

# FEBS openbio

Volume 12 Supplement 1  
July 2022  
ISSN 2211-5463



25TH IUBMB  
46TH FEBS  
15TH PABMB | 2022  
9-14 JULY  
LISBON PORTUGAL

## THE BIOCHEMISTRY GLOBAL SUMMIT LISBON



 **FEBS PRESS**  
science publishing by scientists

[febsopenbio.org](http://febsopenbio.org)

WILEY

aglycone contents in citrus extracts. In a first step, citrus extracts rich in naringin and hesperidin were treated with citric acid to remove terminal rhamnose groups. This was followed by incubation with lactic acid bacteria to cleave the remaining glycosidic bonds and to release the aglycones naringenin and hesperetin. The composition of flavonoids was analyzed before and after biotransformation by high performance liquid chromatography (HPLC). As expected, hydrolysis with citric acid resulted in a significantly higher content of naringenin-7-O-glucoside and hesperetin-7-O-glucoside. Subsequent biotransformation of these so-called monoglucosides by bacteria significantly increased the yield of aglycones. In conclusion, we introduced an innovative method to enrich the aglycone levels in flavonoid-rich extracts. Molecular mechanisms affected by the relevant bioactive compounds will be investigated in future experiments.

#### P-05.1-007

##### **Ghee butter from bovine colostrum reduces inflammation in dextran sulfate sodium-induced colitis in mice**

A. Tarasiuk<sup>1</sup>, M. Talar<sup>1</sup>, J.B. Krajewska<sup>1</sup>, A. Binienda<sup>1</sup>, A. Bartoszek<sup>1</sup>, A. Fabisiak<sup>2</sup>, P. Mosińska<sup>1</sup>, K. Dziedziczak<sup>1</sup>, K. Niewinna<sup>1</sup>, M. Salaga<sup>1</sup>, J. Fichna<sup>1</sup>

<sup>1</sup>Department of Biochemistry, Faculty of Medicine, Medical University of Lodz, Lodz, Poland, <sup>2</sup>Department of Digestive Tract Diseases, Faculty of Medicine, Medical University of Lodz, Lodz, Poland

Pharmacological treatment and/or remission maintenance in inflammatory bowel disease (IBD) is currently one of the most difficult challenges in the field of gastroenterology. The available therapies are mostly aimed at alleviating symptoms rather than addressing the underlying cause of the disease. Ghee butter from bovine colostrum (GBBC) is a clarified butter produced by heating milk fat to 40°C and separating the precipitating protein. As colostrum mainly contains fatty acids, immunoglobulins, maternal immune cells, we hypothesized that it may exert anti-inflammatory effects. We characterized the effect of GBBC on intestinal barrier function in dextran sulfate sodium (DSS) mouse model of colitis. 100% GBBC (per os, 100 µL/mouse) significantly reduced colon-damage score, MPO activity, stool score, and concentration of FITC dextran in serum in comparison with DSS mice. GBBC notably reduced the level of TNF- $\alpha$ , IL-17, and IL-23 while compared to the DSS mice group. Additionally, administration of the FFAR4 antagonist followed by treatment with 100% GBBC significantly increased the anti-inflammatory effect of GBBC by decreasing production of IL-17 and 23 and the IL-6 level in comparison with DSS. We also assessed tight junctions (TJs) mRNA expression using distal colon samples collected from control, DSS-treated, DDS+GBBC-treated mice, and mice-treated DSS with the combination of GBBC+FFAR1 or 4 antagonists. Administration of GBBC alone not only restored the expression of OCLD1 and CLDN1 to the level of control but also notably increased expression of these TJs mRNA above the basal level. FFAR1 antagonist in combination with GBBC significantly potentiated this effect. Of note, attenuation of FFAR4 expression reversed the effect of GBBC, thus indicating that FFAR4 receptor may affect the expression of OCLD1 and CLDN1 in the colon. This is the first study to show the anti-inflammatory potential of a nutritional supplement derived from GBBC in the colitis animal model.

#### P-05.1-008

##### **Interaction between alpha-2-macroglobulin and phycocyanobilin – structural and physiological implications**

N. Gligorijević<sup>1</sup>, M. Šunderić<sup>1</sup>, S. Minić<sup>2</sup>, O. Nedić<sup>1</sup>, M. Nikolić<sup>2</sup>  
<sup>1</sup>University of Belgrade - Institute for the Application of Nuclear Energy, Department for Metabolism, Belgrade, Serbia, <sup>2</sup>Center of Excellence for Molecular Food Sciences and Department of Biochemistry, University of Belgrade - Faculty of Chemistry, Belgrade, Serbia

The interaction between phycocyanobilin (PCB), a bioactive chromophore of blue-green cyanobacteria *Spirulina's* phycobiliproteins, and human alpha-2-macroglobulin ( $\alpha$ 2M), a universal anti-proteinase, was investigated in this study under simulated physiological conditions using spectroscopic techniques and  $\alpha$ 2M activity assay. Protein  $\alpha$ 2M was found to bind PCB with a moderate affinity, as assessed by spectrofluorimetric titration. The binding constant was calculated to be  $6.3 \times 10^5 \text{ M}^{-1}$  at 25°C. The binding of PCB to  $\alpha$ 2M did not cause significant change in the secondary structure of the protein, as determined by circular dichroism. PCB protected  $\alpha$ 2M from oxidative damage in the presence of AAPH-induced free radical overproduction. PCB binding also effectively preserved  $\alpha$ 2M anti-proteinase activity. Since  $\alpha$ 2M is involved in controlling the action of enzymes during the inflammatory process, the protection that PCB expresses could indirectly influence the intensity and direction of the body response to impaired homeostasis, especially under oxidative stress.

