

# **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**

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## The word of welcome

*Dear colleagues,*

We would like to welcome you to the 3<sup>rd</sup> 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 Organising Committee*

## P16. COMBINATIONS OF COCOA ANTIOXIDANTS: WHAT THEY TELL US ABOUT THE CHEMOPREVENTIVE RELEVANCE OF INTERACTIONS BETWEEN FOOD COMPONENTS?

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Antioxidant properties of polyphenols are believed to underlie cocoa chemopreventive potential. However, it has been not recognized if these effects are mainly caused by the most abundant components or result from concerted action of major and minor cocoa bioactives as proposed by food synergy concept. This study was aimed at resolving this question. Initially, the cocoa extract composition was determined by HPLC-DAD-MS. Then, bioactivities of cocoa extract and a series of artificial mixtures of cocoa phytochemicals were tested to compare their redox properties in cell-free system and redox-associated biological effects in human colon cancer HT29 cells serving as a model of human alimentary tract. Under cell-free conditions, DPPH test as well as differential pulse voltammetry showed the highest antioxidant activity for cocoa powder extract (CE), but surprisingly, did not reveal any dose-dependent differences between mixtures despite growing concentration and complexity of antioxidants. Basically, to the same conclusion lead determinations of cellular antioxidant activity; CE was the most efficient in cell protection against ROS whereby concentration of catechins in studied solutions had to be above 10  $\mu\text{M}$  to override cellular redox homeostasis. Cell growth inhibition was dose-dependent only for mixtures that consisted of main catechins at narrow range of low concentrations (0.01 – 1  $\mu\text{M}$  C+EC). Neither clear relationship between composition of cocoa phytochemicals and nutrigenomic activity of CE and matching mixtures was spotted. Therefore, our study indicates that the bioactivity of non-toxic complex natural mixtures such as cocoa is strongly affected by interactions between their components, as predicted by food synergy.

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