7th International Congress on Applied Biological Science

ACCEPTANCE LETTER

Presenting Author : TOLGAHAN OZER

Presentation Type : Oral research

Authors : F.UNAL, D.YUZBASŽIOGžL,

Title of Abstract : Genotoxic Effects of Fe2O3 Nano- and Micro-Particles in Human Lymphocytes by The Comet Assay

Dear OZER and GAZI UNIVERSITY;

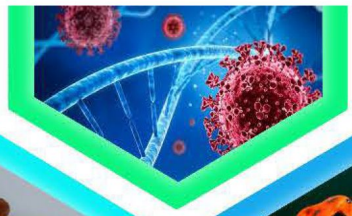
On behalf of the Organizing Committee, I am pleased to inform you that based on the recommendations of the reviewers and the Scientific Committee, your abstract identified above has been accepted for presentation by the 7th International Congress on Applied Biological Science.

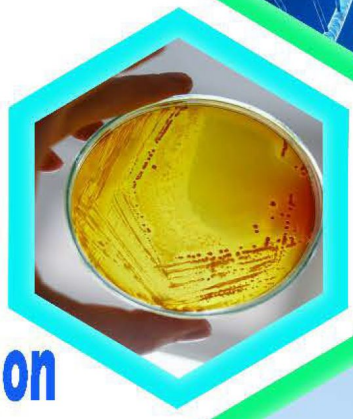
All the papers will be published in the official conference e-book with ISBN number.

I look forward to meeting you at the conference.

Best regards,

Prof. Dr. Hatice KORKMAZ GUVENMEZ
Chair of Conference



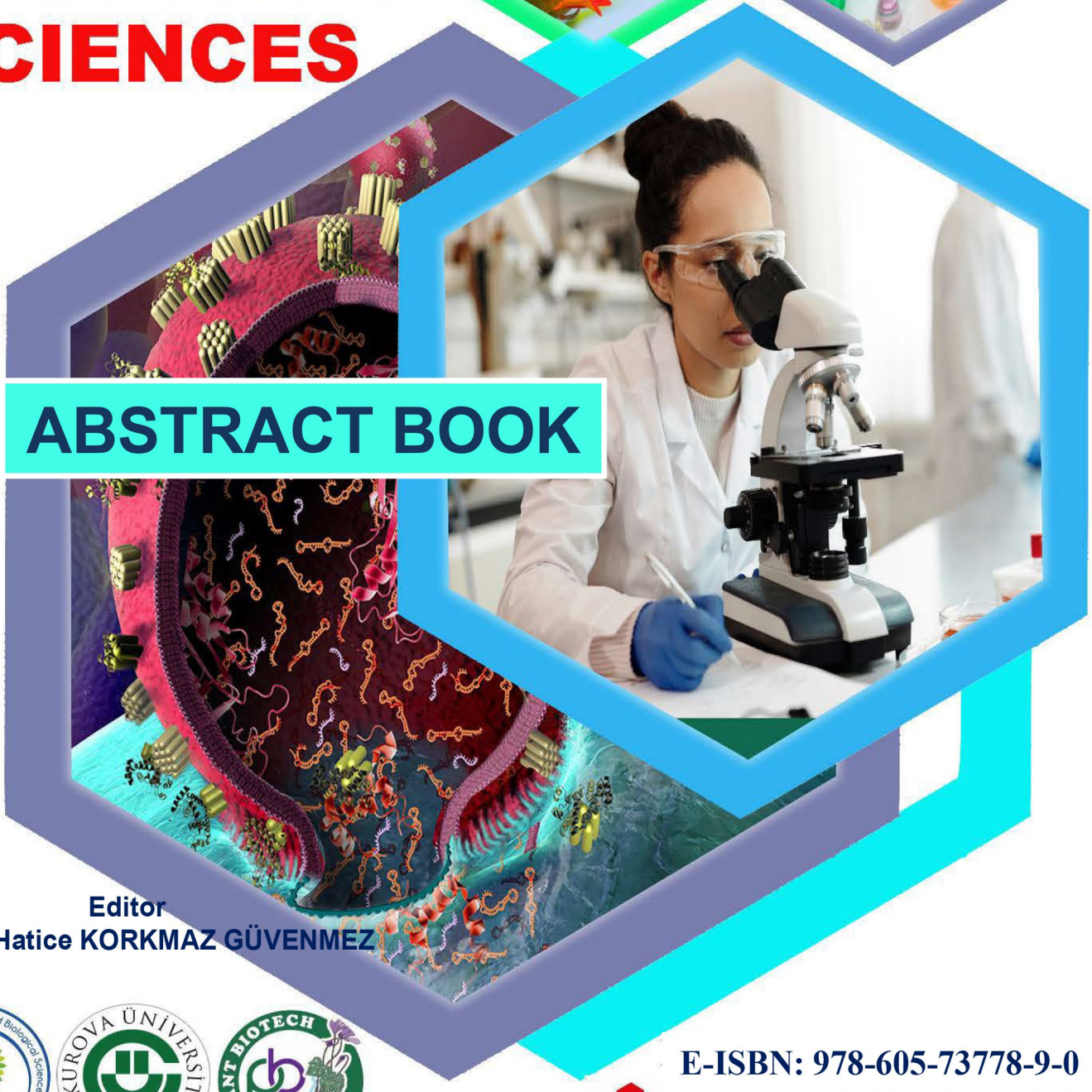




7th International Congress on APPLIED BIOLOGICAL SCIENCES







ABSTRACT BOOK

Editor
Prof. Dr. Hatice KORKMAZ GÜVENMEZ

E-ISBN: 978-605-73778-9-0
ANT ACADEMY

Distinguished Scientists and Dear Young Scientist Candidates,

The 7th International Congress on Applied Biological Science(ICABS) was held ONLINE, hosted by CUKUROVA UNIVERSITY, on 01-02 November 2022.

