

Role of the Ubiquitin-Proteasome System During Lithium Stress Response in Yeast.

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Ubiquitination is a post-translational modification characterized by the covalent attachment of the small protein ubiquitin to lysine residues of target proteins. Ubiquitination signals many different fates to the target protein such as changes in subcellular localization, modulation of its activity or its degradation. Due to these characteristics, ubiquitination events are frequent in signal transduction pathways. In order to study the role of the ubiquitin system during lithium stress adaptation, we screened a series of yeast mutants deleted of different ubiquitination related enzymes. In total, we tested the growth rate of 9 ubiquitin conjugating enzyme (UBCs), 15 ubiquitin-specific proteases (UBPs) and 67 ubiquitin-ligase (E3)-deleted mutants in the presence of toxic lithium concentrations on both YPD and YPGal media. We identified 4 UBC-mutants, 2 UBP-mutants and 5 E3-mutants with growth rates different from that of the WT strain BY4741 under these conditions. These results show the great implication of the ubiquitin system on the adaptation process during lithium stress in yeast. We are currently studying the molecular mechanisms of the effect of these mutations to understand the biochemical role of these genes on the adaptation process.

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