



Microbial inactivation utilizing impulse waveform

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ABSTRACT

Inactivation of *Escherichia coli* has been successfully performed by the utilization of impulse voltage waveform. The process involves in microbial inactivation is pulsed electric field (PEF) treatment. PEF utilizes short-duration high-voltage pulses for microbial inactivation by the process of electroporation. Inactivation rate was measured against peak electric field, number of applied pulses, and energy input to unit volume of liquid. Two different electrode configuration spherical–spherical and parallel-plate electrode systems were used. The results indicate that parallel-plate electrode system results in better inactivation rate than spherical electrode system. With applied electric field of 24kV/cm and 20 pulses, six log reductions were achieved in parallel-plate electrode system indicating that inactivation rate is strongly dependent on electrode configuration, peak electric field, and applied pulses.

Keywords: Inactivation rate; Pulsed electric field; Impulse waveform; *Escherichia coli*; Drinking water treatment

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