Nutraceuticals in balancing redox status in ageing and age-related diseases

WGs Meeting of the NutRedOx COST Action CA16112

Belgrade, March 2-3, 2020

Book of Abstracts

SCIENTIFIC COMMITTEE

Prof. Mustapha Cherkaoui Malki, University of Burgundy, Dijon, France
Prof. Agnieszka Bartoszek, Gdansk University of Technology, Gdansk, Poland
Prof. Claus Jacob, University of Saarland, Saarbrücken, Germany
Prof. Patrick Chaimbault, University of Lorraine, Metz, France
Prof. Josep A. Tur, University of the Balearic Islands & CIBEROBN, Palma, Mallorca, Spain
Prof. Elke Richling, University of Kaiserslautern, Germany
Prof. Nina Hermans, University of Antwerpen, Antwerpen, Belgium
Dr. Claudia Santos, Instituto Biologia Experimental e Tecnologica, Oeiras, Portugal
Prof. Marc Diederich, LBMCC Hopital Kirchberg, Luxembourg, Luxembourg
Dr. Linda Giblin, Teagasc Food Research Centre, Fermoy, Co. Cork, Ireland
Prof. Slađana Šobajić, University of Belgrade, Belgrade, Serbia

LOCAL ORGANIZING COMMITTEE

from University of Belgrade (UB), Belgrade, Serbia

Dr. Svetlana Dinić, Institute for Biological Research „Siniša Stanković“ National Institute of Republic of Serbia
Dr. Miloš Šunderić, Institute for the Application of Nuclear Energy
Dr. Aleksandra Uskoković, Institute for Biological Research „Siniša Stanković“ National Institute of Republic of Serbia
Dr. Ana Đorđević, Institute for Biological Research „Siniša Stanković“ National Institute of Republic of Serbia
Dr. Dragana Robajac, Institute for the Application of Nuclear Energy
Dr. Vesna Vučić, Institute for Medical Research, National Institute of Republic of Serbia
Prof. Ivana Đuričić, Faculty of Pharmacy
Prof. Bojana Vidović, Faculty of Pharmacy
Dr. Vanja Todorović, Faculty of Pharmacy

CONFERENCE SECRETARIAT

Dr Miloš Đorđević, Institute for Biological Research „Siniša Stanković“ National Institute of Republic of Serbia
Email: milos.djordjevic@ibiss.bg.ac.rs
Phone: +381 11 2078343

Conference website: https://sites.google.com/view/costmeetingbelgrade/home
Contact: Dr Ana Đorđević
Email: djordjevica@ibiss.bg.ac.rs

EDITORS

Svetlana Dinić, Miloš Šunderić, Vesna Vučić, Bojana Vidović

The word of welcome

Dear colleagues,

We would like to welcome you to the 3rd Group meeting within the NutRedOx CA16112 COST Action, which is entitled: “Nutraceuticals in balancing redox status in ageing and age-related diseases”. We hope that this gathering will enable us to shed more light on the healing nature of proper nutrition. Since ancient times, food was regarded as something more than a fuel for survival. The Greek doctor Hippocrates once said: “Let food be thy medicine and medicine be thy food.” Nutraceuticals or “nutritional medicines” could be the answer to difficulties encountered during aging, without neglect of official medications. In a society living longer than ever, health has become one of the most valuable assets. It would be comforting to know that in the near future old age is not associated with deteriorating quality of life.

This COST action was initiated in 2017, as a consortium of countries and scientists whose primary goal was to “focus on the impact of redox active compounds in food on healthy ageing, chemoprevention and redox control in the context of major age-related diseases”. By now, 34 COST participating countries and 6 Near Neighborhood Countries took part in this project, showing that there is great interest in this problem.

We are pleased that you have decided to take part in this mutual conversation, where many will present their recent work, through poster sessions, oral communications or simply by asking questions. One of the goals of this action is cooperation between laboratories by short term scientific missions, so we look forward hearing the results of these encounters. Although we are approaching the end of this joint venture, it is satisfying to know that participants are not yet tired, which is supported by the number of registrations and abstracts that will be presented. On this meeting 67 participants from 24 countries will take part.

Belgrade, an old city which is always young, embraced by two rivers, will be your host. We hope that you will enjoy its rugged charm and warm hospitality, its streets, restaurants and cultural heritage.

At the confluence of new ideas and experiences we again wish you a warm welcome.

Your Local Organizing Committee

P11. DETERMINATION OF THE GENOTOXIC EFFECT OF CAPSAICIN ON HUMAN PERIPHERAL BLOOD MONONUCLEAR CELLS BY USING A COMET ASSAY

Milev, M., Maksimova, V. & Ruskovska, T.

University "Goce Delcev" Stip, Republic of North Macedonia

misko.milev@ugd.edu.mk

Capsaicin is a main representative of the group of proto-alkaloids called capsaicinoids, isolated from hot peppers. Despite the positive health effects of capsaicin seen previously, some studies suggest that capsaicin may act as a cytotoxic and genotoxic agent on some human cells. A considerable number of assays exist for the detection of different genotoxic effects of various compounds in experimental systems. The Comet assay is widely used because it is technically straightforward, sensitive, relatively fast, and cost-effective. DNA damage can be detected and quantified in different cell types without the requirement of cell culture. This work aimed to evaluate the genotoxic potential of capsaicin on human peripheral blood mononuclear cells (PBMCs). The cells are embedded in agarose and lysed, generating nucleus-like structures in the gel – nucleoids. Following alkaline electrophoresis, the DNA strands migrate towards the anode, and the extent of migration correlates with the number of strand breaks (SB) in the nucleoid. The migration is visualized and scored with a light microscope after silver staining. Thirty minutes of treatment with capsaicin concentrations in the range of 100 - 200 µmol/L resulted in a high occurrence of single and double SB. The concentration of 50 µmol/L caused moderate DNA damage, and lower concentrations (20 µmol/L) provoked only minor changes in the genome without DNA lesions. Although not all types of genotoxic exposures should be expected to result in DNA damage in PBMCs, the comet assay seems to be a valuable tool for the detection of genotoxic exposure in humans.

This work was conducted as part of the NATO project: "A Field Detector for Genotoxicity from CBRN and Explosive Devices" under the Agreement No. SPS G5266 from the Science for peace program.