

## FACTORS AFFECTING BLOOD GLUCOSE CONTROL

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**Abstract:** *In human and animal tissue, glucose can be converted into a reserve carbohydrate - glycogen. It participates in many metabolic reactions, is the main part of carbohydrate metabolism. It is the main source of energy for organisms. Human blood contains about 100 mg of glucose, and its amount is controlled by hormones and the central nervous system. It controls the water regime in the body, monitors the activity of cells, neutralizes toxic substances, increases the muscle function of the heart, expands blood vessels, and accelerates the excretion of urine. In many diseases, the amount of glucose in the blood increases, as a result, it begins to be excreted in the urine.*

**Key words:** *glucose, hormone, metabolic processes, glands, insulin, hypoglycemia, carbohydrate, ketone.*

### INTRODUCTION

Controlling the amount of glucose in the blood is a complex process, in which other organs besides the liver are actively involved. Their functions are provided by the interaction of nervous and humoral factors. Hormones in the body also have a great influence on the stability of glucose in the blood and its management.

Physiological control of all metabolic processes in the body is carried out through nervous and humoral mechanisms. Humoral, i.e. communication through fluids, mainly depends on the participation of chemical molecules called hormones, which are products of internal secretion glands.

In normal animals, when insulin is injected, their blood sugar levels decrease. Biological standardization of the hormone is based on the measurement of hypoglycemia observed under the influence of the hormone. In general, when insulin is injected into the body, the following symptoms are observed:

1) Oxidation of glucose in tissues; 2) In tissues, first of all, in the liver, the conversion of glycogen or transfer to fats is accelerated; 3) Carbohydrate synthesis from non-carbohydrate sources in the liver; 4) The processes of formation of excess ketone bodies are inhibited.

### LITERATURE REVIEW

Kasimov's textbook "Biochemistry" (1987) contains information about endogenous and exogenous formation of glucose, a representative of carbohydrates in the body. Exogenous glucose is formed at the expense of food that comes from outside. And

endogenous is formed from the breakdown of glycogen stored inside. Sucrose ingested with food is broken down into glucose and fructose in the small intestine under the action of sucrase enzyme. Lactose is broken down into glucose and galactose. About 90% of glucose passes through the blood, and 10% goes to the lymph, and then it is absorbed into the blood. Information is provided that if carbohydrates are completely removed from the diet, the necessary carbohydrates for the body will be synthesized from other non-carbohydrate substances.

The health encyclopedia (Tashkent 1985) provides information on natural sources of carbohydrates, carbohydrate metabolism and its control by nervous and humoral pathways. In addition, the importance of insulin, glucagon and adrenaline hormones in the synthesis of glycogen from glucose and the breakdown of glycogen is widely covered. Insulin is the only hormone that lowers blood glucose levels. The hormones glucagon and adrenaline have the opposite effect on insulin. Basic information about diabetes is also provided.

Through the textbook "Biochemistry" (Tashkent, 1996) by Yo. Kh. Torakulov, we got basic information about the chemistry and metabolism of carbohydrates. In this literature, information about the importance of carbohydrates in the body, their classification and their main representatives has been extensively discussed. Carbohydrates are the main source of energy for the body, and oxidation according to the pentose cycle has been widely discussed. In addition, general information about the processes of glycolysis, breakdown and synthesis of glycogen, and about monosaccharides, disaccharides and polysaccharides and their main representatives is given.

**DISCUSSION** Despite the fact that there is a lot of information on the connection between insulin and metabolic processes in the body, the mechanism of its action is still not clear. According to one of the most common hypotheses, the acceleration of the oxidation of carbohydrates in tissues by insulin depends on the increase in the entry of glucose into the cell through the cell membrane. This hypothesis is confirmed by an experiment that shows that insulin increases the distribution phase in the body. But the effect that shows an increase under the influence of insulin can be determined by the increase in the activity of certain enzymes.

