to NaCl addition suggest that sodium addition retards the depolarization of the membrane and the cell death. The sodium protection effect is related with expression of sodium efflux systems in *Saccharomyces*.

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