

Glycemia

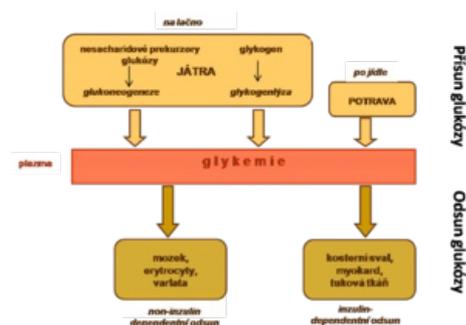
The concentration of glucose in blood (**blood glucose**) is maintained in a narrow range of 3.9-5.6 mmol/l on an empty stomach and after a meal lower than 10 mmol/l. It is tightly regulated by a number of mechanisms: insulin, which lowers blood glucose, and anti-insulin hormones - glucagon, catecholamines, glucocorticoids and growth hormone which increase blood glucose. The liver is also significantly involved in the regulation of glucose homeostasis. Maintaining a constant blood glucose level is essential for the activity of the CNS and other tissues and cells (eg erythrocytes).

Sources of glucose

The exogenous **glucose source** for the body is the Disaccharides and Polysaccharides in the diet. Glucose is formed by their breakdown in the small intestine and is utilized in the liver, muscle, adipose and brain tissue as a direct source of energy. Non-oxidized glucose is stored in the form of glycogen or converted to fatty acids and triacylglycerols. In the fasted state, normal glucose concentration is maintained by glycogen cleavage by glycogenolysis and glucose formation from non-saccharide precursors (amino acids, glycerol and lactate in the gluconeogenesis process).

Changes in blood glucose concentration

- A drop in blood glucose below 3.2 mmol/L is referred to as **hypoglycemia**. In hypoglycemia, the supply of glucose to brain tissue is compromised. It can occur during various diseases, most often in overdose antidiabetics, more rarely in long-term starvation, in some endocrine tumors or inherited metabolic disorders that also affect glucose metabolism (eg in antidiabetics). glycogenosis [glycogenosis]). Severe hypoglycaemia is accompanied by restlessness, sweating and tremor;
- Glycaemia elevated above the reference range is referred to as **hyperglycemia**. Chronic hyperglycemia is an underlying manifestation of *diabetes*. However, we may also encounter transient **non-diabetic hyperglycaemia**. All situations where there are elevated levels of catecholamines, glucocorticoids and other stress hormones lead to it, including a number of acute diseases. A change in the regulation of glucose metabolism leading to hyperglycemia also accompanies inflammatory conditions. Hyperglycemia can also be induced iatrogenically, most often as a result of treatment with steroid hormones and their analogues.



Origin of plasma glucose and its removal from plasma

Links

Related articles

- Glycaemia determination
- The blood glucose assessment is discussed together with the assessment of oGTT
- Hepatogenous diabetes

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