



UDC: 612.617.2/614.824

ASSESSMENT OF POSITIVE EXPRESSION OF THE IMMUNOHISTOCHEMICAL MARKER CD45 IN TESTICULAR TISSUE FOLLOWING CARBON MONOXIDE (CO) EXPOSURE

Hojiyev Sharif Shukurovich
ORCID: 0009-0007-1624-7293

Relevance. An immunohistochemical study was performed to assess immune cellular responses in testicular tissue. The CD45 marker, also known as the leukocyte common antigen (LCA), was used for this purpose.

The CD45 immunohistochemical marker was used to assess the presence of immune cells and their distribution within the testicular tissue. Immunohistochemical staining revealed cells exhibiting positive immunoreactivity for CD45.

Objective. In assessing CD45 expression, the proportion of cells exhibiting a positive reaction was determined, and the results were expressed as percentages (%). The obtained values were comparatively evaluated among the control group, the CO-exposed group, and the group receiving correction with milk thistle oil.

Materials and Methods During the study, the behavior and physiological parameters of animals in the control and experimental groups were monitored regularly. A total of 180 white outbred male rats were divided into three groups: Group I (control) included 1-month-old ($n=30$) and 7-month-old ($n=30$) rats maintained under standard conditions for 53 days; Group II (experimental) included rats of the same age and number exposed to carbon monoxide (CO) for 53 consecutive days to establish a model of chronic CO intoxication; and Group III (correction) consisted of CO-exposed rats that simultaneously received milk thistle (*Silybum marianum*) oil for 53 days. The chronic CO intoxication model was developed based on modified experimental approaches described by Hampson N.B. (2018) and Rose J.J. et al. (2017). The animals were exposed once daily for 60 minutes to CO at a concentration of 25–30 ppm in a hermetically sealed 1 m³ chamber, with CO levels continuously monitored using a Dräger X-am 5600 device. No mortality occurred during the experiment. For correction, milk thistle oil obtained by cold pressing of *Silybum marianum* seeds was administered orally by intragastric gavage once daily at a dose of 0.1 mL for 53 days. By the end of the experiment, the initially 1-month-old rats were 3 months old, whereas the initially 7-month-old rats were 9 months old.

Results. In 3- and 9-month-old white outbred male rats, exposure to



carbon monoxide resulted in increased infiltration of CD45-positive immune cells in the testicular tissue. Following biocorrection with milk thistle oil, a decrease in the infiltration of CD45-positive immune cells was observed, indicating that milk thistle oil had a positive effect in reducing the immunohistochemical alterations in the testicular tissue induced by carbon monoxide exposure.

Conclusion. CD45-positive expression in 3- and 9-month-old rats was 11.2% and 4.95%, respectively, in the control group; 30.75% and 22.9% in the CO-exposed group; and 15.8% and 10.2% in the correction group. Thus, CO exposure resulted in an increase in the proportion of CD45-positive immune cells compared with the control group, whereas a decrease in CD45 expression was observed following biocorrection with milk thistle oil. At the same time, CD45 expression in the correction group approached the values observed in the control group.