

Past Papers

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



MID – Lecture 10 to 13
metabolism

﴿ وَإِن تَتَوَلَّوْا يَسْتَبَدِلْ قَوْمًا غَيْرَكُمْ ثُمَّ لَا يَكُونُوا أَمْثَلَكُمْ ﴾

اللهم استعملنا ولا تستبدلنا

Written by:

- Ibraheem Samarah
- Tareq smairat



Q 1: When pyruvate is converted to lactate one statement is correct:

- a) NAD^+ is reduced to NADH
- b) NADH is oxidized to NAD^+
- c) The reaction is irreversible
- d) Pyruvate is reduced to form lactate
- e) b+d

Answer : e

Q 2: How many CO₂ molecules result from the oxidation of one mole of glucose?

- a) 3
- b) 2
- c) 4
- d) 6
- e) 12

Answer : d

Q 3: True about isomaltase-sucrase enzyme:

- a) It's composed of 2 polypeptide chains.
- b) It can metabolize lactose, sucrose and isomaltose.
- c) It is a glycoprotein.
- d) It's cleaved pre-translationally.

Answer : c

Q4 : Which of these transporters is insulin dependent glucose transferase?

- a) Glut 5
- b) SglT
- c) Glut 4
- d) Glut 3
- e) Glut 7

Answer : c

Q 5: Acetaldehyde is reduced to ethanol by?

- a) Alcohol dehydrogenase
- b) Catalase
- c) Cytochrome P450 2E1
- d) All the above

Answer : a

Q6 : Net of ATP that results of glycolysis:

- a) 4
- b) 0
- c) 1
- d) 2
- e) 5

Answer : d

Q 7: Rate limiting step for glycolysis is catalyzed by:

- a) PFK-1
- b) Aldolase
- c) Pyruvate kinase
- d) hexokinase

Answer : a

Q 8: Which of the following is the transporter of fructose in intestine:

- a) GLUT 4
- b) GLUT 7
- c) GLUT 3
- d) GLUT 5
- e) GLUT 4

Answer :d

Q 9: Which of the following statements is correct regarding the enzyme that phosphorylates Fructose 6 phosphate to Fructose-1,6-bisphosphate:

- a) It catalyzes the rate limiting step of glycolysis
- b) Is called Phosphofructokinase II
- c) Can catalyze the reversible reaction
- d) A+b

Answer : a

Q 10: Which enzyme deficiency causes hemolytic anemia?

- a) Pyruvate kinase
- b) PFK-1
- c) PFK-2
- d) glucokinase

Answer : a

Q 11: All of the following cause lactic acidosis, except:

- a) Deficiency of lactate dehydrogenase
- b) Inhibition of electron transport chain
- c) Inhibition of Phosphofructokinase-1
- d) Low blood absorption of O₂ in lungs

Answer : c

Q 12: All of the following can result in lactic acidosis EXCEPT:

- a) Respiratory failure associated with COVID19.
- b) Direct inhibition of oxidative phosphorylation
- c) Uncontrolled haemorrhage
- d) Reduced tricarboxylic acid cycle activity.
- e) Activated gluconeogenesis.

Answer : e

Q 13: The reaction that is catalyzed by phosphofructokinase-1:

- a) is activated by high concentrations of ATP and citrate.
- b) uses fructose 1-phosphate as a substrate.
- c) is inhibited by fructose 2,6-bisphosphate.
- d) is near equilibrium in most tissues.
- e) is the rate-limiting reaction of the glycolytic pathway.

Answer : e

Q 14: Isomaltase is a mucosal enzyme that is used in the digestion of _____ bond:

- a) alpha 1,2
- b) alpha 1,1
- c) beta 1,4
- d) alpha 1,6
- e) alpha 1,4

Answer : d

Q15 : The glucose transporter whose expression on cell membrane is increased due to insulin secretion is:

- a) Glut 4
- b) Glut1
- c) Glut 5
- d) Glut 7
- e) Glut 2

Answer : a

Q 16: The Na⁺ monosaccharide cotransporter.