#### P-05.1-009

##### **Stability of oligosaccharides and rutin after *in vitro* digestibility of enzymatically hydrolyzed common buckwheat (*Fagopyrum esculentum* M.)**

P. Streimikyte<sup>1,2</sup>, D. Urbonaviciene<sup>1</sup>, V. Puzeryte<sup>1</sup>, J. Kailiuviene<sup>3</sup>, E. Mazoniene<sup>3</sup>, R. Daubaras<sup>2</sup>, L. Cesoniene<sup>2</sup>, P. Viskelis<sup>1</sup>, J. Viskelis<sup>1</sup>

<sup>1</sup>Institute of Horticulture, Lithuanian Research Centre for Agriculture and Forestry, Babiiai, Lithuania, <sup>2</sup>Botanical Garden of Vytautas Magnus University, Kaunas, Lithuania, <sup>3</sup>Roquette Amilina, Panevezys, Lithuania

Enzymes-assisted extraction of common buckwheat (*Fagopyrum esculentum* M.) is an exciting tool for developing food with higher-added value and characteristics because of their mild extraction conditions. During extraction, the permeability increases of the plant cell wall, releasing functional compounds such as rutin and forming new derivatives and properties. The research aims to determine rutin and oligosaccharides' stability after enzymes-assisted extraction and INFOGEST *in vitro* digestibility afterward. For analysis, two different batches were performed. Milled common buckwheat flours (> 0.5 mm) were homogenized with distilled water in a ratio of 1:5. Continuously, for the first batch, 0.15% of amylase (AL) and 0.15% non-starch polysaccharides enzymes (NSP), and for the second batch, 0.45% AL+ glucoamylase (AG) and 0.15% NSP was incorporated. After 2.5 hours at 68°C enzymatic extraction, a liquid fraction of buckweats was collected. Samples were lyophilized, and rutin content was determined using HPLC. Furthermore, the HPLC SEC – NSP methodology was implemented for sugars and



[About](#) [Programme](#) [Abstracts](#) [Registration](#) [Destination](#) [YSF](#) [Sponsorship](#)



[REGISTER / LOG IN](#) 

[Home](#) › [About](#) › [Committees](#)

## Committees

### Local Organizing Committee

---

Graça Soveral

President SPB, Congress Co-Chair, School of Pharmacy and Research Institute for Medicines, University of Lisbon, Portugal

Miguel Castanho

Congress Co-Chair, School of Medicine and Instituto de Medicina Molecular, University of Lisbon, Portugal

João Laranjinha

CNC, University of Coimbra, Portugal

Cláudio Soares

ITQB, NOVA University of Lisbon, Portugal

Francisco Ambrósio

iCBR-CIBB, University of Coimbra, Portugal

Manuela M. Pereira

FCUL, University of Lisbon, Portugal

Nuno Santos

IMM, University of Lisbon, Portugal

### Congress Program Board

---

Alexandra Newton, USA (IUBMB)

Andy Wang, Taiwan (IUBMB)

Bianca Zingales, Brazil (PABMB)

Francesco Bonomi, Italy (IUBMB)

Ilona Concha Grabinger, Chile (IUBMB)

Miguel Castanho (IMM; Congress Co-Chair)

Miguel de la Rosa, Spain (FEBS)

About Programme Abstracts Registration Destination YSF Sponsorship  
Chair) Vaclav Paces, Czech Republic (FEBS)

## International Scientific Committee

Akira Kikuchi, Japan  
Alain Krol, France  
Ali Akbar Saboury, Iran  
Alicia Kowaltowski, Brazil  
Andrzej Legocki, Poland  
Annette Beck-Sickinger, Germany  
Bianca Zingales, Brazil  
David Romero Camarena, Mexico  
Dogan Yucel, Turkey  
Gideon Schreiber, Israel  
Glaucius Oliva, Brazil  
Graça Soveral, Portugal  
In-San Kim, Korea  
Irene Diaz-Moreno, Spain  
Leda Quercia Vieira, Brazil  
Leonor Cancela, Portugal

Lorena Norambuena, Chile  
Manuel Prieto, Portugal  
Maria Ana Duhagon, Uruguay  
Maria Ángeles Serrano García, Spain  
Maria Carmo Fonseca, Portugal  
Maria Isabel Colombo, Argentina  
Maria Sunnerhagen, Sweden  
Martino Bolognesi, Italy  
Miguel Castanho, Portugal  
Raffaele Porta, Italy  
Rajendra Prasad, India  
Richard Garratt, Brasil  
Selma Jerónimo, Brasil  
Vitor Freitas, Portugal  
Wen Shan Yew, Singapore

## 21st Young Scientists' Forum Organizing Committee

Ana Salomé Veiga, Portugal (YSF Co-Chair)  
Marco Domingues, Portugal (YSF Co-Chair)  
Bárbara Rocha, Portugal  
Diana Lousa, Portugal  
Fábio Fernandes, Portugal

Rita Aroeira, Portugal  
Ilona Concha Grabinger, Chile (IUBMB)  
Irene Díaz-Moreno, Spain (FEBS)  
Bianca Zingales, Brazil (PABMB)

