Don estridge middle school summer reading

Name: Avalos Mauritius Cane / Matter: Clinical Biochemistry / Section: 206 / Date: 19/02/2018 Catabolic Route (Degradation) Destroys Complex Molecules Proteins, Polysaccharides, Lipids and converts into simple as carbon dioxide, ammonia and water. 1 General metabolism is the sum of all chemical changes that occur in a cell, tissue or body. There are two main ways to metabolism: 2 anabolic pathways. (Synthesis) Carbohydrate Metabolism Study Metabolic Map is form complex end products of simple precursors A useful vision for tracking the connections between the paths and the best understanding of them. Glycolysis is a complete process for atp generation by dividing glucose into two lactic acid molecules. Gluconeogenesis is the process that occurs in the conversion of pyruvate into glucose. It has 3 differences in glycolysis, which are: 1.- The production of pyruvate and ATP phosphoenolpiruvate. 2.- Production of fructose-1, 6- fructose biphosphate 6 phosphate. 3.- Glucose production 6 glucose phosphate. Main processes Glucogenesis Is the synthesis of glycogen, this process is coupled with the transport of K+ in the cell. Backup Polysacchaid glycogen, degraded via shortening and deramifying; it will only be dismantled if necessary. Glycogenolysis consists of the removal of glucose from glycogen for use; removed from the non-reducing ends of the glycogen. Intracellular Very fast signals generated from inside the cell, vital for continuous regulation, from now on, of metabolism. Intercellular signals, which are essential for the development and supervivience of the organism. Promotes long-term metabolism integration. It can be mediated by contact of superfices or have communicative joints. Cellular Communication Regulation Second Messenger Systems Conceptual map on carbohydrate metabolism are hormones and neurotrnasmitors that, together with their receptors, perform a number of specific intracellular reactions such as glucose. Name: Avalos Mauritius Rod / Matter: Clinical Biochemistry / Section: 206 / Date: 19/02/2018 Bibliography 1. McGilvery RW. Biochemical concepts. First. Ed. Barcelona, Spain.: Reverté; 1977. 2nd Ferrier DR. Biochemistry. Seventh. Note: Wolters Kluwer. 3. Silva PCGyLV. Notes of Human Biochemistry Intermediate Metabolism. First. cuenca, Ecuador.; 2006. 4. Macarulla JM, Goi FM. Human Biochemistry: Basic course. Second Ed. Barcelona, Spain.: Reverté.; 5. Pertierra AG, Elmo R, Aznar C, López CT. Metabolic biochemistry. First. Ed. Madrid, Spain.: Tébar.; 6. Pertierra AG, Elmo R, Aznar C, López CT. Metabolic biochemistry. 1. Ed. Madrid, Spain.: Tébar.; 2001. 7. MK, Farrell SO. Biochemistry. First ed. Pacific Grove, Calif. : Brooks/Cole ; Londo: Thomson Learning; 2007. CARBOHYDRATE METABOLISM 1.1.1. It is the metabolic pathway responsible for the oxidation of glucose to obtain energy for cell1.2. Phase 11.2.1. Glucose is phosphorylated twice and fractionated paws form two molecules of glyceraldehyde-3-phosphate.1.2.1.1. Reactions1.2.1.1.1. 1. Glucose synthesis-6-phosphate1.2.1.1.2. 2. Conversion of glucose-6-phosphate into fructose-6-phosphate1.2.1.1.3. 3. Fructose phosphorylation-6-phosphate1.2.1.1.4. 4. Unfold fructose-1,6-diphosphate1.2.1.1.5. 5. Interconversion of glyceraldehyde-3-phosphate and dihydroxyzetophosphate1.3. Phase 21.3.1. Glyceraldehyde-3 phosphate is converted into pyruvate.1.3.1.1. Reactions1.3.1.1.1. 6. Oxidation of glyceraldehyde-3-phosphate1.3.1.1.2. 7. Transfer of phosphate group1.3.1.1.3. 8. Interconversion of 3-phosphoglycerate and 2-phosphoglycerate1.3.1.1.4. 9. Dehydrogenation of 2-phosphoglycerate1.3.1.1.5. 10. Synthesis of Pyruvate1.4. 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It consists of 10 reactions equal to glycolysis, but in gluconeogenesis irreversible reactions change2.2. Different reactions2.2.1. 1. PEP synthesis --> irreversible reaction2.2.1.1. Pyruvate is converted into oxaloacetate by the action of CO2, H2O and ATP and catalyzed by pyruvate carboxylase.2.2.1.2. Oxaloacetate is decarboxylate and phosphorylates of PEP carboxycinase, is powered by hydrolysis of guanosine triphosphate.2.2.1.3. Cells that lack PEP carboxychinase are used by the malate shuttle. Oxaloacetate is transmitted by malate dehydrogenase in malate.2.2.2. 