- a) uses ATP to drive the transport of sodium with glucose.
- b) is present in plasma membrane of hepatocytes.
- c) is insulin dependent.
- d) transfers glucose from high to low concentration by facilitated diffusion.
- e) is involved in glucose reabsorption in proximal tubules.

Answer : e

Q17 :B glycosidic bond is found in

- a) Isomaltose
- b) Maltose
- c) Lactose
- d) Trehalose
- e) starch

Answer : c

Q18 :The products of glycolysis under aerobic conditions in the muscle are

- a) pyruvate, NADPH and ATP.
- b) lactate, NADH and ATP.
- c) lactate and ATP.
- d) pyruvate, NADH and ATP.
- e) lactate, NADPH and ATP.

Answer : d

Q 19: The glucose transporter GLUT4

- a) is found in the pancreatic cells.
- b) is found in liver cells.
- c) can transport glucose against concentration gradient.
- d) is actually fructose transporter.
- e) is insulin sensitive.

Answer : e

Q 20: All of the following cause lactic acidosis, except:

- a) Deficiency of lactate dehydrogenase
- b) Inhibition of electron transport chain
- c) Inhibition of Phosphofructokinase-1
- d) Low blood absorption of O₂ in lungs

Answer : c

Q21: What is the net yield of NADH when 1 mole of glucose 6-phosphate is oxidized by aerobic glycolysis to yield pyruvate ?

- A) 0 mole of NADH
- B) 1 mole of NADH
- C) 2 mole of NADH
- D) 3 mole of NADH

Answer : C

Q22: The most important controlled step in the glycolytic pathway is:

- A) the formation of fructose 1,6-bisphosphate by PFK1
- B) the formation of glucose 6-phosphate
- C) the formation of glyceraldehyde 3 phosphate
- D) the formation of phosphoenolpyruvate

Answer : A

Q23: activators of the enzyme pyruvate kinase include :

- A) insulin
- B) fructose 1,6-bisphosphate
- C) fructose 2,6-bisphosphate
- D) A+B

Answer : D

Q24: Glucagon controls the entry of glucose into glycolysis by altering the enzymatic function of PFK-2 .

This inhibition results in the conversion of :

- A) fructose,6-phosphate into fructose 2,6-bisphosphate
- B) fructose 1,6-bisphosphate into fructose 2,6-bisphosphate
- C) fructose 2,6-bisphosphate into fructose,6-phosphate

Answer : C

Q25: which of the following enzyme of glycolysis catalyze the reaction of phosphoenolpyruvate (PEP) to pyruvate while making one molecule of ATP in the process ?

- A) enolase
- B) phosphoglycerate kinase
- C) pyruvate kinase
- D) aldolase

Answer : C

Q26: An enzyme in liver which is part of both the glycolytic and gluconeogenic pathway is :

- A) glucose 6-phosphatase
- B) PEP carboxykinase
- C)) fructose 1,6-bisphosphatase
- D) glucokinase
- E) glyceraldehyde 3-phosphate dehydrogenase

Answer : E

Q27: Glycolysis will cease if:

- A) Phosphofructokinase is activated
- B) Mitochondria aren't present in the cell
- C) NADH is not oxidized

Answer : C

Q28: The rate of glycolysis is increased by :

- A) Increased insulin/glucagon ratio
- B) ATP
- C) Citrate

Answer : A

Q29: under anaerobic conditions , a primary product of glycolysis is :

- A) Pyruvate
- B) Lactate
- C) ethanol

Answer : B

Q30: Which of the following enzymes of glycolysis is/are regulated?

