

# BOOK OF ABSTRACTS



**ISCOM 2025**



**GOCE DELCEV UNIVERSITY STIP  
FACULTY OF MEDICAL SCIENCES**



# ISCOM 2025

4 International Student's  
Congress of Medicine  
15 - 17 May - Stip, North Macedonia

*Via Medica*



Multimedial center  
Goce Delcev University

CIP - Каталогизација во публикација

Национална и универзитетска библиотека "Св. Климент Охридски", Скопје

61(062)(048.3)

INTERNATIONAL student congress of medicine (4 ; 2025)

Book of abstracts [Електронски извор] / 4 International student congress of medicine 15-17 May 2025 ; [editor Aleksandar Velickov]. - Stip : Goce Delcev University, Faculty of medical sciences, 2025

Начин на пристапување (URL): Add a little bit of body text. - Текст во PDF формат, 95 стр., илустр. - Наслов преземен од екранот. - Опис на изворот на ден 12.05.2025

ISBN 978-608-277-106-9

а) Медицина -- Собири -- Апстракти

COBISS.MK-ID 65907461

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**4 INTERNATIONAL  
STUDENT CONGRESS  
OF MEDICINE  
15 -17 MAY 2025**

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## **Editor :**

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## **Technical & graphic design :**

Aleksandar Velickov

## **Year & place of publication :**

Stip, Macedonia 2025

PUBLISHER:

**GOCE DELCEV UNIVERSTIY**

**FACULTY OF MEDICAL SCIENCES**



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**ISCOM 2025**



The graphic features a central orange rounded rectangle containing the text "POSTER PRESENTATIONS" in a bold, dark blue, sans-serif font. The rectangle is set against a white background, which is framed by dark blue wavy borders at the top and bottom.

# **POSTER PRESENTATIONS**

## The use of Comet assay for detection of genotoxic effect of benzo[a]pyrene

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**Introduction:** The Comet assay, or single-cell gel electrophoresis, is a highly sensitive technique for detecting DNA damage at a single-cell level. It enables the identification of strand breaks, alkali-labile sites, and cross-linking in individual cells. This assay is extensively used in genotoxicity testing, cancer research, and studies on DNA repair mechanisms. Benzo[a]pyrene, a known genotoxic compound detected in cigarette smoke, diesel exhaust, and industrial waste, poses significant health risks.

**Objective:** This study aims to evaluate the applicability of the Comet assay in detecting DNA damage induced by exposure to this cytotoxic agent.

**Materials and Methods:** Peripheral blood mononuclear cells were treated with varying concentrations of benzo[a]pyrene, followed by Comet assay under alkaline conditions. Cells were embedded in agarose, lysed, and subjected to electrophoresis. DNA migration was visualized using silver staining, and damage was quantified by visually scoring 50 cells per slide.

**Results:** The results revealed a dose-dependent increase in DNA damage, as reflected by a significant increase in comet tail arbitrary units. Higher concentrations of benzo[a]pyrene resulted in pronounced DNA fragmentation, indicating increased genotoxicity.

**Conclusion:** These findings affirm the effectiveness of the Comet assay in detecting DNA damage and monitoring cellular responses to genotoxic agents. The study highlights benzo[a]pyrene as a potent genotoxic agent, reinforcing its classification as a Group I carcinogen. This research underscores the importance of genotoxic assessments in evaluating and understanding the cellular impact of environmental and industrial toxins.

**Keywords:** Comet assay, benzo[a]pyrene, DNA damage, genotoxicity.