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AGE-RELATED CHANGES IN AN ANTIOXIDANT DEFENSE SYSTEM OF BLOOD IN GERBILS

It is well known that oxidative stress is an important factor contributing to the development of chronic diseases in elderly people. It was established that activation of oxidative stress is linked to diseases of the cardiovascular system, atherosclerosis, metabolic syndrome, oncological diseases and may contribute to the progression of chronic diseases. Age-related oxidative stress is generated by a combination of increased production of free radicals, decreased antioxidant levels, diminished activities of antioxidant enzymes, and impaired repairs of oxidative damage. There are specific enzymes and low molecular weight substances for removing ROS: Superoxide dismutase (SOD) catalyzes dismutation of superoxide ($O_2^{\bullet-}$), catalase (CAT), scavenges hydrogen peroxide (H_2O_2), glutathione peroxidase (GPx) converts H_2O_2 to water, and neutralizes lipid peroxyl radicals. Glutathione (GSH) serves as a major thiol-disulfide redox buffer of the cell, and its reduced form is maintained by glutathione reductase (GR) [1, p. 101; 2, p. 1356; 3, p. 245; 4, p. 615].

Therefore, the aim of the study was to investigate the system of antioxidant protection and change the intensity of the process of lipid peroxidation in the blood of gerbils of different ages.

Materials and methods. Gerbils of different ages were divided into 3 groups: 1 group is a control group, which included animals aged 8 months; 2 – group of gerbils middle-aged (22-26 months); Group 3 – animals old-aged

(31-38 months). The CAT activity was measured according to the method described by Korolyuk. Determination of TBA – active products in plasma and blood erythrocytes was performed by the method Andreeva. Concentration of reduced glutathione was determined by [5, p. 207]. Statistical processing of the results was performed using Excel, using Student's t-test.

It was shown that the concentration of TBA-active compounds in blood plasma in the group of older animals (second and third) increases threefold compared to the control group of adult animals. Thus, we observed an increase in the intensity of oxidative processes in old animals.

It was studied the activity of catalase. No significant difference in this parameter was found between the control group and the second group of older animals (22-26 months). In the third group (31-37 months) there was decreases in catalase activity by 22% compared with the control group (8 months). It was investigated content of reduced glutathione. It was shown increase of the glutathione concentration in the gerbil's blood in second group by about 2 times compared with the control group. It was observed decrease of the glutathione content in blood of animals aged 31-38 months. Antioxidant levels show a general tendency to decrease with age.

The generation of free radicals, that is, superoxide anion and H_2O_2 showed a progressive increase from the younger to old age groups. Antioxidant defense seems to be approximately balanced with generation of oxygen-derived species in young individuals, however, there is an increase oxidative stress later in life. Our results demonstrate that aging is associated with decreased activity of several antioxidant enzyme and progression of oxidative stress.

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ОРНІТОФАУНА ПРИКАРПАТТЯ (КАЛУСЬКИЙ РАЙОН, СЕЛО ТУЖИЛІВ) ТА ЇЇ ЗНАЧЕННЯ В БІОІНДИКАЦІЇ СЕРЕДОВИЩА

Птахи – один із класів теплокровних хребетних, які пристосувались до життя в різних умовах навколишнього середовища завдяки своїй здатності до польоту. Вони знайшли широке використання в багатьох галузях людського життя. Орнітофауна України нараховує 425 представників, серед яких – 270 з регулярним гніздуванням [1, с. 210].

Незважаючи на досить вагомі дослідження в області орнітології, деякі дані щодо видового складу птахів певних територій є дещо розмитими. В останні роки все більше зростає трансформація середовища під дією антропогенного фактора. Стають все більш актуальними проблеми збереження екосистем, у зв'язку з чим набувають поширення системи моніторингу, які дають можливість оцінити вплив антропогенних факторів на біологічні об'єкти. Біоіндикація з використанням птахів дає змогу реєструвати мінімальні концентрації речовин, які накопичуються в них, а також прогнозувати розвиток техногенного впливу в майбутньому.

Об'єктом дослідження була орнітофауна Прикарпаття, зокрема села Тужилів, Калуського району.