

Dependence of the Electro-Stimulation of *Saccharomyces cerevisiae* by Pulsed Electric Field at the Yeast Growth Phase

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Abstract : The effects of electro-stimulation of *S. cerevisiae* cells in colloidal suspension by Pulsed Electric Fields (PEF) with electric field strength $E = 20 - 2000 \text{ V.cm}^{-1}$ and effective PEF treatment time $t_{PEF} = 10^{-5} - 1 \text{ s}$ were investigated. The applied experimental procedure includes variations in the preliminary fermentation time and electro-stimulation by PEF-treatment. Plate counting was performed. At relatively high electric fields ($E \geq 1000 \text{ V.cm}^{-1}$) and moderate PEF treatment time ($t_{PEF} > 100 \mu\text{s}$), the extraction of ionic components from yeast was observed by conductivity measurements, which can be related to electroporation of cell membranes. Cell counting revealed a dependency of the colonies' size on the time of preliminary fermentation t_f and the power consumption W , however no dependencies were noticeable by varying the initial yeast concentration in the treated suspensions.

Keywords : intensification, yeast, fermentation, electroporation, biotechnology

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