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MICROALGAE PROTEIN HEATING IN ACID/BASIC SOLUTION FOR NANOFIBERS PRODUCTION BY FREE SURFACE ELECTROSPINNING

Juliana Botelho Moreira[a], Loong-Tak Lim[b], Elessandra da Rosa Zavareze[c], Alvaro Renato Guerra Dias[c], Jorge Alberto Vieira Costa[a] and Michele Greque de Morais[a*]

[a] College of Chemistry and Food Engineering, Federal University of Rio Grande, 96203-900, Rio Grande, RS, Brazil.

[b] Department of Food Science, University of Guelph, Guelph, ON N1G 2W1, Canada.

[c] Department of Agroindustrial Science and Technology, Federal University of Pelotas, 96010-900, Pelotas, RS, Brazil.

[*] Corresponding author – e-mail: michele.morais@pq.cnpq.br

Abstract

The objective of this work was to evaluate the effect of the biopolymers heating in alkaline and acidic solutions in the formation of nanofibers using protein concentrate from *Spirulina* sp. LEB 18 for potential application in food packaging field. With the highest protein concentration, the mean diameter of nanofibers was approximately 450 nm. For nanofibers developed with 5% ($w.w^{-1}$) of protein concentrate, the peaks in FTIR spectra were observed at 1641 cm^{-1} (amide I) and 1533 cm^{-1} (amide II). Moreover, the increasing of protein concentration of 5 to 10% ($w.w^{-1}$) enhanced the initial temperature of degradation of the nanofibers at 34 °C, when the poly (ethylene oxide) (PEO) was added after solution heating. The possibility of formation of uniforms nanofibers using the acidic solution with a low concentration of PEO (0.8%, $w.w^{-1}$) shows the potential of the protein concentrate from *Spirulina* sp. LEB for the production of these materials.

Keywords: biopolymer; denaturation; electrospinning; microalgae biomass; poly (ethylene oxide); *Spirulina.*