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

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INTRODUCTION

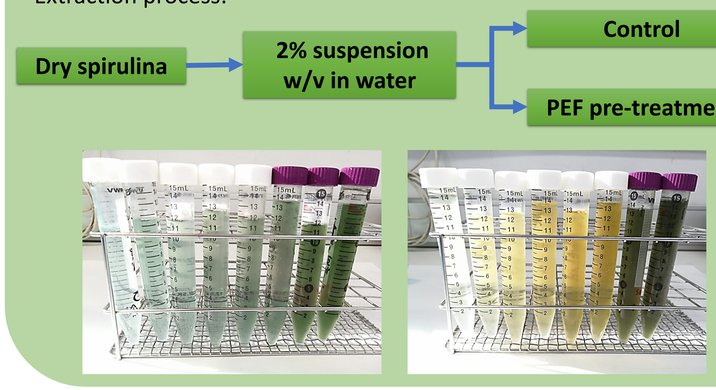
Pulsed electric fields (PEF) is an innovative technology that allows the creation of pores in the cell membrane through the application of an electric field. Among its main advantages, the increase in the extraction performance of intracellular compounds stands out.

OBJECTIVES

EVALUATE THE EFFICIENCY OF EXTRACTION ASSISTED BY PEF COMBINED WITH SUPPLEMENTARY EXTRACTION USING DIFFERENT BINARY MIXTURES TO RECOVER HIGH ADDED VALUE COMPOUNDS FROM SPIRULINA MICROALGAE.

MATERIALS & METHODS

Extraction process:



PEF-Treatment
-3 kV/cm and 100 kJ/kg.
-2% (w/v) suspension of the Arthrospira platensis microalgae.

Chlorophyll a, chlorophyll b and carotenoids contents were estimated spectrophotometrically according to the study by Parniakov et al. [1]. They were calculated using the equations of Lichtenthaler & Wellburn [2] for EtOH and Wellburn [3] for DMSO.

RESULTS AND DISCUSION

Figure 1a shows the results obtained after applying both treatments (conventional and PEF) using the mixture EtOH/H_2O. **Figure 1b** shows the results obtained for chlorophyll, carotenoids content after conventional and PEF-assisted extraction using DMSO/H_2O as solvent. 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 (4).

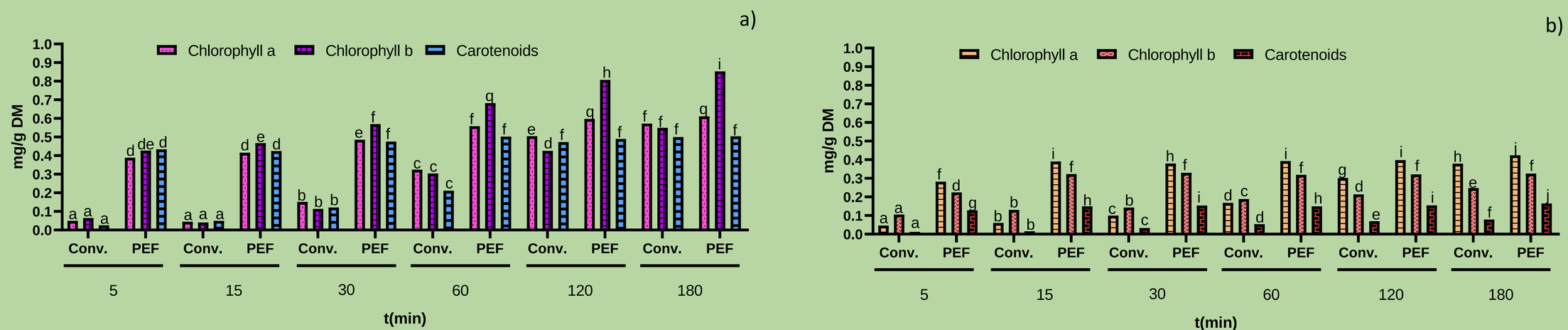


Figure 1. Chlorophyll a, chlorophyll b and carotenoids content EtOH/H_2O (a); DMSO/H_2O (b) after conventional extraction and PEF-assisted extraction. Different lower-case letters in the same parameter indicate statistical differences depending on the extraction time or treatment used.

CONCLUSIONS

PEF is a promising technology for pigment extraction as it is environmentally friendly while improving the profitability of the process.

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