
ASSESSMENT OF THE INFLUENCE OF THE FOOD PRODUCT OF GMO ON THE SEXUAL FUNCTION AND ARE BIOCHEMICAL RESEARCH WHITE LABORATORY OUTBREED RATS

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ABSTRACT:

The aim of the study was to study and evaluate effects of GM- product axial № 24 flour on the reproductive function of laboratory animals (white mongrel rats) in experiment. Found that when included in feed rations, studied the GMG product (soy flour № 24) had gonodotoxicity effect on male white outbred rats in experiment. When feeding this product had virtually no visible adverse changes in the genitals and sexual functions of female white rats.

KEYWORDS: GM – product, soy flour, white outbred rats, gonodotoxicity action, experiment.

INTRODUCTION:

Genetically modified objects (GMOs) are increasingly used for human and domestic animals, but there is still no definite answer to the question of the possible negative impact of GM products on the body, especially with prolonged use. The need for the use of food additives is dictated by several reasons: the first is the most rational use of grown and produced agricultural products. This is due to the fact that during the cooking process a valuable part of the produced agricultural raw materials is lost; the second is the inability to

use previously available raw materials; the third is the creation of new types of products from unconventional raw materials [1].

The safety assessment system for genetically modified organisms (GMOs) of plant origin, adopted in the Russian Federation, along with general toxicological studies provides for the study of specific types of toxicity, such as genotoxicity, immunotoxicity, allergenicity and reproductive toxicity. In accordance with established research practice, the study of the reproductive toxicity of GMOs refers to optional studies carried out in case of proven need [2, 3].

Based on the fact that the body is a complex biological system, in order to maintain homeostasis, in which adaptation processes occur at different levels, it is necessary to study changes in the body of laboratory animals when GM products are introduced into the diet, which will make it possible to evaluate the negative and/or positive effects of these products [4,5].

PURPOSE OF THE STUDY:

Studying and evaluating the effect of a GM product - soy flour No. 24 on the sexual function of laboratory animals (white outbred rats) in the experiment.

MATERIALS AND METHODS:

To conduct research, 90 white outbred rats weighing at least 80 grams were involved in the experiment. They were divided into the following groups: group 1 - males who were introduced soy flour No. 24 (n = 35) into the diet; Group 2 - females who were introduced soy flour No. 24 (n = 35) into the feeding ration; Group 3 - males who received a general brew diet without adding soy flour No. 24 (control, n = 10); Group 4 - females who received a general brew diet without the addition of soy flour No. 24 (control, n = 10).

Given the difference between experimental studies and clinical, laboratory, instrumental and medical-social studies, we strictly observed all ethical principles of working with experimental animals and the rules of biological safety. When choosing an experimental material, the basis was the numerous studies carried out, the convenience of working with it, its cheapness and the high possibility of achieving the purity of the experiment in a methodological aspect. All laboratory animals were kept in quarantine for 21 days before the start of the experiments and made sure that they did not suffer from infectious and other diseases. Before the experiments, all animals were divided into groups, then they were weighed for 3 days and thermometry was performed. During these days, a decrease in body weight and an increase in body temperature (average rate of 38.5-39.5 ° C) were not detected.

All studies were carried out using modern, traditional research methods set forth in the Sanitary Rules and Norms of the Republic of Uzbekistan (SanPiN RUz) No. 0185-05 [4]. Before starting the research, we compiled a methodology for the step-by-step implementation of these studies.

Statistical processing of the material was carried out by traditional methods of variation statistics, all the results and

conclusions are based on the principles of evidence-based medicine.

RESULTS AND DISCUSSION:

On the 12th day of feeding with soy flour No. 24 (0.2-0.3 g per rat per day), a sharp increase in the size of the testes, the appearance of signs of inflammatory changes (swelling) were observed in all (100%) males of the 1st group (n = 35), redness, places of necrosis in places), in addition, a deterioration in the general condition of the animals (decreased activity and appetite) was noted. Almost completely stopped sexual activity and the fertilization ability of males of the experimental group (1 group). We noted this condition as a possible gonadotoxic effect.

In group 2 (females that received a GM product, n = 35), there were practically no changes in the genital organs and sexual function.

In both control groups (groups 3 and 4, n = 10 each), the above changes observed in group 1 were also not observed. After termination of feeding with soy flour No. 24 in males of the 1st group, all visible pathological changes disappeared after 5-6 days.

In the second series of experiments, the same soy flour No. 24 was introduced into the diet of the same laboratory animals, but at a reduced dose 10 times (0.02-0.03 g per rat per day).

All the above visible pathological changes in the testes in males of the 1st group were again repeated on the 12th day of feeding with soy flour No. 24, but with less intensity and only in 40.0 ± 8.3% (n = 14) animals. On the 39-41th day of feeding, 2 lethal cases were recorded in males of the 1st group (6.0 ± 4.0%). As in the first series of experiments, in females of group 2 and in both control groups (groups 3 and 4), no visible changes were noted.

Experimental research has been undertaken in rats without white matter to

investigate the positive or negative effects of gene modification products on the body. As a genetically modified product, soybean crops grown abroad and imported only for scientific research in our country were used. In order to clearly distinguish it, it was given the name of the shadow number 24.

The biochemical parameters of the blood were tested by laboratory methods in experimental and control groups in white rats. Peripheral blood test animals were removed from the sleep artery by centrifugal tissues.

The results showed that creatinine 1.3 times more in the experimental group than in the control group, bilirubin 1.7 times, AST 1.5 times, ALT 1.4 times, mochevin 1.4 times, glucose 1.4 times ($P < 0.05$).

The total protein levels in the experiment group animals compared to the control group increased by 1.1 times ($p < 0.05$). In addition, the levels of free bilirubin in experimental animals increased 1.5 times in comparison with the control group ($p < 0.05$).

Thus, the total protein increase in the blood of the first-generation animals, experimental group, was characterized by significant decrease in free bilirubin, bilirubin, ALT, AST, machevina and glucose control group, and the balance of biochemical parameters was deteriorated. This data showed the tension in the hepatic-bilirum system in experimental animals. In the second generation of experimental groups, multidimensional changes in biochemical changes were observed in the control group data. Studies have shown that biochemical parameters of blood are unlikely to make certain conclusions about the effect of GM product on the body. These indicators are insignificant for the GM-product medical and biological assessment of the risk of organism and, therefore, it is not expedient to identify them for toxicological evaluation.

Based on these facts, studies on the study of biochemical parameters of third-generation liver blood have not been conducted.

FINDINGS:

1. It was found that when included in the diet, the studied GM product (soy flour No. 24) had a gonadotoxic effect on male white outbred rats in the experiment.
2. It was revealed that when feeding with a GM product (soy flour No. 24), there were practically no visible negative changes in the genitals and sexual function of female outbred rats in the experiment.

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