

2nd National Food Conference

with International Participation
March 20th-21st, 2015

PROGRAM AND ABSTRACTS



NEW BULGARIAN UNIVERSITY

Sofia, Bulgaria

2nd National Food Conference

with International Participation

Sofia, March 20th-21st, 2015

New Bulgarian University

Program

Celebration of the 110th Anniversary
of *Lactobacillus bulgaricus* Discovery by
Dr. Stamen Grigorov



<http://www.nbu.bg/index.php?l=4482>

<http://ebox.nbu.bg/2foodconference>

CONGRESS ORGANIZERS

NEW BULGARIAN UNIVERSITY

DEPT. NATURAL SCIENCES, BIOLABORATORY

BULGARIAN SOCIETY FOR MICROBIOLOGY(BSM)

BULGARIAN FOOD SAFETY AGENCY

**THE STEPHAN ANGELOFF INSTITUTE OF
MICROBIOLOGY, BULGARIAN ACADEMY OF
SCIENCES**

*Under the auspices of The Rector
of New Bulgarian University and The
Central Fund for Strategic Development*

2nd National Food Conference with International Participation

Sofia

March 20th-21st, 2015

Organizing Committee

- Acad. Angel S. Galabov, DSc. - President of the Bulgarian Society for Microbiology (BSM)**
Corr. Member Hristo Najdenski, DSc. - Director of The Stephan Angeloff Institute of Microbiology - Bulgarian Academy of Sciences
Dr. Tencho Tenev - Deputy Executive Director of The Bulgarian Food Safety Agency
Prof. Maria Angelova, DSc. – The Stephan Angeloff Institute of Microbiology, Bulgarian Academy of Sciences
Prof. Dr. Veneta Groudeva - Sofia University “St. Kliment Ohridski”
Prof. Dr. Boyko Lykov - Director of the Center for Risk Assessment, Bulgarian Food Safety Agency
Prof. Dr. Vyara Ivanova - University of Food Technologies, Plovdiv
Prof. Yana Topalova, DSc. - Sofia University “St. Kliment Ohridski”
Assoc. Prof. Atanas Bliznakov, DSc. - New Bulgarian University
Assoc. Prof. Dr. Galina Satchanska - New Bulgarian University

Organizing Secretariat

Prof. Dr. Daniela Pilarska
Assoc. Prof. Dr. Ekaterina Kroumova
Student Georgi Georgiev
Student Alexander Tomov

Best Poster of Young Scientist Committee

Assoc. Prof. Dr. Ekaterina Kroumova-Chair
Prof. Dr. Vyara Ivanova
Assoc. Prof. Dr. Galina Satchanska

 **NEW BULGARIAN UNIVERSITY**



**BULGARIAN FOOD
SAFETY AGENCY**



**BULGARIAN SOCIETY
FOR MICROBIOLOGY**



**THE STEPHAN ANGELOFF
INSTITUTE OF MICROBIOLOGY,
BULGARIAN ACADEMY
OF SCIENCES**



**2ND NATIONAL FOOD CONFERENCE
WITH INTERNATIONAL PARTICIPATION**

WORD PROCESSING AND EDITING OF
THE ABSTRACTS WAS PERFORMED BY
THE ORGANIZING COMMITTEE AND THE
SECRETARIAT

ORGANIZING COMMITTEE:
ACAD. ANGEL S. GALABOV, DSc.
CORR. MEMBER HRISTO NAJDENSKI, DSc.
DR. TENCHO TENEV
PROF. MARIA ANGELOVA, DSc.
PROF. DR. VENETA GROUDEVA
PROF. DR. BOYKO LYKOV
PROF. DR. VYARA IVANOVA
PROF. YANA TOPALOVA, DSc.
ASSOC. PROF. ATANAS BLIZNAKOV, DSc.
ASSOC. PROF. DR. GALINA SATCHANSKA

2015 © NBU

ELECTROCHEMICAL DETERMINATION OF REDOX POTENTIAL IN INFANT FORMULA AND HUMAN BREAST MILK

N.M. Lugonja¹, S.D. Spasić¹, D.M. Stanković², M.M. Novaković¹, D.D. Manojlović², M.M. Vrvic²

¹Department of Chemistry, Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Belgrade.

²Faculty of Chemistry, University of Belgrade, Belgrade, Serbia

Object of Research: Human breast milk is the best dietary choice for newborn baby, and it is considered to be a gold standard. All the manufacturers of infant formula aim to produce these products with composition very similar to that of human breast milk. The objects of research of this study are to investigate the significance of breast milk and infant formula in the prevention of oxidative stress, by electrochemical determination of the total antioxidant potential and commonly used DPPH method, demonstrating the relationship between the antioxidant capacity of milk and postnatal age.

Materials and Methods: Infant formulas supplemented with prebiotics for term and preterm newborn babies, human breast milk and UHT milk were used. Cyclic voltammograms and differential pulse voltammograms were recorded with the glassy carbon electrode as the working electrode, an accessory platinum electrode, and an Ag/AgCl reference electrode. The DPPH assay measures the reducing ability of antioxidants in milk samples towards the DPPH radical using a UV-vis spectrophotometer.

Results: Electrochemical measurements indicate that human breast milk has the highest redox potential (250 mV), while skimmed UHT milk has very low one (100 mV). Infant formulas have also high potential of 180 mV. DPPH method confirmed results obtained by electrochemical methods. The free radical scavenging activity is highest for human breast milk (92.51%) and lowest for UHT milk sample (39.94%). Infant formulas have also high free radical scavenging activity (70-91%).

Conclusions: The main advantage of electrochemical methods used to assess the total antioxidant activity of milk was that they directly monitored the electron-donating ability of the compounds and could be used for the quantitative analysis of the total antioxidants of different types of milk.