Membrane Potential and Acid Sensitivity in *Saccharomyces cerevisiae*

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To tolerate a stressful pH as low as 2, yeast cells must be able to maintain cytoplasmic pH and ion homeostasis at a livable level. The maintenance of pH_i homeostasis and the proton-motive force is obtained through the action of the H^+-pumping Pma1 H^+-ATPase in concert with secondary ion transporters. Moreover, the transmembrane H^+-gradient generated by H^+-pumping is the driving force for active nutrient uptake, and by this way affects cell survival.Taking in account all these aspects, in previous work we investigated the response of *S. boulardii* and *S. cerevisiae* strains to separate elements of a simulated gastric environment, and the role of different salts, especially sodium chloride, in cellular tolerance to an acidic environment. We found that presence of Na^+ ions in low concentrations (85 mM, as in gastric juice) confers protection to the yeast cells exposed to acid stress. Here, we used bis(1,3-dybutylbarbituric acid(5)) trimethine oxonol (diBA-C_4-(3)) dye and flow cytometry to carry out membrane potential measurements. A strong relationship was found between viability measured by direct microscopic counting using methylene blue and membrane potential. We have found evidences suggesting that systems involved in settlement of the plasma membrane potential (Pma1p H^+-ATPase and secondary transporters systems) are connected to acidic stress response and that the plasma membrane potential conferred by NaCl addition is the major determinant of Na^+ protective mechanism. The true nature of the process remains unclear though it is plausible that ion homeostasis indirect effect above mentioned relates with signaling events that might trigger specific responses to acidic stress, consistently with dependence of this process on *de novo* protein synthesis previously reported.

Key words: *membrane potential, S. boulardii, S. cerevisiae, stress acid*
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