

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”

Examining fatty acid interactions with *Arthrospira platensis*-derived C-phycoyanin

Ljubodrag Aleksić^{1*}, Luka Veličković¹, Nikola Gligorijević², Miloš Šunderić³, Marija Takić⁴, Milan Nikolić¹, Simeon Minić¹

¹Department of Biochemistry & Center of Excellence for Molecular Food Sciences, Faculty of Chemistry, University of Belgrade, Serbia

²Center for Chemistry, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, University of Belgrade

³Department for Metabolism, Institute for the Application of Nuclear Energy, University of Belgrade

⁴Group for Nutrition and Metabolism, Institute for Medical Research, National Institute of the Republic of Serbia, University of Belgrade

*e-mail: ljubodragal@protonmail.com

Cultured meat requires less land and water and is less polluting, but still costly. The critical challenge in cultivated meat science is identifying and developing bovine serum albumin alternatives as the key component in cell media. Phycobiliproteins (PBPs) from micro- and macroalgae are promising candidates for albumin replacement due to their high abundance and well-known excellent antioxidative and metal-binding activities of covalently attached tetrapyrrole chromophores. Considering the importance of fatty acids (FA) binding by albumin for cell cultivation, the additional prerequisites for developing PBPs as albumin replacement components is their validation for the ability to bind FA. This study aims to examine the ability of C-phycoyanin (C-PC), the major PBP of microalgae *Arthrospira platensis*, to bind seven fatty acids (stearic, palmitic, oleic, elaidic, linoleic, linolenic and docosahexaenoic acid). For this purpose, we employed various optical spectroscopy techniques (fluorescence, CD, and VIS absorption spectroscopy). The protein fluorescence quenching approach demonstrated FA binding affinities ranging from 0.42 to 2.4 x 10⁵ M⁻¹, with the ability of FA to bind at different sites on C-PC. Fatty acid binding induces substantial changes in the VIS absorption spectra of C-PC, indicating the FA are attached in the vicinity of C-PC chromophores. On the other hand, CD spectroscopy did not show significant effects of FA binding on C-PC secondary structure content. Overall, this study revealed C-PC's significant potential in binding FA, the critical prerequisite to replacing albumin for developing animal-free cell media for meat cultivation.

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
