Tolerance to low pH seems to be related with low expression of the sodium pump Ena1p.

Zorel, J.A.; Queiros, H.T.; Duarte, K.E.; Rosa, J.C.C.; Brandão, R.L. and Castro, I.M.

Laboratório de Biologia Celular e Molecular – NUPEC - E. Farmácia, Universidade Federal de Ouro Preto – Ouro Preto, Minas Gerais, Brazil, 35400-000.

The capacity to tolerate low pH levels by maintaining cytoplasmatic pH at physiologically favorable level is critical to yeast survival in fermentative and yeast recycle processes. Thus, the use of yeast strains tolerant to low pH may be industrial importance. By pumping protons out of the cells the H⁺ pump Pma1 H⁺-ATPase contributes, in concert with proton/cation antiporters, to intracellular pH regulation. On the other hand, ion homeostasis in yeast is achieved by the coordinated activity of plasma membrane efflux and influx systems and by sequestration systems. So, in addition to Pma1p, several additional proteins give more subtle contributions to yeast fitness in acid. Firstly, we tested the viability in CFU of different strains to low pH. Our data pointed out that expression level of Ena1p (main component of the sodium homeostasis system) is important to acid sensitivity of S. cerevisiae strains. High resistance to acid is related to low Ena1p expression. We also observed that H⁺-ATPase is higher activated under acidic stress in strains with low Ena1p expression. The ena1-4Δ mutant was transformed with the plasmids p417-cyc (low copy) and p427 TEF (high copy) expressing the ENA1 gene by lithium acetate method. The inserts were sequenced to verify the frame. The wild type, the ena1-4Δ mutant and the transformed strains were grown in YPGlucose medium up to OD_{600nm} 1.0, diluted and spotted onto YPGlucose supplemented with different NaCl concentrations to test salt tolerance. Our preliminary data of resistance to low pH confirm the previous results.

Key words: sodium ATPase, acidic stress, Saccharomyces

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