EFFECTS OF HYPERTHERMIC STRESS IN DIFERENT DEVELOPMENTAL STAGES IN WHITE RAT ON THE TABLE AND THE FUNCTION OF THE ADRENAL GLANDS

Verica Spasova, Mire Spasov, Icko Gorgoski

„Saints Cyril and Methodius“ University, Faculty of Natural Sciences and Mathematics, Skopje - Macedonia

High environmental temperature of 40 ^{0}C, applied in different developmental stages in White laboratory rat, is a stress on the body that load the adrenal glands. In terms of hypotermic stress adrenal glands work faster, producing increased amounts of adrenaline , noradrenaline and cortisol. In terms of long-term stress, and load of the glands are entering a phase of temporary hypofunction . If they are healthy, they hypertrophied trying to compensate for the reduced release of hormones. During a long and exhausting stress comes to chronic hypofunction of the adrenal glands.

In our Researches was examined the effect of hyperthermic stress in the White laboratory rat strain Wistar, the temperature of 40^{0}C, applied for two hours daily. The animals were divided into five groups: control, which resides at room temperature, exposed during pregnancy, exposed during lactation in exposed after the period of lactation and exposed continuously from pregnancy until the 50th day of life. After the sacrifice of young animals examined were the mass, total protein, content of DNA, and RNA content of the adrenal glands .

From the obtained results, come to a realization that hyperthermic stress applied during pregnancy is not or has little effect on the parameters examined, because of the protective effect of the placenta. During lactation hyperthermic stress causes the adrenal gland hyperplasia, that is why it comes to increasing the value of all tested parameters. Hyperthermic stress applied after the period of lactation doesn't cause special effects on the examined parameters, because the body is recovering and the values are almost back to those values in the control group of animals. Continued hyperthermic stress (animals exposed from pregnancy until the 50th day of life) causes a significant increased values of all examined parameters, because of the increased levels of ACTH and cortisol in serum.

From the performed tests and obtained results for the effect of hyperthermic stress applied in different developmental stages in White laboratory rat we can derive the following conclusions: During pregnancy hyperthermic stress has a small effect on the monitored parameters, while during lactation these parameters is likely due to increased hyperplasia and adrenal hyperfunction. In the recovery period (after the period of lactation) returns the level of the control group because of the occurrence of hyperplasia which is compensateing the reduced secretion of hormones and the glands function normalized. Due to continuous hyperthermic stress applied during the entire experimental period comes to a significant increase in all parameters examined for irreversible impairment of the function of the adrenal glands (chronic hypofunction) .