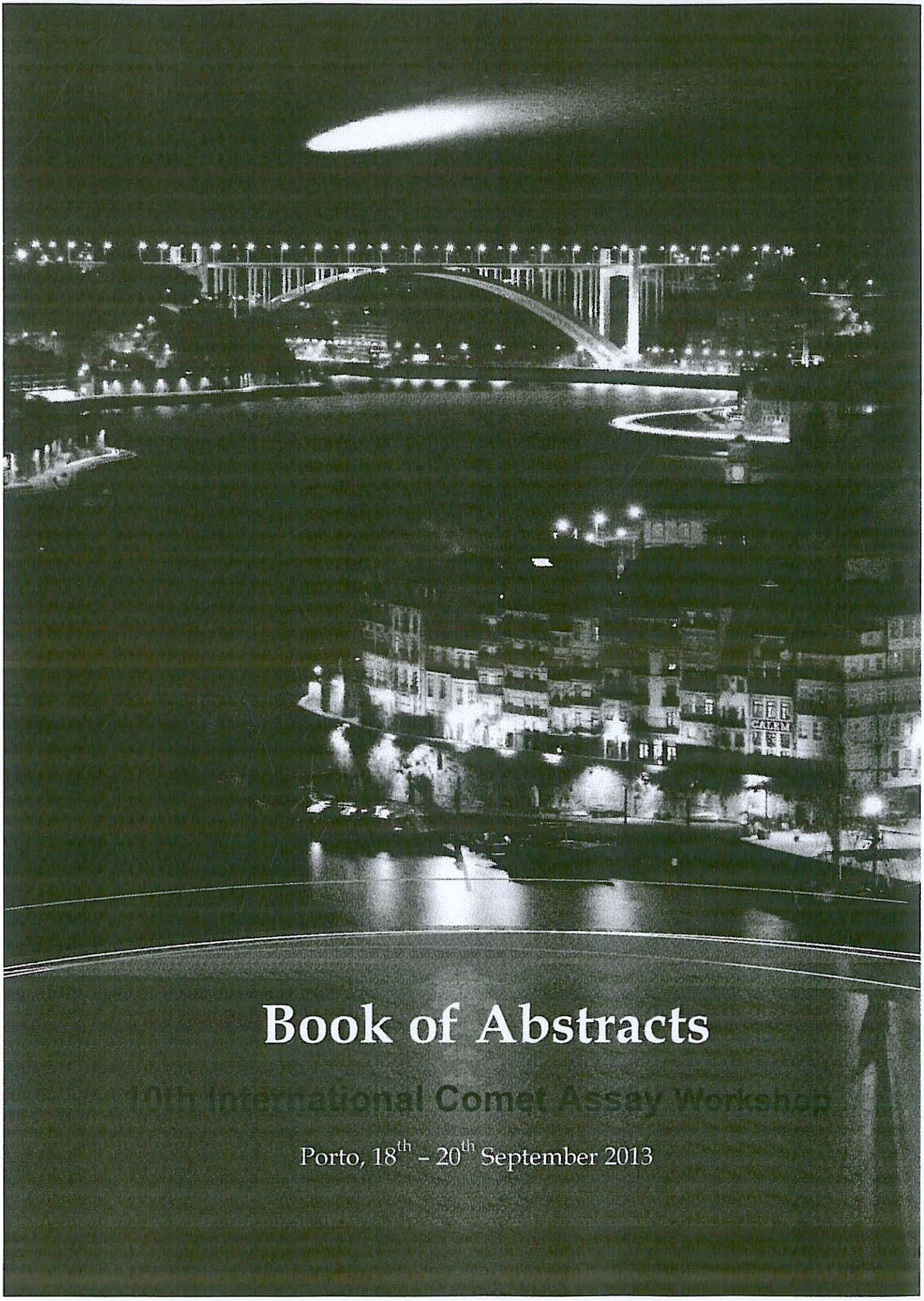

Book of Abstracts

10th International Comet Assay Workshop

Porto, 18th - 20th September 2013

PROGRAM

SEPTEMBER 18TH

8.30 AM – REGISTRATION

9.15 AM – WELCOME SESSION
ANDREW COLLINS, JOÃO PAULO TEIXEIRA

9.30 AM –CELLULAR DNA DAMAGE AND DNA REPAIR
SESSION CHAIRS: GUNNAR BRUNBORG, JANA SLYSKOVA

The effects of ageing and dietary restriction on base excision repair in the brain
Joanna Gorniak, Newcastle University, United Kingdom

What are appropriate measures of cytotoxicity in the in vitro comet assay?
Günter Speit, Ulm University, Germany

Implementation of the Comet assay to detect DNA damage and to analyse repair activity in *Drosophila melanogaster*
Rubén Rodriguez, Salamanca University, Spain

Poster Minitalks

DNA damage evaluated through the comet assay in fresh versus cryopreserved peripheral blood mononuclear cell samples from a dietary intervention study
Cristian Del Bo', Università degli Studi di Milano, Italy

Comet assay in mouse spermatozoa using different conditions for decondensation and electrophoresis
Aliy Zhanataev, Institute of Pharmacology of RAMS, Russia

10.45 AM – COFFEE BREAK AND POSTER SESSION

11.15 AM –NANOTOXICOLOGY AND THE COMET ASSAY
SESSION CHAIRS: GUDRUN KOPPEN, SERGEY SHAPOSHNIKOV

TiO_2 nanoparticles differentially induce more DNA damage in peripheral blood lymphocytes from polyposis coli and colon cancer patients than in healthy individuals
Diana Anderson, University of Bradford, UK

Toxicity of engineered nano particles in plants and animals: correlation amongst various toxicity assays
Anita Mukherjee, University of Calcutta, India

The effect of the vehicle on in vivo genotoxicity and inflammation
Nicklas Raun Jacobsen, The National Research Centre for the Working Environment, Denmark

