

Accepted Manuscript

R1

Production of antimicrobial chitosan nanoparticles against food pathogens

Ana Raquel Madureira, Adriana Pereira, Pedro M. Castro, Manuela Pintado

PII: S0260-8774(15)00265-4

DOI: <http://dx.doi.org/10.1016/j.jfoodeng.2015.06.010>

Reference: JFOE 8205

To appear in: *Journal of Food Engineering*

Received Date: 9 November 2014

Revised Date: 7 April 2015

Accepted Date: 4 June 2015



Please cite this article as: Madureira, A.R., Pereira, A., Castro, P.M., Pintado, M., Production of antimicrobial chitosan nanoparticles against food pathogens, *Journal of Food Engineering* (2015), doi: <http://dx.doi.org/10.1016/j.jfoodeng.2015.06.010>

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.

R1

Production of antimicrobial chitosan nanoparticles against food pathogens

Ana Raquel Madureira, Adriana Pereira, Pedro M. Castro & Manuela Pintado

CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Universidade Católica Portuguesa/Porto, Rua Arquitecto Lobão Vital, Apartado 2511, 4202-401 Porto, Portugal

Abstract

The chitosan nanoparticles (NPs) may be a promissory delivery system of polyphenols. The main objective of this study was to produce chitosan NPs encapsulated with polyphenols with antimicrobial and antioxidant activity against food pathogens. The NPs produced with low and high molecular weight chitosan (LMWC and HMWC) were successfully obtained showing slight variations in the particle size, in the range 300-600 nm, as far as the zeta potential is concerned values in the range 20-30 mV and exhibiting a moderate stability. The best encapsulation performance was obtained for NPs produced with low molecular weight chitosan and the polyphenol rosmarinic acid. The antimicrobial studies proved that all free and encapsulated compounds have inhibitory activity upon the tested bacteria (*Bacillus cereus*, *Escherichia coli* O157, *Listeria innocua*, *Staphylococcus aureus*, *Salmonella typhimurium* and *Yersinia enterocolitica*). The images obtained by electronic microscopy showed that it was possible to obtain NPs capable of affecting the cellular structure of bacteria reinforcing their antimicrobial activity.

Download English Version:

<https://daneshyari.com/en/article/10277251>

Download Persian Version:

<https://daneshyari.com/article/10277251>

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