- A) Glucokinase/hexokinase
- B) Aldolase
- C) Pyruvate kinase
- D) A AND C

Answer : D

Q31: The rate-limiting enzyme in glycolysis is :

- A) Hexokinase
- B) Glucokinase
- C) Phosphatase-1
- D) Phosphofructokinase-1
- E) Aldolase

Answer : D

Q32: the enzyme that has low k_m and low V_{max} for glucose is :

- A) Hexokinase
- B) Glucokinase
- C) Phosphofructokinase-1
- D) Aldolase

Answer : A

Q33: pyruvate carboxylase :

- A) Requires acetyl CoA for activity
- B) Occurs in the cytosol
- C) Catalyze an irreversible reaction in glycolysis
- D) Produces carbon dioxide

Answer : A

Q34: under anaerobic conditions , skeletal muscle tissue may continue to generate ATP from glucose metabolism (via glycolysis) , resulting in the conversion of glucose to :

- A) Acetyl-CoA
- B) Succinate
- C) Lactate
- D) Citrate
- E) Malonate

Answer : C

Q35: Citrate is used as :

a-PFK inhibitor

b-PFK activator

c-Hexokinase inhibitor

d-Glucokinase inhibitor

Answer : A

Q36: glucokinase , the liver enzyme has which of the following properties:

- A) A lower K_m for glucose than hexokinase
- B) Can be inhibited by glucose6-phosphate
- C) A higher K_m for glucose than hexokinase

Answer : C

Q37: Diabetic patient lost consciousness after she injected herself with insulin, we gave her glucagon and she recovered very fast. What metabolic pathway was activated?

a-Glycogenesis

b-Glycogen phosphorylase kinase activates glycogen phosphorylase

c-PFK2 is activated forming more Fructose 2,6-BP

d-Pyruvate kinase is allosterically activated

Answer : B

Q38: Cleavage of fructose 1-phosphate will form:

a-Glyceraldehyde and DHAP

b-G3P and DHAP

c-Dihydroxyacetone and G3P

d-Dihydroxyacetone and Glyceraldehyde

Answer : A

Q39: Which of the following is true about pyruvate dehydrogenase?

- a-It catalyses a reversible reaction
- b-It contains four coenzymes
- c-Its deficiency causes lactic acidosis
- d-It is inhibited by the presence of ADP

Answer : C

Q40: Which of the following is true regarding isomaltase?

a-It is found in the saliva

b-It has an α (1-6) glycosidase activity

c-It is a soluble enzyme

d-It cleaves α (1-4) glycosidic bond in dextrans

Answer : B

Q41: all of the following are positive regulator to PFK-1 except:

A-ATP

B-F-2,6-BPase

C-AMP

Answer : A

Q42: all of the following about GLUT true except:

A-facilitated diffusion

B-sodium independent

C-ATP dependent

D-tissue specific pattern

Answer : C

Q43: products of aerobic glycolysis:

A-2 ATP

B-2 NADH

C-2 pyruvate

D- ALL

Answer : D

Q44: Well fed state and we have High insulin to glucagon ratio which of the following enzymes will be activated?

- A) glycogen phosphorylase kinase
- B) adenylate kinase
- C) pyruvate kinase
- D) fructose 2,6 bisphosphatase
- E) all of the above

Answer : C

Q45: What are the effects of increased concentration of citrate?

- a) Increases the inhibitory effect of ATP
- b) Decreases the inhibitory effect of ATP
- c) Increases the activity of ATP
- d) Increases the activity of AMP

Answer : A

Q46: Which of the following are an example of epimers?

- a. glucose and galactose
- b. glucose and ribose
- c. mannose and glucose
- d. glucose and sucrose
- e. a + c

Answer : E

Q47: Which of the following carbohydrates is a triose?

- a. glucose
- b. ribose
- c. ribulose
- d. glyceraldehyde
- e. none of the above

Answer : D

Q48:activators of the enzyme pyruvate kinase include:

- A. Insulin
- B. Fructose1,6,biphosphate
- C. Fructose 2,6biphosphate
- D. A + B
- E. None of the above

Answer : D

Q49: $\alpha(1-4)$ bond is found in:

- A. sucrose
- B. Maltose
- C. Lactose
- D. Galactose

Answer : B

For any feedback, scan the code or click on it.



Corrections from previous versions:

Versions	Question #	Before Correction	After Correction
V1 → V2			
V2 → V3			