

**INFLUENCE OF BUFFER CONDUCTIVITY ON
INACTIVATION OF STAPHYLOCOCCUS AUREUS BY
PULSED ELECTRIC FIELDS WITH EXPONENTIAL
AND SQUARE PULSES***

Jie Chen, Ruobing Zhang, Mengbin Mo, Liming Wang,
Zhicheng Guan
*Graduate School at Shenzhen, Tsinghua University, 518055,
P.R. China*

In this paper, effect of buffer conductivity on the inactivation of *Staphylococcus aureus* by Pulsed Electric Field (PEF) has been studied. Apple juice with four different conductivity (1.0 mS/cm, 1.5 mS/cm, 2.0 mS/cm and 2.5 mS/cm) was inactivated by two different pulse profiles (exponential and rectangular pulses). The experiment results showed that the inactivation effectiveness of exponential pulse decreased with buffer conductivity increased, while the inactivation effectiveness of square pulse improved with buffer conductivity increased. Through theoretical analysis and calculation of the actual waveforms in the experiment, it could be concluded that for exponential pulses input energy kept constantly, and the effectively treatment time reduced with buffer conductivity increased; for square pulses the effective treatment time kept constantly, while the input energy heightened with buffer conductivity increased. Therefore, the effect of buffer conductivity on inactivation of *Staphylococcus aureus* results from the combined effects of the effectively treatment time and input energy.

* This work was supported in part by the National 11th Five-Year Plan major scientific and technological issues of China (Grant 2006BAD05A02) and project sponsored by Shenzhen Science and Technology Planning Project Fund (JC200903180542A).