

ACRYLAMIDE TREATMENT AFFECTS OXIDATIVE STRESS PARAMETERS IN RAT HEPATOCYTES

Jelena Marković Filipović¹, Danijela Kojić¹, Marko Miler², Verica Milošević², Milica Matavulj¹

¹University of Novi Sad, Faculty of Sciences, Department of Biology and Ecology, Novi Sad, Serbia.

²Department of Cytology, Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia, University of Belgrade, Belgrade, Serbia.

INTRODUCTION

- Acrylamide is toxic chemical that can be formed as a food contaminant during the high-temperature cooking of many common foods such as potato products, breads and coffee.
- The objective of our study was to determine whether acrylamide treatment disturbs redox balance by altering nitrite, glutathione (GSH), and malondialdehyde levels in rat hepatoma cell line (H4IIE).

MATERIAL AND METHODS

- Rat hepatoma cell line H4IIE was treated with 4 mM (IC₂₀) and 4.5 mM (IC₅₀) of AA for 24 h.
- The nitrite level in the medium was analyzed as an indicator of NO production following the Griess reaction method.
- After ultrasonic cell lysis in 2.5% sulfocalicylic acid, supernatant was analysed for the content of glutathione.
- Lipid peroxidation was evaluated using thiobarbituric acid reactive substance assay (TBARS).

RESULTS

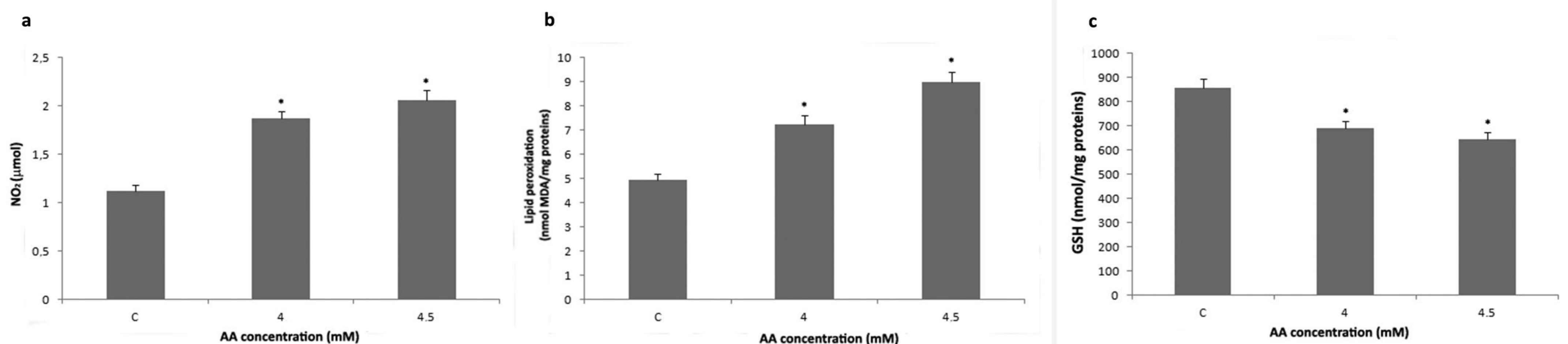


Figure 1. Nitrite concentration (a), malondialdehyde (MDA) concentration (b), reduced glutathione (GSH) concentration (c) in H4IIE cells after treatment with 4 and 4.5 mM acrylamide (AA) for 24 h. Values in charts are means \pm SEM of three experiments performed in triplicate. Mean values were significantly different from that of untreated control cells (* $p < 0.05$).

- ✓ Exposure to AA caused significant concentration-dependent increase of nitrite level and lipid peroxidation.
- ✓ Acrylamide treatment significantly reduced GSH content.

Conclusion

Acrylamide treatment disturbs redox status in hepatocytes.