

Suggestion for Enhanced *In Vitro* Lysosomal Activity in *Saccharomyces cerevisiae*

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Lysosomes, a cell organelle in yeast, contains many hydrolase. The activity of lysosomal enzymes in *Saccharomyces cerevisiae* were altered by several stimuli factors as oxidative and starvation stress. Therefore, in this study, to evaluate the lysosomal activity under the stress conditions, we selected H<sub>2</sub>O<sub>2</sub> for oxidative stress and several different concentrations of glucose added YP medium to culture *S. cerevisiae* for starvation stress. We found that fluorescent intensities of each condition increased with the increment of treated H<sub>2</sub>O<sub>2</sub> concentration and decrease of glucose concentrations. In addition, the lysosomes isolated from each condition exhibited enhanced antimicrobial activity. Moreover, we performed proteomic analysis of lysosomal enzymes in response to enhanced condition and repressed condition for in vitro activity, using two-dimensional gel electrophoresis (2-DE). The findings from our study suggest that utilizing a systemic investigative tool, such as the proteomic approach using 2-DE, may play an important role in discovering novel mechanisms for regulation of lysosomal activity in *S. cerevisiae*. [This study was supported by the 21C Frontier Microbial Genomics and Applications Center program, grant ]