In the body, mainly glucuronic acid, and in some animals with sulfuric acid, the hormones released in the form of esters are in many cases returned to  $\alpha$ -chain, as a result of such a reaction, tetrahydro compounds are formed. The amount of hormones and their metabolites excreted in urine depends on age and gender. From a clinical point of view, examination of corticosteroids and some of their functions in urine and blood plasma is important in determining the functional changes of the adrenal gland and their reactive state.

The liver quickly adapts to changes in the amount of glucose in the blood, or vice versa, by disposing of it. In both cases, the homeostatic function of the liver is

determined by glycogen metabolism. The amount of glycogen in the liver of humans and other warm-blooded animals varies daily and seasonally, which of course depends on the composition of the food received, the frequency of feeding and other effects. Glycogen makes up 5% of the weight of the liver in a person after a mixed meal under normal conditions, and 10% during a carbohydrate meal. In the human liver, 7% of the total amount can be broken down and synthesized anew during the day. (V.D. Romanenko 1978) It was observed in the experiments that the human liver releases  $3.5 \pm 0.7$  mg of glucose per 1 kg of weight into the general circulation every minute. If it is calculated according to the body surface ( $1 \text{ m}^2$ ), the average is 116 mg/minute. If there is a lack of carbohydrates in the diet, the amount of glycogen in the liver decreases in a short time. If food is not taken for a long time, i.e. during starvation, the level of glucose in the blood is maintained due to the formation of glycogen from fats and proteins in the liver. It is known to be synthesized from glycogen and lactic acid.

**RESULTS** As a result of the complex transformation of carbohydrates in the human and animal liver (glycogen formation, storage, decomposition), the most important link in the management of carbohydrate metabolism is the maintenance of blood sugar level. Part of the glucose absorbed from the intestine into the blood is stored in the liver and converted into glycogen. Its amount depends on the diet. When a person eats a normal, mixed meal, 3-5% of glucose is converted into glycogen. 30% of glucose is used for the formation of fats, and 60-70% is used for oxidation to carbon dioxide and water.

The amount of glucose in the arterial and capillary blood of a healthy person is 54-96 mg/100 ml (according to the method of glucose oxidation) and 80-120 mg/100 ml (according to the method of Hagedorn and Jensen). Venous blood contains little glucose, because it has been absorbed by the tissues from the blood. The only organ that releases endogenous glucose into the general circulation is the liver. When eating food rich in carbohydrates, the amount of glucose in the portal vein of the liver reaches 200-220 mg / 100 ml. But in all the rest of the circulatory system, the amount of glucose in a healthy person does not change or increases slightly. As a result, excess glucose is excreted in the urine. It returns to normal after 1.5-2 hours. When blood glucose is 120-150 mg%, glucose begins to be excreted in the urine. This condition is observed when 160-180 g of sugar is consumed at once. In a healthy person, carbohydrate starvation or high consumption of glucose during active physical work does not cause significant changes in blood glucose levels.

Thus, the level of glucose in the blood in the body is continuously maintained, i.e. it is homeostatically controlled. In homeostasis, a decrease in the concentration of a substance in the body initiates processes aimed at restoring the normal concentration of this substance. That is, autoregulation is realized. Control of blood glucose is the implementation of the homeostatic regulatory function of the liver (A.A. Anisimov 1986). The transformation of glucose into glycogen and vice versa is carried out under the influence of hormones, the hormone insulin reduces the amount of glucose in the blood,

the hormones glucagon and adrenaline have the opposite effect on insulin, the synthesis of these hormones, in turn, depends on the amount of glucose in the blood, thus It has a closed loop of automatic control. The amount of glucose in the blood is directly affected by the central nervous system. The synthesis of these hormones, in turn, depends on the amount of glucose in the blood.