Neuronal genotoxicity assessment of iron oxide nanoparticles by comet assay
Gözde Kiliç, University of A Coruña, Spain

Poster Minitalks

Genotoxic properties of platinum nanoparticles in human colon carcinoma cells
Helge Gehrke, University of Vienna, Austria

Genotoxic effects of silver nanoparticles on A549 cell line
Corine Reis, University of Aveiro, Portugal

1.00 PM – LUNCH AND POSTER SESSION

2.30 PM – TECHNICAL ISSUES AND IMPROVEMENTS
SESSION CHAIRS: IRIS BENZIE, BERTRAND POURRUT

High-throughput comet analysis with fully automated scoring
Petra Jackson, NRCWE- National Research Centre for the Working Environment, Denmark

Controlling variability in the comet assay
Andrew Collins, University of Oslo, Norway

Comet assay electrophoresis is of major importance for the results
Gunnar Brunborg, Norwegian Institute of Public Health, Norway

Poster Minitalks

Do we really need the lysis step in the standard comet assay?
Amaya Azqueta, University of Navarra, Spain

Increasing the sensitivity of the comet assay as a genotoxicity assay
Amaya Azqueta, University of Navarra, Spain

Long-term storage of agarose slides at low temperature
Nikolay Sirota, Russian Academy of Sciences, Russia

An inter-laboratory calibration trial: To what extent can we compare comet results obtained in different laboratories?
Anne Graupner, Norwegian Institute of Health, Norway

Novel formats for the comet assay
Sergey Shaposhnikov, NorGenoTech, Norway

Comet assay as a reliable tool to enhance knowledge about antioxidant potential in natural matrices
João C.M. Barreira, University of Porto, Portugal

The influence of the number of cells scored on the sensitivity in the comet assay
Soussaline Françoise, IMSTAR S.A., France

Automated scoring of minigels in a 96 format
Gunnar Brunborg, Norwegian Institute of Public Health, Norway

