

SUMY STATE UNIVERSITY  
MEDICAL INSTITUTE



**BIOMEDICAL  
PERSPECTIVES**

**II**

**ABSTRACT BOOK**

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## POST-GRADUATE STUDENTS AND YOUNG SCIENTISTS SECTION

### PECULIARITIES OF CHANGE IN THE BODYWEIGHT OF RATS UNDER CONDITIONS OF EXPERIMENTAL ALLOXAN HYPERGLYCEMIA IN THE AGE ASPECT

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**Introduction.** Diabetes has been and remains a global threat in these modern days, leading to disability, resulting in lifelong health complications or even to the extent of death. Interest in this pathology does not fade and has been encouraging scientists to seek new ways to diagnose and treat diabetes and its complications. It is well acknowledged in the endocrinology field, that diabetes is a manifestation of "failure" of the endocrine system, which is manifested by hyperglycemia.

**Aim.** To detect and investigate the changes of bodyweight in the rats of different age groups under the hyperglycemia experiment.

**Materials and methods.** Studies were performed on 36 white laboratory rats of both genders. The experimental animals were divided into two sections: Experimental and Intact. Each of the sections are divided into three groups depending on the age of the rats: young (2 months old), mature (8 months old) and old (20 months old). For experimental simulations of hyperglycemia, alloxan monohydrate was used at a rate of 20 mg per 100 g of rat bodyweight. The weight of the animal was determined using electronic scales KERN 442-432N (Germany). The level of glucose in the venous blood of rats was determined by glucose oxidase method using sets of reagents "Philisit" (Ukraine).

**Results.** After the introduction of alloxan at the end of the first day, animals of different age groups had developed polydipsia, polyphagia and polyuria. The level of glucose in the blood of experimental young animals was  $19.3 \pm 0.2$  mmol/l; in mature -  $14.8 \pm 0.19$  mmol/l; in the elderly -  $22.7 \pm 0.3$  mmol/l. In animals of the intact group, the blood glucose level was within normal limits, namely:  $6.3 \pm 0.2$  mmol/l,  $3.5 \pm 0.1$  mmol/l,  $6.5 \pm 0.24$  mmol/l, respectively. The bodyweight of Intact rats aged 2 months was  $101.5 \pm 0.87$  g, in animals of the Experimental sections of the same group -  $91.3 \pm 0.47$  g. The bodyweight of Intact rats aged 8 months was  $193.2 \pm 0.13$  g, Experimental -  $146.6 \pm 0.3$  g. Body weight in Intact animals of old age was  $220.2 \pm 0.19$  g, in Experimental rats of the appropriate age -  $178.03 \pm 1.27$  g. As a percentage of weight loss on the background of chronic hyperglycemia in young animals occurred by 11.2% ( $p < 0.05$ ), in mature animals by 31.8% ( $p < 0.05$ ), in elderly animals by 23.6% ( $p < 0, 05$ ).

**Conclusions.** As a result, the development of alloxan hyperglycemia in young and old animals is been concluded severe hyperglycemia; in mature rats – the results were moderate. The most increased in deficiency of body weight had occurred in rats aged 8 months, the least recorded was in rats aged 2 months, which can be explained by enhanced compensatory and adaptive properties of young animals.