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ANALYSIS AND OPTIMIZATION OF PULSED ELECTRIC FIELD DISTRIBUTION EFFICIENCY IN A CYLINDRICAL TREATMENT CHAMBER FOR JUICE EXTRACTION

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ABSTRACT

Pulsed electric fields (PEF) technology has been receiving wide attention. The PEF treatment has the ability to trigger functional modifications in biological cells, without irreversible disruption of the cell membranes. Indeed, this process depends on several parameters such as the strength, pulses number and pulse duration of pulsed electric field (PEF). However, the influence of pulsed electric field distribution is also one of the key components in the PEF treatment process. The aim of this study to mention the effect of the Electric Field distribution based on Response Surface Modeling (RSM) for identifying the set point of the juice extraction process using pulsed electric field pre-treatment. This parameter was studied by using the different cylindrical treatment chambers built in laboratory. The experiments were carried out on a laboratory experimental bench and the obtained results are very important not only in juice extraction yield, but for quality of final product.