4.10 PM –COFFEE BREAK AND POSTER SESSION

4.40 PM – OCCUPATIONAL EXPOSURE AND GENOTOXICITY
SESSION CHAIRS: GÜNTER SPEIT, ANNE GRAUPNER

Genotoxic stress in B- and T-lymphocytes of farmers during one spraying season
Elisa Boutet, Toxalim INRA/UPS, France

Oxidative stress and genotoxicity markers measured in a panel study over two seasons
Gudrun Koppen, Flemish Institute for Technological Research, Belgium

POSTERS

P01. **DNA oxidation damage and DNA repair capacity in lymphocytes from mothers and newborns**
Naouale El-Yamani, University of Oslo, Norway

P02. **Usefulness of the Premature Chromosome Condensation assay for biological dosimetry – comparison with the comet assay, the micronucleus assay and the γ-H2AX assay**
Maria Wojewódzka, Institute of Nuclear Chemistry & Technology, Poland

P03. **DNA damage evaluated through the comet assay in fresh versus cryopreserved peripheral blood mononuclear cell samples from a dietary intervention study**
Cristian Del Bo', Università degli Studi di Milano, Italy

P04. **Isolation of limbal epithelial cells for tissue engineering**
Yolanda Lorenzo Corrales, Center for Eye Research, Norway

P05. **Comet assay in mouse spermatozoa using different conditions for decondensation and electrophoresis**
Aliy Zhanataev, Institute of Pharmacology of RAMS, Russia

P06. **In vitro risk assessment of single-walled carbon nanotubes on the human embryonic fibroblast's line**
Viktoria Nikitina, Russian Academy of Medical Sciences, Russia

P07. **Toxic and geno-toxic effect of titanium and cobalt oxide nanoparticles in tumor and primary cell lines**
Alessio Perotti, Università degli Studi di Parma, Italy

P08. **Genotoxic properties of platinum nanoparticles in human colon carcinoma cells**
Helge Gehrke, University of Vienna, Austria

P09. **Assessment of the Protective Effects of Resveratrol on Titanium Dioxide Induced DNA Damage by Comet Assay**
Deniz Ozkan Vardar, HITIT University, Turkey

P10. **Size, charge and stabilizer dependent genotoxicity of nanosilver**
Maria Dusinska, NILU, Norway

P11. **Genotoxic effects of Silver Nanoparticles on A549 cell line**
Corine Reis, University of Aveiro, Portugal

P12. **Application of the comet assay in nanotoxicology. Example of nanosilver.**
Anna Huk, NILU, Norway

P13. **Do we really need the lysis step in the standard comet assay?**
Amaya Azqueta, University of Navarra, Spain

P14. **Increasing the sensitivity of the comet assay as a genotoxicity assay**
Amaya Azqueta, University of Navarra, Spain

P15. **Long-term storage of agarose slides at low temperature**
Nikolay Sirota, Russian Academy of Sciences, Russia

P16. **An inter-laboratory calibration trial: To what extent can we compare comet results obtained in different laboratories?**
Anne Graupner, Norwegian Institute of Health, Norway

P17. **Novel formats for the comet assay**
Sergey Shaposhnikov, NorGenoTech, Norway

P18. **Comet assay as a reliable tool to enhance knowledge about antioxidant potential in natural matrices**
João C.M. Barreira, University of Porto, Portugal

P19. **The influence of the number of cells scored on the sensitivity in the comet assay**
Soussaline Françoise, IMSTAR S.A., France

P20. **Automated scoring of minigels in a 96 format**
Gunnar Brunborg, Norwegian Institute of Public Health, Norway

P21. **Detection of alkylation DNA damage induced sulphur mustard and 2- chlorethyl ethyl sulphide using comet assay**
Petr Jost, University of Defence, Faculty of Military Health Sciences, Czech Republic

