

#### 4. ANTIRADICAL PROTECTION OF RAT LACRIMAL GLANDS UNDER CONDITION OF COMBINED INFLUENCE OF SIRS AND GENERAL ADAPTATION SYNDROME

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**Introduction.** The general adaptation syndrome and systemic inflammatory response syndrome (SIRS) are opposite in their evolutionary patterns. Currently, the scientific literature provides a limited amount of data about possible synergistic or antagonistic effects of the combination of general adaptation syndrome and SIRS.

**Aim of study.** To determine the activity of catalase and superoxide dismutase in the rat lacrimal glands under conditions of SIRS and general adaptation syndrome.

**Methods and materials.** The experiment was performed on 18 adult male rats weighing 190-240 g. The animals were divided into 3 groups. I group consisted of intact animals (n=6). II group consisted of animals, on which we simulated stress syndrome (n=6) by daily holding over water surface for 1 hour for 30 days (patent №145226). III group consisted from animals that were intraperitoneally injected 0,4 mg/kg bacterial lipopolysaccharide (LPS) of *S. typhi* (pyrogenal) 3 times a week during the first week, then once a week for the duration of the experiment and simulated stress syndrome as in II group. Removal of animals from the experiment was done by bloodletting under thiopental anesthesia. The object of a study was organs that reflect stress development and severity and lacrimal glands in which the activity of catalase (Korolyuk, 1988) and superoxide dismutase (SOD) (Brusov OS, 1976) were determined. Statistical processing was performed by using a non-parametric Mann-Whitney test.

**Results.** Catalase activity in the rat lacrimal glands decreased by 2.11 times during chronic stress and by 1.68 times in the group of animals with SIRS and stress syndrome compared with the control group ( $p<0.05$ ). The SOD activity in the rat lacrimal glands decreased by 4.87 times under conditions of general adaptation syndrome modelling and increased by 1.34 times in the animals with the combined effects of SIRS and stress syndrome compared to the control group ( $p<0,05$ ). Thus, the general adaptation syndrome led to decreased antioxidant enzymes' activity in the rat lacrimal glands. The combined effects of SIRS and general adaptation syndrome lead to the activation of antiradical protection of lacrimal glands that was evidenced by an increase of catalase activity by 1.26 times and SOD activity by 6.51 times compared with the stress group ( $p<0.05$ ).

**Conclusion.** The general adaptation syndrome in the rat lacrimal glands leads to a decrease of antioxidant enzymes' activity. The combined effects of SIRS and chronic stress leads to the activation of antiradical protection in rat lacrimal glands.