2. Conversion of fructose-1,6-diphosphate into fructose-6-phosphate --> irreversible reaction2.2.2.1. • Exergonica reaction2.2.2.2. • Fructose-1,6-diphosphate in fructose-6-phosphate is produced inorganic phosphate.2.2.3. 3. Glucose formation from glucose-6-phosphate2.2.3.1. • Glucose-6-phosphate hydrolysis to glucose2.3. Cori2.3.1 cycle. During exercise, lactate occurs in muscle cells, which are transported through the bloodstream to the liver, the lactate is converted into glucose by gluconeogenesis.2.4. Glucose-alanine cycle2.4.1. In the muscle, alanine is formed from pyruvate and then transported through the bloodstream to the liver. In the liver, it is converted into pyruvate by gluconeogenesis.2.5. Regulation of glycogenics2.5.1. • Glucose-6-phosphatase2.5.2. • Fructosephosphatase --> is activated by citrate stimulation and inhibits AMP and fructose-2,6-fiphosphate.2.5.3. • PEP carboxyicinase --> is activated by acetyl-CoA and inhibited by AMP and fructose-1,6-diphosphate. 3. WAY OF PENTOSAS PHOSPHATE (anabolic)3.1. What is this?3.1.1. Glucose oxidation is glucose oxidation in which ATP is not produced. Its main products are NADPH and ribose-5-phosphate3.2. Oxidative Phase3.2.1. Reactions3.2.1.1. 1. Glucose-6-phosphate dehydrogenase catalyzes the oxidation of glucose-6-phosphate to 6-phospho-D-glucono-□-lactone and produces a NADPHH3.2.1.2. 2. Glucose-6-phosphate to 6-phospho-D-glucono- □-lactone hydrolyses for the production of 9-phospho-D-gluconate.3.2.1.3. 3. During the oxidative decarboxylation of phosphogluconate produces a reaction ribulose-5 phosphate, another NADPH3.3 molecule is produced. Non-oxidative phase3.3.1. Reactions3.3.1.1. 1. Xylulose-5-phosphate transfers a two-carbon unit to ribos-5 phosphate, which produces glyceraldehyde-3-phosphate and sedoheptulse-7-phosphate.3.3.1.2. 2. Carbon molecules of xylulyse-5-phosphate are transferred to erythrose-4-phosphate to form molecules of glyceraldehyde-3-phosphate and fructose-6-phosphate3.4. Regulation of phosphate pentosis pathways3.4.1. •It is regulated to meet the requirements of NADPH and ribose-5-phosphate3.4.2. •In the oxidative phase, G-6-PD catalyzes a controlled passage of the phosphate pentose pathway. 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Fructose-1 phosphate is divided into DHAP and glyceraldehyde-3 phosphate by the reaction of the enzyme fructose-1-phosphate aldolase 5. GLYKOGENSTOFFWECHSEL5.1. CONCEPT5.1.1. Glycogen stores glucose, glycogen synthesis and degradation is regulated with caution so that it may contain enough glucose for the body's energy needs, within the metabolism of glycogen are two processes of glycogenesis and glycogecolysis controlled by 3 enzymes: insulin, glucagon and epinephrine.5.2. GLUCOGENESIS5.2.1. CONCEPT5.2.1.1. Glycogen synthesis occurs after a meal when the blood sugar concentration increases, given from glucogeno-6-phosphate glycogen synthesis.5.2.2. REACTIONS5.2.2.1. 1. Glucose synthesis-1-phosphate5.2.2.1.1. Glucose-6-phosphate is reversibly converted into glucose-1 phosphate by phosphate glucomutase, the phosphate group of the enzyme is transferred into glucose-6-phosphate, forming glucose-1,6-phosphate, group C-6 is transferred to its residues of the enzyme.5.2.2.2. 2. UDP-glucose synthesis5.2.2.2.1. Glucoside link formation is an endergonic process. Uridine-glucose diphosphate (UDP-glucose) is more reactive than glucose, glucose-1 phosphate, which is bound to an UTP molecule, makes a reversible reaction as the conversion into UDP glucose pyrophospholase.5.2.2.3. 3. Glycogen synthesis from UDP-glucose5.2.2.3.1. Two enzymes are needed from UDP glucose: glycogenlytase catalyzes the transfer of the UDP glucose glycosyl group to the non-reducing ends of glycogen and amyl (1,4-1,6) glucose transferase produces bonds (1,6)5.3. GLUCOGENOLYSIS5.3.1. KONZEPT5.3.1.1. Glucose-1 phosphate, the main product of glyconolysis, is derived from glycolysis in muscle cells.5.3.2. REACTIONS5.3.2.1. 1. Glucose removal from non-glycogen-reducing ends5.3.2.1.1. Glycogen phosphorylase breaks the α (1.4 located in the branches) form glucose-1-phosphate.5.3.2.2. 2. Hydrolysis of glucoside bonds α (1.6) at glycogen branch points.5.3.2.2.1. 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