P22. **Exposure-response relationships in adolescents of the 2nd Flemish Environment and Health Study: The correlation between polycyclic aromatic hydrocarbons (PAHs) and DNA damage**
Carmen Franken, Flemish Institute for Technological Research, Belgium

P23. **Impact of occupational exposure to ionizing radiation on the DNA damage in peripheral blood leukocytes of nuclear medicine personnel**
Malgorzata Dobrzynska, National Institute of Public Health, Poland

P24. **Analyses of the toxic effect, at chromosomal and DNA levels, on HepG2 cells related to a steroidal drug precursor – Solasodine**
Natália Barbosa, Universidade Federal do Rio Grande do Norte, Brazil

P25. **Application of COMET Assay for detection of DNA damage caused by mycotoxins**
Marijana Sokolovic, CVI – Poultry Centre, Croatia

P26. **DNA repair in peripheral blood lymphocytes of patients with non-small cell lung cancer treated with platinum-based derivatives**
Petra Fikrova, Charles University in Prague, Czech Republic

P27. **Use of the standard and Fpg modified comet assay for the detection of the role of pycnogenol in sepsis induced DNA damage**
Gökçe Taner, Gazi University, Turkey

P28. **The Comet Assay in Studying the Molecular Events in Cellular Transformation in an Inherited Metabolic Disease**
Piet Pretorius, North-West University, South Africa

P29. **Evaluation of DNA damage induced by naproxen on MG-63 osteosarcoma cell line using the comet assay**
Isabel Gaivão, UTAD, Portugal

P30. **Health related benefits of a physical exercise program on cellular damage and antioxidant protection**
Jorge Pinto Soares, UTAD - Sport Science, Exercise and Health Department, Portugal

P31. **Synthesis and Photobiological Evaluation of Fluoroquinolones as Anticancer Agents**
Monica Savio, University of Pavia, Italy

P32. **Imbalance in the antioxidant defense system and pro-genotoxic status induced by high glucose concentration (hyperglycemia) in HepG2 liver cells**
Samuele Vannini, University of Perugia, Italy

P18 Comet assay as a reliable tool to enhance knowledge about antioxidant potential in natural matrices

Authors

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Evaluating the antioxidant activity in natural matrices has been among our primary research challenges (1). However, most of the established methodologies still have significant limitations and interferences, especially in examining whether antioxidant activity is actually translated from in vitro to in vivo systems. Furthermore, several antioxidant in vitro assays still pose difficulties when comparing results between different procedures and researchers; in fact, there is not a unique method that can provide unequivocal results (2). In alternative, we have also used cell culture, which might represent a closer approach to in vivo systems, but this methodology presents also operational problems: cells adapt to the imposed oxidative stress (changing their properties), some cells suffer mutation, while others segregate antioxidant compounds (like pyruvate) and antioxidants are unstable in cell culture media and may generate one or more pro-oxidants or react with components of cell culture media. In addition, the fluctuating O2 levels in cell culture media have very different antioxidant compositions from in vivo extracellular fluids (3). In vivo assays could represent a way to overcome these difficulties, but, despite some developments, electron spin resonance methods to detect free radicals in humans, immuno spin-trapping and hydroxylation of aromatic compounds as a method to detect hydroxyl radicals, have proven to be difficult (3). Moreover, the number of reports identifying new potential antioxidant compounds grows rapidly, demanding their fast and reliable evaluation. In contrast, from the available literature, it is possible to conclude that there have been major advances to accurately measure end products of oxidative damage to proteins, lipids, and DNA. Comet assay, in particular, might represent a suitable solution due to its sensitiveness for detecting low levels of DNA damage, small number of cells and low amount of the test substance, low cost, ease of application and flexibility. In addition, a high potential research field is focused on the link between antioxidants and DNA repair, this being an indirect mechanism to confront oxidative stress (4). Therefore, Comet assay comprises a valuable complementary tool for our research on antioxidant activity.

REFERENCES

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