

Impact of pulsed electric fields technology on pigments extraction yield from *Arthrospira platensis*

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Abstract

Pulsed electric fields (PEF) is an innovative technology that allows the creation of pores in the cell membrane through the application of an electric field. Among its main advantages, the increase in the extraction performance of intracellular compounds stands out. In order to study this effect on pigment recovery, a PEF-assisted extraction was performed. For that purpose, a PEF treatment at 3 kV/cm and 100 kJ/kg was applied to a 2% (p/v) suspension of the *Arthrospira platensis* microalgae, also known as spirulina. After pre-treatment with PEF, the suspension was stirred for 3h, taking samples at different times. This extraction was compared with a control extraction, which consisted of stirring for 3h, without PEF pre-treatment. Furthermore, the influence of the solvent was evaluated in each case. Therefore, the extraction yield obtained using ethanol 50% (v/v) and DMSO 50% (v/v) was compared. The best results were obtained using 50% (v/v) ethanol as solvent. In addition, a greater extraction of pigments was observed in the samples pre-treated with PEF. This was especially noticeable at lower extraction times. In conclusion, these results showed that PEF is a promising technology for pigment extraction as it is environmentally friendly while improving the profitability of the process.

Keywords

Pulsed electric fields (PEF); *Arthrospira platensis*; pigments extraction