THE MECHANISM OF ACTION OF ALLOXAN IN EXPERIMENTAL STUDIES

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Despite the significant development of diabetology, which is a priority area of health care development in many countries of the world, the problem of prevention, early diagnosis and treatment of diabetes (QD) in children and adults has become an acute medical and social problem. QD, which leads to severe complications and early disability in young organisms, is characterized by high mortality. Cell therapy allows you to ensure the full supply of the body with the necessary peptides and intercellular interaction factors, which contributes to the reparative regeneration of pancreatic tissues, thereby reducing insulin deficiency.

After administration of a diabetogenic dose of alloxan tetrahydrate, several phases of changes in blood glucose levels were observed: the first phase is hyperglycemic, reaching a maximum within the first 2-4 hours; the second is hypoglycemic, which mainly manifests itself within 15-24 hours, and finally the third phase is a phase of persistent hyperglycemia (more than 24 hours).

The first signs of diabetes mellitus were a sharp increase in daily water consumption (more than 120 ml), polyphagia, polyuria, hyperglycemia, sudden weight loss and hair loss. At various times during the experiment, gangrene with trophic ulcers of the lower leg and spontaneous amputation of the tail occurred. Approximately 15% of the animals died at various stages of the development of alloxan diabetes as a result of hyperglycemic or hypoglycemic coma.

4-6 hours after alloxan administration, a decrease in glucose levels was noted, which was accompanied by an increase in blood insulin levels to 12.3 μIU/ml and C-peptide levels to 0.5 ng/ml. Subsequently, after 1 day, insulin levels increased to 12.7 μIU/ml and C-peptide to 1.48 ng/ml. At the same time, a decrease in corticosterone levels from 609 to 456 nmol/l, an increase in total triiodothyronine from 1.08 to 2.15 nmol/l, and total thyroxine from 20.1 to 36.4 nmol/l were observed. Biochemical tests showed a decrease in glucose levels to 4.12 mmol/l. Triglyceride concentrations also decreased to 0.48 mmol/l, and ZYLP levels increased to 34.3%, although ZPLP levels remained virtually unchanged.

Literature

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