

# Accepted Manuscript

Microalgae protein heating in acid/basic solution for nanofibers production by free surface electrospinning

Juliana Botelho Moreira, Loong-Tak Lim, Elessandra da Rosa Zavareze, Alvaro Renato Guerra Dias, Jorge Alberto Vieira Costa, Michele Greque de Moraes



PII: S0260-8774(18)30071-2  
DOI: 10.1016/j.jfoodeng.2018.02.016  
Reference: JFOE 9171  
To appear in: *Journal of Food Engineering*  
Received Date: 16 October 2017  
Revised Date: 28 December 2017  
Accepted Date: 17 February 2018

Please cite this article as: Juliana Botelho Moreira, Loong-Tak Lim, Elessandra da Rosa Zavareze, Alvaro Renato Guerra Dias, Jorge Alberto Vieira Costa, Michele Greque de Moraes, Microalgae protein heating in acid/basic solution for nanofibers production by free surface electrospinning, *Journal of Food Engineering* (2018), doi: 10.1016/j.jfoodeng.2018.02.016

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

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

Juliana Botelho Moreira<sup>a</sup>, Loong-Tak Lim<sup>b</sup>, Elessandra da Rosa Zavareze<sup>c</sup>, Alvaro Renato

Guerra Dias<sup>c</sup>, Jorge Alberto Vieira Costa<sup>a</sup> and Michele Greque de Morais<sup>a\*</sup>

<sup>a</sup> College of Chemistry and Food Engineering, Federal University of Rio Grande, 96203-900, Rio Grande, RS, Brazil.

<sup>b</sup> Department of Food Science, University of Guelph, Guelph, ON N1G 2W1, Canada.

<sup>c</sup> 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<sup>-1</sup>) of protein concentrate, the peaks in FTIR spectra were observed at 1641 cm<sup>-1</sup> (amide I) and 1533 cm<sup>-1</sup> (amide II). Moreover, the increasing of protein concentration of 5 to 10% (w.w<sup>-1</sup>) 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 uniform nanofibers using the acidic solution with a low concentration of PEO (0.8%, w.w<sup>-1</sup>) 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*.

Download English Version:

<https://daneshyari.com/en/article/6664542>

Download Persian Version:

<https://daneshyari.com/article/6664542>

[Daneshyari.com](https://daneshyari.com)