**SUBCHRONIC ACRYLAMIDE TREATMENT INDUCES SUPEROXIDE DISMUTASE 1 EXPRESSION IN RAT LIVER**

Jelena Marković Filipović¹, Ivana Ivelja¹, Jelena Karan¹, 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", Serbia.

**Introduction**

- Acrylamide (AA) is carcinogen, mutagen and neurotoxic substance present in fried, roasted and baked starch-based goods.
- AA is formed in Maillard reaction from asparagine and carbonyl sources, such as reducing sugars, during thermal food processing at temperatures between 120 and 180°C.
- The objective of our study was to determine whether acrylamide treatment affects superoxide dismutase 1 (SOD1) expression in rat liver.

**Material and methods**

- Adult male Wistar rats were subchronically treated with 25 mg/kg or 50 mg/kg body weight of acrylamide.
- Formalin-fixed paraffin-embedded liver tissue was cut into 5 µm thin sections and immunostained with anti-SOD1 antibody.
- The amount of SOD1 in immunostained sections was determined using Windows based ImageJ program.
- The optical density (OD) and stained percentage color area of immunolabeled SOD1 were measured.

**Results**

Immunostaining of SOD1 in liver of control rats showed weak cytoplasmic immunoreactivity in hepatocytes. AA application induced dose-dependent increase of immunostaining intensity. Significant increase of OD and percentage contribution of low positive and total positive cells of immunostained SOD1 was detected in group treated with AA in a dose of 50 mg/kg.

**Conclusion**

Acrylamide by changing SOD1 expression potentially affects redox balance in the liver.