

**International Society of Antioxidants**

# **HOW TO EVALUATE OXIDATIVE STRESS & ANTIOXIDANTS ACTIVITIES?**

**March 19 | June 11 | November 26**

**From Initiation to  
Improvement**

**Online Workshop**



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# How to Evaluate Oxidative Stress & Antioxidants Activities?

Workshop Date: March 19, 2021, June 11, 2021, and November 26, 2021

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In collaboration with the International Society of Antioxidants (ISANH), we are pleased to announce the organization of three workshops dedicated to **Oxidative Stress and Antioxidants - How to Evaluate Oxidative Stress & Antioxidants Activities?**.

**Workshop Date:** March 19, 2021, June 11, 2021, and November 26, 2021.

Among the sessions which will be addressed:

- *Recent advances and perspectives on oxidative stress and antioxidants*
- *Methods used to Evaluate Oxidative Stress & Antioxidants Activities in different matrices and models*
- *Discuss the different methods of measuring oxidative stress in humans and present the controversies related to these methods*

During this workshop, an important part will be dedicated to the presentation of the all methods of evaluations of antioxidants in food, cosmetics and food supplements (polyphenols, catechins, phenolic acids, etc.).

## **Special Session: Methods for evaluating antioxidant activity in humans**

Presentation of methods for measuring protein alteration (glycation / carbonylation, etc.), alteration of lipids (lipoperoxidation) and DNA (8-OH-guanosine, etc.).

## **Discussion and Critics on many methods used to evaluate antioxidant capacity**

At present, there are different methods for evaluating antioxidant capacity and oxidative stress. However, these methods are not standardized and can vary greatly from one laboratory to another.

## **Come with your project!**

Do you have a product, an ingredient or a food supplement...? Do you want to measure its antioxidant capacity? Come with your project, we will discuss it and offer you the best suitable method.

This workshop is intended for anyone who wish to improve their skills and knowledge in the field of oxidative stress and antioxidants.

Looking forward to meeting you very soon, please don't hesitate to contact us for any further information.

Best regards,



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## **For Information & Registration**

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# How to Evaluate Oxidative Stress & Antioxidants Activities?

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## Program

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14:00 Welcome of Participants

14:05 Introduction of the workshop

### Session 1 - Oxidants and antioxidants: physicochemical reminders

- Source and role of free radicals and oxidative stress
- What are the characteristics of an antioxidant molecule?
- How does an antioxidant work?
- The subtle role of antioxidants, their “double face”, positive and negative

15:00 Break

### Session 2 - What are the different methods of dosage of antioxidants?

15:30 Presentation of the most used methods, their main characteristics, advantages and disadvantages

- **Chemical methods**
  - **Spectrophotometric, fluorometric and chemiluminescence methods**
    - ORAC: Oxygen Radical Absorbance
    - DPPH•
    - ABTS•+
    - FRAP
    - CUPRAC
    - DCFH-DA
    - FOX
    - TRAP : Total-Radical trapping Antioxidant Parameter Assay
    - Others : O<sub>2</sub>•, •OH, ONOO<sup>-</sup>, HOC
  - **Chemiluminescence methods**
    - without amplifier
    - with amplifier
- **Techniques for determining antioxidant activity on lipoperoxidation**
  - Measurement of lipoperoxidation by the FOX method
  - TBARS: Reaction of thiobarbituric acid with MDA
- **Methods based on the use of cells:**
  - Cell-Based Assays**
    - CAA: cellular antioxidant activity
    - Expression of antioxidant enzymes vs inhibition of pro-oxidant enzymes
    - Activation vs repression of redox factors transcription
  - **Anticatalytic methods**
    - SIEFED method
    - EquiNox2 method
- **Combined methods**
  - AMADEOX
  - Lipoperoxidation: detection of lipoperoxides and of lipid radicals by ESR
- **Others methods**
  - Electrochemical techniques
  - Red blood cell hemolysis
  - Ascorbic acid (Vitamin C)
  - Total Phenolics
  - Separation and determination of flavonols / anthocyanidins / isoflavones / phenolic acids

### 16:30 Presentation of practical cases

- *How to measure the antioxidant activity in food?*
- *How to measure the antioxidant activity in food supplements?*
- *How to measure the antioxidant activity in cosmetic products?*

### 17:30 How to evaluate Oxidative Stress in Human

- *What does "oxidative stress" mean?*
- *Are there any valid biomarkers of oxidative stress in humans?*
- *What are the evaluation methods and their limitations?*
- *Is there a standard on the market?*
- *How to conduct a clinical study? Selected examples*
- *What advice for biology and clinical chemistry labs?*

### 18:00 New methods and Innovation

#### **Electrochemical hybrid methods of oxidative stress and antioxidant activity evaluation: current state and future perspectives in medicine**

*Khiena Brainina, Ural State University of Economics, Russia*

#### **eBQC Device: a promising tool for antioxidant capacity measurement**

*Marina del Riego Nozal, Bioquochem, Spain*

### 18:40 Discussions

Do you have any questions? Come with your project! We will discuss it and we will give you all the keys and supports.

We will prepare an annex with protocols related to oxidative stress & antioxidants evaluations, methods, and technics you need in your future study:

- *Oxidants and antioxidants: physicochemical reminders*
- *Methods of measuring & evaluating an oxidative stress and antioxidants activities*
- *Evaluation of antioxidant activity in different matrices - practical cases*
- *Evaluation of antioxidant capacity in vivo: measurement of markers of oxidative stress*
- *Flavonoids, flavonols, anthocyanidins, isoflavones, phenolic acids, etc.*
- *Useful Publications*

### 19:00 End of the workshop

## Information

**Registration fee:** Academics & Industrials: 895 €

To register, please use the online form [available here](#).

## Who Should Attend ?

Are you a general practitioner, biologist, geneticist, researcher in oncology, neuroscience and pediatrics, or metabolic diseases? Research director, R&D director, engineer, research assistant, or business leader ? You want to learn more about oxidative stress & antioxidants, their key roles in the cellular metabolism, last analytical tools and methods.

## Teaching resources

- Presentation support given to participants
- Presentation proposed by the speaker via Power Points
- Q&A session with all participants

## Workshop Report & Recorded video

### International Society of Antioxidants

### HOW TO EVALUATE OXIDATIVE STRESS & ANTIOXIDANTS ACTIVITIES?

Recorded Workshop + Report

If you couldn't join the live workshop, you can still watch the recorded version of the Workshop of 4h30 minutes and get the workshop report in PDF format.

Also, you can get access to the Paris Redox 2020 Congress which was held on October 8-9, 2020 as a virtual congress. During the congress, more than 50 Communications (Majors, Shorts, and Posters).

### International Society of Antioxidants

### HOW TO EVALUATE OXIDATIVE STRESS & ANTIOXIDANTS ACTIVITIES?

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October 8, 2020

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### Abstracts Books contains:

- *Introduction to oxidative stress and antioxidants*
- *Part 1: Oxidants and antioxidants: physicochemical reminders*
- *Part 2: Methods of measuring & evaluating an oxidative stress and antioxidants activities*
- *Part 3: Evaluation of antioxidant activity in different matrices - practical cases*
- *Part 4: Evaluation of antioxidant capacity in vivo: measurement of markers of oxidative stress*
- *Part 5: Flavonoids*
- *Part 6: Useful publications*

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