### Accepted Manuscript

Extracellular polysaccharide from Weissella confusa OF126: Production, optimization, and characterization

A.T. Adesulu-Dahunsi, A.I. Sanni, K. Jeyaram, J.O. Ojediran, A.O. Ogunsakin, K. Banwo

PII: S0141-8130(17)33739-X

DOI: https://doi.org/10.1016/j.ijbiomac.2018.01.060

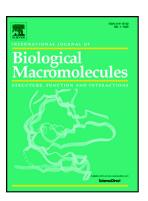
Reference: BIOMAC 8892

To appear in:

Received date: 27 September 2017 Revised date: 19 December 2017 Accepted date: 9 January 2018

Please cite this article as: A.T. Adesulu-Dahunsi, A.I. Sanni, K. Jeyaram, J.O. Ojediran, A.O. Ogunsakin, K. Banwo, Extracellular polysaccharide from Weissella confusa OF126: Production, optimization, and characterization. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Biomac(2017), https://doi.org/10.1016/j.ijbiomac.2018.01.060

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.



## **ACCEPTED MANUSCRIPT**

# Extracellular Polysaccharide from Weissella confusa OF126: Production, Optimization, and Characterization

A.T. Adesulu-Dahunsi <sup>1,2</sup>\*, A.I. Sanni , K. Jeyaram , J. O. Ojediran , A.O. Ogunsakin , and K. Banwo

<sup>1</sup>Department of Microbiology, University of Ibadan, Ibadan, Oyo State, Nigeria. <sup>2</sup>Microbial Resources Division, Institute of Bioresources and Sustainable Development (IBSD), Imphal-795001, Manipur, India.

<sup>3</sup>Department of Agricultural and Biosystems Engineering, Landmark University, Omu-Aran, Kwara State, Nigeria

<sup>4</sup>FMBCT Department, CSIR-Central Food Technological Research Institute, Mysore-570020, Karnataka, India.

\*Corresponding address: adesuluchemmy@yahoo.com; +2348154796861

#### **Abstract**

The production, optimization, and characterization of exopolysaccharide (EPS) from Weissella confusa OF126 and the in-vitro probiotic potentials of this strain was investigated. The EPS produced on sucrose modified-MRS broth was characterized. The purified EPS had an average molecular weight of  $1.1 \times 10^6$  Da. HPLC analysis revealed the presence of glucose monomers, indicating its homopolysaccharide nature. The structural characteristics of the EPS were investigated by FTIR, and NMR spectroscopy. FTIR spectroscopy revealed the presence of hydroxyl, carboxyl, N-acetyl and amine groups. NMR analysis confirmed that the EPS contained  $\alpha$ -(1 $\rightarrow$ 6) linkage and  $\alpha$ -(1 $\rightarrow$ 3) branched linkage. The EPS showed strong in-vitro antioxidant activity. Four significant factors were optimized using Central Composite Design (CCD) and Response Surface Methodology (RSM). The predicted optimum conditions for EPS production were cultivation time (48.50 h), sucrose concentration (24.00 g/L), pH (7.00) and yeast extract (2.50 %). The EPS produced was predicted to be 3.10 g/L, while the experimental yield was 3.00 g/L. This strain was found to possess desirable probiotic attributes by its ability to survive at pH 2.0 and in the presence of bile salts (0.50 % (w/v)) for 4 h. The results obtained from this study demonstrate W. confusa OF126 as a promising probiotic and the EPS produced can find useful applications in industries.

**Keywords:** Exopolysaccharide; Probiotic; FTIR

#### 1. Introduction

Lactic acid bacteria (LAB) are beneficial microorganisms commonly isolated from various fermented foods [1, 2]. They are known to perform essential roles during the fermentation of many Nigerian indigenous fermented food products such as *gari*, *fufu*, *ogi*, *kunu*, *masa* 

#### Download English Version:

## https://daneshyari.com/en/article/8327919

Download Persian Version:

https://daneshyari.com/article/8327919

<u>Daneshyari.com</u>