

The position of organs in energy metabolism

Liver

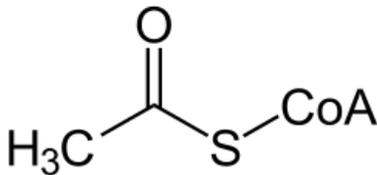
Hepatic cells (hepatocytes) have essential role at maintaining homeostasis , at synthesis molecules , at each other transformation nutrients and at regulation storage and release energy . Participates in metabolism all of them nutrients .

Metabolism of carbohydrates

In metabolism of carbohydrates is important their function ' *short term , in scope hours , and long-term* , in scope days until weeks , **regulation glycemia** – glucostatic function liver . At high level glucose in vena portae po eat in the liver will start the synthesis of glycogen which consumes glucose taken up from the blood . On the contrary at starvation and decline glycemia with glucose adds to the circulation through glycogenolysis - breakdown stock of glycogen , possibly when they are supplies glycogen exhausted , gluconeogenesis .

V liver in progress also degradation fructose and galactose .

Metabolism of lipids



Some expensive metabolism lipids they are for the liver unique - synthesis ketolatin . Most tracks in progress and elsewhere , but in the liver they are quantitatively the most significant . It's running out here to oxidation greasy acids . At starvation in progress this range track _ greater than _ liver they need for production energy for your own consumption . That of the resulting acetyl-CoA is subsequently make up ketone bodies , which liver alone process they can't , so they release them into circulation , where serves like alternative source energy . In the liver in progress also synthesis cholesterol .

The key is i position liver in metabolism lipoproteins :

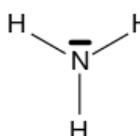
- They synthesize VLDL, part of HDL;
- convert IDL to LDL;
- they degrade chylomicron remnants , HDL and part of LDL.

Metabolism of proteins and amino acids

In metabolism proteins and amino acids they are again some reactions for the liver specific - synthesis of urea . Other reactions , for example deamination and transamination amino acids whose synthesis non-essential of amino acids , are ongoing and in others authorities . Liver also synthesize (excl immunoglobulins) all plasmatic proteins , e.g. _ albumin or coagulation factors .

 For more information see *Metabolism amino acids* .

Kidney

 Concentration of urine and transport of substances in the kidneys requires big amount energy , therefore the consumption of ATP, especially in the cortex , is high .
ATP is obtained oxidative metabolism glucose , lactate , fatty acids and amino acids .

From metabolic tracks here in progress also gluconeogenesis , esp at starvation . Hers main substrate they are carbonaceous skeletons amino acids - mainly glutamine . Ammonia obtained at reactions are excluded directly into the urine , where serves like buffer .

Skeletal muscles

Skeletal muscles they consume at yours activities big amount energy . ATP regeneration is underway on the way aerobic i anaerobic glycolysis , degradation greasy acids and also from creatine phosphate .

The role of the skeleton is essential muscle in metabolism amino acids , mainly branched (valine , leucine and isoleucine) . Their carbonaceous skeletons used for creation energy and their amino groups are used for

synthesis alanine , glutamine and glutamate , which relaxes skeletal muscle in big quantity into circulation .
From alanine then liver they can regenerate glucose - the so- called alanine cycle .

 For more information see *Glucose-Alanine cycle* .

Glucose-alanine cycle

Fatty tissue

Fat tissue is postprandial — that is after food when _ prevails effect of insulin , used like **warehouse triacylglycerols** . Saves how lipids taken in food , so created liver . At fasting when _ prevails the effect of glucagon , occurs opposite to lipolysis - release free greasy acids and glycerol .

Brain

Glucose is the main one energetic substrate brain , daily consumption is 120 g adapted starvation which arises approximately after 3 weeks without adequate supply energy , can brain cover up to 50% energy consumption by oxidation ketone bodies .

Interaction organs during physical activities

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