

Serbian Biochemical Society

President: Marija Gavrović-Jankulović

Vice-president: Suzana Jovanović-Šanta

General Secretary: Isidora Protić-Rosić

Treasurer: Milica Popović

Scientific Board

Marija Gavrović-
Jankulović
Svetlana Dinić
Ario de Marco
Suzana Jovanović-
Šanta
Mario Gabričević
Vladimir Mihailović
Theodore G.
Sotiroudis

Natalija Polović
Andreja Rajković
Nataša Simin
Edvard Petri
Sanja Krstić
Željko Popović
Snežana Pantović
Milan Nikolić
Simeon Minić

Organization Committee

Ivan Spasojević
Tanja Ćirković
Veličković
Milica Popović
Aleksandra
Uskoković
Tijana Ćulafić
Isidora Protić-Rosić
Jovana Trbojević-Ivić
Milena Dimitrijević
Srđan Miletić

Proceedings

Editor: Ivan Spasojević

Technical support: Jovana Trbojević-Ivić, Milena Dimitrijević, Tijana Ćulafić

Cover design: Zoran Beloševac

Publisher: Faculty of Chemistry, Serbian Biochemical Society

Printed by: Colorgrafx, Belgrade

No of printed copies: 130

Serbian Biochemical Society
Twelfth Conference

International scientific meeting

September 21-23, 2023, Belgrade, Serbia

“Biochemistry in Biotechnology”

Combined hydrogels of starch and β -lactoglobulin as matrices for the preservation of C-phycoyanin

Zorana Jovanović^{1,2*}, Burkhard Annighöfer², Daniel Dudzinski², Luka Veličković¹, Nikola Gligorijević³, Milan Nikolić¹, Annie Brûlet², Ali Assifaoui⁴, Sophie Combet², Simeon Minić¹

¹ Faculty of Chemistry, University of Belgrade, Serbia

² Laboratoire Léon Brillouin (LLB) UMR12 CEA-CNRS, Université Paris-Saclay, Gif-sur-Yvette CEDEX, France

³ Institute of Chemistry, Technology and Metallurgy, University of Belgrade

⁴ PAM Unit, team Physical chemistry applied to Food and Wine – AgroSupDijon, University of Burgundy, Dijon, France

*e-mail: zorana.gr@gmail.com

The color of food products is an important aspect in food industry, and its preservation remains a big challenge. We aim to preserve the natural blue dye of C-phycoyanin (C-PC) phycobiliprotein from *Spirulina* microalgae. For this purpose, we incorporated C-PC in combined starch and β -lactoglobulin (BLG) hydrogels by using a high-pressure (HP) process. Indeed, in thermal treatment, the color derived from C-PC is entirely lost. We characterized the obtained HP gels by both rheology and small-angle X-ray scattering (SAXS). Various formulations of binary (BLG/C-PC) and ternary (starch/BLG/C-PC) systems were tested under HP up to 4,500 bar. A good preservation of the C-PC pigment was established by mixing BLG and starch with C-PC at pH 7, with concentrations of 180, 5, and 10 mg/mL, respectively. Identical component concentrations were maintained in the binary systems. Structure of gels was characterized by SAXS providing insight of C-PC interactions with BLG and starch after HP process which leads to the formation of solid gels with larger mesh compared to two-component systems. This results in enhanced mechanical properties, which were determined by amplitude and frequency sweep measurements using a rheometer with applied plane/plane geometry. Therefore, adding starch, even at small concentration, significantly improves gel visual appearance and mechanical properties. Our study reveals that preservation through HP treatment is more effective than high temperature treatment, as visually observed through the sustained color integrity of C-PC blue dye.

Acknowledgements

This work was supported by ANSO Project No. ANSO-CR-PP-2021- 01.

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

577.1(048)

SERBIAN Biochemical Society. International scientific meeting (12 ; 2023 ; Beograd)

"Biochemistry in Biotechnology" : [proceedings] / Serbian Biochemical Society, Twelfth Conference, International scientific meeting, September 21-23, 2023, Belgrade, Serbia ; [editor Ivan Spasojević]. - Belgrade : Faculty of Chemistry : Serbian Biochemical Society, 2023 (Belgrade : Colorgrafx). - 156 str. ; 23 cm

Tiraž 130. - Bibliografija uz većinu apstrakata.

ISBN 978-86-7220-140-6 (FOC)

а) Биохемија -- Апстракти

COBISS.SR-ID 124201993