The magic of Applied Biological Sciences continues to drag millions of scientists behind it; meanwhile, new problems are added every day to the big problems that need to be solved in the universe we live in. The driving and compelling power of the problems waiting for solution feeds our scientific curiosity and desire to research and directs us to our laboratories. Sharing the science/knowledge produced in laboratories at congresses make us stronger and open new horizons for young scientist candidates.

Your participation in the 7th International Congress on Applied Biological Science honored us.

Kind regards.

Prof. Dr. Hatice KORKMAZ GÜVENMEZ
Chair of Congress
Çukurova University, Turkey
hkorkmaz@cu.edu.tr

CONGRESS PROGRAM

All Sessions Will Start According to İstanbul, Turkey Time Zone (GMT +3)

WEDNESDAY, 02 NOVEMBER 2022	
Session VII	**Chair: Tolga İZGÜ, PhD** *(National Research Council of Italy (CNR) IBE/Institute of BioEconomy, Firenze, Italy)*
14:15-14:30	**"Genotoxic Effects of Fe2O3 Nano- and Micro-Particles in Human Lymphocytes by The Comet Assay"** **Tolgahan ÖZER** *(Gazi University, Faculty of Sciences, Department of Biology, Genetics Laboratory, Ankara, Turkey)*
14:30-14:45	**"Investigation of the Genetic Transition in Patients Diagnosed with Dilated Cardiomyopathy"** **Özge SARICA YILMAZ** *(Manisa Celal Bayar University, Faculty of Medicine, Department of Medical Biology, Manisa, Turkey)*
14:45-15:00	**"Treating Glioblastoma Using Newly Derived Telomerase Inhibiton Techniques"** **Hasan YÜCELEN** *(Çukurova University, Faculty of Arts and Sciences, Department of Biology Adana, Turkey)*
15:00-15:15	**Break**
Session VII	**Chair: Mete KARABOYUN, PhD Candidate** *(Çukurova University, Institute of Natural and Applied Sciences, Department of Biotechnology, Adana, Turkey)*
15:15-15:30	**"Potential of Gama Glutamyl Cysteine in Bitechnology"** **Mumine GURUK** *(Çukurova University, Faculty of Engineering, Department of Food Engineering, Adana, Turkey)*
15:30-15:45	**"Role of Plant Growth Promoting Bacteria in Sustainable Agricultural Studies"** **Fatma AZGIN** *(Çukurova University, Faculty of Arts and Sciences, Department of Biology, Adana, Turkey)*
15:45-16:00	**"Salinity Stress *in vitro* Culture"** **Rumeysa KAHRAMAN** *(Çukurova University, Faculty of Agriculture, Department of Horticulture, Adana, Turkey)*

Genotoxic Effects of Fe_2O_3 Nano- and Micro-Particles in Human Lymphocytes by The Comet Assay

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Oral Presentation

Background: Iron (III) oxide (Fe_2O_3) nanoparticles-NPs and microparticles-MPs are multipurpose robust materials that are used in a wide variety of fields from military to medical. Nevertheless, information on their genotoxic effects is insufficient and contradictory. In this study, the genotoxic effects of Fe_2O_3 NPs and MPs were investigated by performing a comet assay (Single Cell Gel Electrophoresis) in human peripheral lymphocytes.
Method: Isolated lymphocytes were treated with 25, 125, 250, and 500 µg/mL concentrations of NPs and MPs within 2 and 3 hours. Sterile distilled water and hydrogen peroxide were used as negative and positive controls, respectively. DNA damages due to genotoxicity were examined using comet assay.
Results: Three different comet parameters were evaluated in this study: tail length, tail intensity, and tail moment. None of the 2h applications of Fe_2O_3 NPs and MPs formed significant DNA damage in lymphocytes compared to the negative control. However, at 3h treatment, all the concentrations of both of the particles significantly but not-dose dependently increased tail length. In terms of tail intensity, all the tested concentrations of Fe_2O_3 MPs but only the highest one (500 µg/mL) of the NPs induced a significant increase in lymphocytes. No significant DNA damage was determined in the tail momentfor all the parameters tested.
Conclusion: These results revealed that the 3h application of both particles was more effective than the 2h treatment to induce DNA damage in nucleoids. Also, the DNA-damaging effect of MPs was slightly higher than those of the NPs. Long-term exposure to Fe_2O_3 MPs looks more genotoxic than NPs for lymphocytes *in vitro* treatment. Aggregations of the nanoparticles and co-products of the high dose concentrations may be the issues for these results. However, more investigations should be conducted to determine the genotoxic potential of these particles using different types of cells, organisms, and test systems.

Keywords: Iron (III) Oxide, Nanoparticles, Microparticles, Genotoxicity, Comet assay.

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