**Table-1**  
**Blood sugar results of students aged 20-25 years**

	Tested	Glucose mg %					
		1	2	3	4	E	x
	<b>Group 1</b>	<b>20-25 years old</b>					
1	Rahimova G	83	79	73	77	312	78
2	Siddiqova G	80	81	84	87	332	83
3	Qo'chqorova R	81	83	87	88	339	84,7
4	Umarova D	77	80	79	83	319	79,7
5	Dehqonova F	85	88	83	89	345	86,2
	Total $E_{x1}$	406	411	406	424	164	411,6
	$x S_x$	$x=81,2$ $S_{x\pm 1,8}$	$x=82,2$ $S_{x\pm 2,0}$	$x=81,2$ $S_{x\pm 1,8}$	$x=84,8$ $S_{x\pm 1,8}$	$x=329$ $S_{x\pm 7,5}$	$x=82,3$ $S_{x\pm 1,8}$

**Table-2**

**Results of blood sugar levels of volunteer girls aged 30-35**

	Tested	Glucose mg %					
		1	2	3	4	E	X
	<b>Group 2</b>	<b>30-35 years old</b>					
1	Nurmatova D	91	94	96	92	373	93,2
2	Ibragimova R	94	96	95	90	375	93,2
3	Soliyeva N	87	89	92	94	362	90,5
4	Abdullayeva R	88	91	86	88	353	88,2
5	Alimova N	90	93	89	91	365	90,7
	Total $S_{x1}$	450	463	458	455	1826	456,3
	$x$	$x=90$	$x=92,6$	$x=91,6$	$x=91$	$x=365,2$	$x=91,2$
	$S_x$	$S_{x\pm 1,5}$	$S_{x\pm 1,5}$	$S_{x\pm 2,2}$	$S_{x\pm 1,3}$	$S_{x\pm 5}$	$S_{x\pm 1,25}$

A decrease in blood glucose by 60-70 mg% leads to the reflex excitation of the corresponding centers located in the hypothalamus. The impulse goes from the central nervous system to the liver through the sympathetic nerve. A part of the liver glycogen is broken down to form glucose. When the amount of glucose in this process returns to the initial state, the impulses from the central nervous system weaken and the breakdown of glycogen is stopped.

### CONCLUSION

Thus, due to the control of the central nervous system and the endocrine system, the level of glucose in the blood is automatically maintained. Blood glucose levels are also affected by the cerebral cortex, for example, emotional hyperglycemia - showing a transition to an excited state, an increase in blood glucose levels (in athletes before the start, in students before an exam) possible.

### REFERENCES:

1. А.А. Анасимов "Основы биохимии" М. "Высшая школа" 1986 г.
2. В. Д. Романенко "Печень и регуляция межтучного обмена" М. "Наукова думка" 1978 г.
3. Yo.X.To'raqulov "Bioximiya" Toshkent "O'zbekiston" 1996 y.
4. Yuldasheva, S. Q. (2020). CHARACTERISTICS OF DISTRIBUTION OF APHIS CRACCIVORA APHID IN THE VERTICAL REGIONS OF SOUTHERN FERGANA. *Theoretical & Applied Science*, (5), 852-854.
5. Kobiljonovna, Y. S. (2022). Little characteristics of bees distributed in the conditions of the fergana valley. *Innovative Technologica: Methodical Research Journal*, 3(02), 41-48.
6. Yuldasheva, S. Q., & Khabibjonova, O. (2021). Bioecological Properties And Significance Of Some Rabbit Breeds. *The American Journal of Applied sciences*, 3(05), 12-16.
7. Yuldasheva, S. Q. (2021). Bioecological features of the braconoid family in Fergana Valley. *Asian journal of multidimensional research*, 10(4), 965-968.
8. Yuldasheva, S. Q., & Soyibnazarov, B. E. (2021). Bio ecological properties and significance of california red worm. *ACADEMICIA: An International Multidisciplinary Research Journal*, 11(4), 1946-1950.
9. Yuldasheva, S. K., & Mukhammedov, M. M. GNA (2022). Dependence of Vertical and Horizontal Distribution of Juice in Nature on Soil-Climate Conditions. *RA Journal of Applied Research*, 8(01), 50-52.
10. Yuldasheva, S.Q. (2022). PANARHIS JUGLANDIS TURI BO'G 'INLARINING RIVOJLANISH SIKLI. *RESEARCH AND EDUCATION*, 1(3), 40-45.
11. Yuldasheva Shokhista Kobiljonovna, Saydaliyeva Roxatoy Zaylobidinovna, Askarova Gulmira Numonjon kizi, & Obidova Gulmiraxon Farxodjon kizi. (2022). THE

