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THE PERSPECTIVE OF THE USE OF PREBIOTICS IN METABOLIC DISORDERS

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Through metabolomics medicine, the aim is to identify the mechanisms that determine the appearance of autoimmune and chronic diseases to avoid the causes of their appearance. The breakdown of proteins, fats, carbohydrates, and fiber results, through the involvement of the intestinal microbiome, in different metabolites that have beneficial or harmful effects on the appearance of diseases: obesity, diabetes, fatty liver, etc. The paper aimed to study the impact of prebiotic substances on blood glucose levels in rats depending on the carbohydrate content in their diet.

Two complex prebiotic compositions were belabored, and their impact on the blood glucose level and body mass of laboratory rats was studied, distributed in 5 groups. The first batch received the standard ration (control), the second - composition 1, the third - composition 1 + glucose, the fourth - composition 2, and the fifth - composition 2 + glucose. The compositions included two different sources of inulin (fructan) fibers with a hypoglycemic effect, products with soluble/insoluble fiber content and enterosorbent. The results obtained show an increase in glucose content in the batch without the administration of prebiotic compositions (control), which was 7.49% compared to the initial level. After 30 days of administration of prebiotic no. 1 in group II (without glucose) - a decrease in its level was observed by 8.88%, while in group III (with glucose) - by 5.44%, compared to the content initial. Prebiotic no.2 demonstrated a higher efficacy because the glucose level, in this case, decreased in groups IV and V, respectively by - 8.61 and 10.45%, compared to the initial one. Despite the administration of glucose for 30 days, concomitantly with prebiotics in groups II and IV, an increase in body mass was observed only by 7.14 and 8.75%, being however higher compared to the control group, but lower than batches that did not receive glucose. This is due to prebiotic fibers, which facilitate the absorption of intestinal fats, leading to control of body mass. The more pronounced hypoglycemic effect of prebiotic no. 2 is explained by the role of the constituent elements. Inulin slows down digestion, allowing carbohydrate sugars to be gradually released into the bloodstream, balancing blood sugar. Co-administration of the pectin and a small amount of insoluble fiber lowers total cholesterol and low-density lipoprotein (LDL) cholesterol. Enterosorbents absorb harmful substances and neutralize toxins, absorb the products of the vital activity of pathogenic microorganisms, and improve metabolism.

Thus, the elaborated compositions have a different hypoglycemic effect, lead to a moderate decrease in blood glucose levels in rats, and have shown efficacy even in conditions of a major carbohydrate intake in their diet. The selected prebiotic components, serving as a substrate for the normal intestinal microbial flora, have a substantial role in the body's ability to assimilate carbohydrates (glucose tolerance) in regulating body mass, which opens the prospect of their use as a component of symbiotics in human metabolic disorders.

Keywords: prebiotics, metabolic disorders, autoimmune and chronic diseases, component of symbiotics, intestinal microbial flora.