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STUDY OF THE RESULTS OF THE STUDY OF TYPOLOGICAL FEATURES IN EXPERIMENTAL DIABETES MELLITUS

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Abstract: In recent years, there has been a global increase in the prevalence of diabetes, obesity, and other chronic diseases, posing significant threats to public health and the economy. Diabetes mellitus has been recognized as a global issue that is rapidly advancing, leading to severe complications that reduce the quality of life and elevate healthcare costs. The worldwide prevalence of diabetes is approximately 5-6%, particularly affecting individuals over the age of 40. The World Health Organization (WHO) forecasts a rise in the number of patients to 160 million by 2025, largely driven by the increasing incidence of type 2 diabetes. Individual differences in stress responses influence organismal resilience, which is crucial to consider when studying pathophysiology and pharmacokinetics.

Objective of the Study: To analyze individual typological characteristics of laboratory animals using the "open field" method.

Materials and Methods: The study was conducted on 56 adult laboratory mice weighing 250–300 g using the "open field" method. The experiment aimed to identify typological traits in animals under stress conditions.

Results and Conclusions: The analysis revealed that animals with mild and moderate toxicity levels displayed distinct behavioral patterns. Most mice preferred staying on the periphery of the "open field," while a smaller proportion moved toward the center. Levels of physical activity varied among the animals. The study confirmed the influence of innate behavioral traits on stress responses: active and curious animals demonstrated greater resilience to stress exposure.

Conclusion: Examining animal behavior in response to toxic exposure provides critical insights for researchers and animal welfare specialists. Considering natural behavioral traits and activity levels helps improve the understanding of animal reactions to environmental stressors and toxins.

Key words: Experimental diabetes mellitus, typological features, study results, research methods, glucose, insulin, pathogenesis, animal models, biochemical parameters, clinical manifestations

Actuality: In recent years, the global community has faced an escalating threat from the spread of diabetes, obesity, and other chronic diseases, which significantly impact both individual health and national economies. Public health experts regard diabetes as one of the most pressing issues of modern times, affecting populations across all nations and age groups. The widespread prevalence of this condition is attributed to its universal geographical distribution, rapid progression, and early onset of complications, which

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profoundly affect health outcomes, leading to a decline in quality of life and a substantial increase in healthcare costs [1, 2].

According to statistical data, the global prevalence of diabetes ranges from 5% to 6%, with the most pronounced increase observed among individuals over the age of 40. The World Health Organization (WHO) reports that the number of patients with diabetes has doubled over the past decade and is projected to reach approximately 160 million by 2025, with a further doubling anticipated in the future. This trend is primarily attributed to the rising incidence of type 2 diabetes, as corroborated by scientific studies [4, 5, 6].

Modern research emphasizes the importance of considering individual differences in the perception of physical and sensory stressors when analyzing mechanisms of organismal adaptation to stress. Typological variations in responses to diseases, particularly in cases of diabetes, significantly influence the understanding of pathophysiology, pathochemistry, and pharmacokinetics. These differences often complicate the interpretation and management of the disease [7, 8, 9].

Thus, a comprehensive approach to studying physiological and psychological responses is a critical component in developing effective prevention and treatment strategies for chronic diseases.

Purpose of the study: Identification of individual typological characteristics of experimental animals using the "open field" method.

Materials and methods: Using the “Open Field” method, a study was conducted on 56 adult laboratory mice weighing 250–300 g in order to determine individual typological characteristics.

Results and Conclusions:

According to the analysis, animals exposed to mild and moderate levels of toxic substances exhibited distinct behavioral patterns. A significant majority of the test subjects in this group, specifically 84.3%, preferred to remain on the periphery of the experimental space known as the "open field," while only 15.7% ventured into the central area. This observation suggests that, in potentially threatening situations, animals tend to avoid open spaces, likely to minimize risks associated with predator detection or other dangers.

On the other hand, varying degrees of physical activity among the animals revealed intriguing trends. About 57.3% of the animals displayed low physical activity, whereas 42.7% showed high mobility. Notably, animals with moderate physical activity demonstrated a more balanced distribution, with 75.2% falling into the moderately active group and 24.6% into the highly active group. This finding indicates that moderate physical activity may strike an optimal balance between exploring the environment and conserving energy.

Furthermore, the study highlighted that innate behavioral traits play a critical role in animals' ability to cope with subsequent stress factors. Animals with active and inquisitive temperaments exhibited greater resilience to stress compared to their less active and less

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curious counterparts. This discovery emphasizes the importance of considering animals' natural predispositions when assessing their susceptibility to toxic substances and other adverse conditions.

In conclusion, a detailed analysis of animal behavior in response to toxic exposure opens new avenues for researchers and wildlife conservation specialists. Understanding the natural behaviors and activity levels of animals provides deeper insights into the mechanisms of their responses to environmental stressors and toxic impacts. Such knowledge can aid in the development of more effective methods for wildlife protection and improving the conditions for laboratory animals.

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