

Determination of Inactivation and Recovery of *Saccharomyces cerevisiae* Cells after the Gas-Phase Plasma Treatment

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Abstract : Gas phase plasma treatment is a new nonthermal technology used for food and water decontamination. In this study, we have investigated influence of the gas phase plasma treatment on yeast cells of *S. cerevisiae*. Sample was composed of 10 mL of yeast suspension and 190 mL of 0.01 M NaNO₃ with a medium conductivity of 100 μS/cm. Samples were treated in a glass reactor with a point- to-plate electrode configuration (high voltage electrode-titanium wire in the gas phase and grounded electrode in the liquid phase). Air or argon were injected into the headspace of the reactor at the gas flow of 5 L/min. Frequency of 60, 90 and 120 Hz, time of 5 and 10 min and positive polarity were defined parameters. Inactivation was higher with the applied higher frequency, longer treatment time and injected argon. Inactivation was not complete which resulted in complete recovery. Cellular leakage (260 nm and 280 nm) was higher with a longer treatment time and higher frequency. Leakage at 280 nm which defines a leakage of proteins was higher than leakage at 260 nm which defines a leakage of nucleic acids. The authors would like to acknowledge the support by Croatian Science Foundation and research project 'Application of electrical discharge plasma for preservation of liquid foods'.

Keywords : *Saccharomyces cerevisiae*, inactivation, gas-phase plasma treatment, cellular leakage

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