IMPORTANCE OF BIOLOGICAL PROTECTION IN COOPERATED FIGHT AGAINST PLANT PESTS. *European Journal of Agricultural and Rural Education*, 3(5), 44-47.

12. Sh. Yuldasheva, O. Gofurova, & G. Askarova (2022). PROSPECTS OF CROP GROWING AND SIGNIFICANCE. *Science and innovation*, 1 (D6), 298-302. doi: 10.5281/zenodo.7191272

13. Yuldasheva Shokhista Kobiljonovna, & Khamidov Abubakir Kodirjon o'g'li. (2022). IMPORTANCE OF BIOLOGICAL CONTROL AGAINST APPLE PESTS. *Proceedings of International Conference on Scientific Research in Natural and Social Sciences*, 1(1), 201–207.

14. Yuldasheva Shokhista Kobiljonovna, & Khamidov Abubakir Kodirjon o'g'li. (2022). AGROTECHNOLOGICAL MEASURES AGAINST APPLE PESTS IN NEW INTENSIVE ORCHARDS. *Proceedings of International Conference on Scientific Research in Natural and Social Sciences*, 1(1), 208–211.

15. Sh. Yuldasheva, O. Gofurova, G. Askarova INTERNATIONAL SCIENTIFIC JOURNAL VOLUME 1 ISSUE 6 UIF-2022: 8.2 | ISSN: 2181-3337 PROSPECTS OF CROP GROWING AND SIGNIFICANCE.

16. Juraeva, K. (2021). PRINCIPLES OF USING NETWORK TOOLS IN IMPROVING THE METHODS OF DISTANCE TEACHING “HUMAN ANATOMY AND PHYSIOLOGY” IN HIGHER EDUCATION. *CURRENT RESEARCH JOURNAL OF PEDAGOGICS*, 2(10), 133-137.

17. Жўраева, Х. (2021). ЛОЙИҲАВИЙ ЁНДАШУВ АСОСИДА “ОДАМ ВА УНИНГ САЛОМАТЛИГИ” КУРСИНИ МАСОФАВИЙ ЎҚИТИШ ЖАРАЁНИ САМАРАЛИ ТАШКИЛ ЭТИШ УСУЛЛАРИ. *Интернаука*, (22-4), 94-95.

18. Тоштемирова, М. А. (2022). МАСОФАВИЙ ТАБЛИМ ЖАРАЁНИДА “ОДАМ АНАТОМИЯСИ ВА ФИЗИОЛОГИЯСИ” ФАНИДАН АНАТОМИК ВА ФИЗИОЛОГИК БИЛИМЛАРНИ ШАКЛЛАНТИРИШ МЕТОДИКАСИ. *Science and innovation*, 1(JSSR), 11-17.

19. Muazzam, T. (2022). Main activity criteria in the development of imagination of primary school students. *Web of Scientist: International Scientific Research Journal*, 3(6), 320-322.

20. Muazzam, T., & Maftuna, T. (2022). METHODOLOGY OF FORMATION OF COMPETENCES IN STUDENTS IN TEACHING BIOLOGY. *CENTRAL ASIAN JOURNAL OF THEORETICAL & APPLIED SCIENCES*, 3(6), 118-119.

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