

FINAL COLLECTED QUESTIONS OF METABOLISM 018

1-Which substrate is common for purines,heme and creatine synthesis?

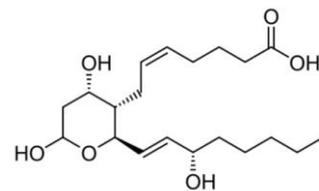
- a. Glycine
- b. Succinate
- c. Arginine
- d. Aspartate

2-A defective glucorodyl transferase is associated with all of the following except?

- a. gilbert syndrome
- b. criggler najjjar
- c. liver cirrhosis
- d. dubin Johnson syndrome

3- The following figure represents the structure of?

- a. Prostaglandin I3
- b. Prostaglandin G2
- c. Thromboxane B2
- d. Leukotriene B4



4-Fumarate is formed as a by-product from which of the following pathways?

- a. Folic acid metabolism
- b. Formation of Argininosuccinate
- c. Formation of GMP from IMP
- d. Formation of AMP from IMP

5-McArdle syndrome involves a deficiency in muscle glycogen phosphorylase, which of the following products will not be produced?

- a. Glucose-1 phosphate
- b. Glucose-6 phosphate
- c. UDP-Glucose
- d. Galactose-1 phosphate

6-Which of the following prevents the incorporation of dUTP into the DNA during DNA synthesis?

- a. dUTPase
- b. Thymidylate kinase
- c. Guanase
- d. Nucleotidase

7-True about hormone sensitive lipases:

- a. Inhibited by phosphorylation
- b. Activated by phosphatases
- c. Phosphodiesterase inhibitors maintain the active form
- d. They are released by the pancreas

8-Statin is a drug used for losing weight, it inhibits the step that produces which of the following products?

- a. HMG CoA
- b. Mevalonate
- c. Acetyl CoA
- d. Propionyl CoA

9- A female neonate did well until approximately 24 hours of age when she became lethargic. A sepsis workup proved negative. At 56 hours, she started showing focal seizure activity. The plasma ammonia level was found to be 1,100 $\mu\text{mol/L}$ (normal 5–35 $\mu\text{mol/L}$). Quantitative plasma amino acid levels revealed a marked elevation of argininosuccinate. Which one of the following would also be elevated in the blood of this patient?

- a. Asparagine.
- b. Glutamine.
- c. Lysine.
- d. Urea.

10-Which one of the following statements concerning amino acids is correct?

- a. An increase in gluconeogenesis from amino acids results in a decrease in urea formation.
- b. All essential amino acids are glycogenic.
- c. Ornithine and citrulline are found in tissue proteins.
- d. Cysteine is an essential amino acid in individuals consuming a diet severely limited in methionine.

11-During the last hours of a 48hour fast, which of the following is used as a source of energy?

- a. Amino acids
- b. Glycogen
- c. Lactate
- d. Nucleotides

12-Regarding the product in the following figure, which of the following will be used in the next reaction?

- a. CoA
- b. H₂O
- c. FAD
- d. NAD⁺



13-Which of the following is used in the oxidation of very long fatty acid and not in long or short chain fatty acids?

- a. NAD⁺
- b. FAD
- c. H₂O
- d. O₂

14- 40-year-old woman, 5 feet, 1 inch (155 cm) tall and weighing 188 pounds (85.5 kg), seeks your advice on how to lose weight. Her waist measured 41 inches and her hips 39 inches. A physical examination and blood laboratory data were all within the normal range. Her only child, who is 14 years old, her sister, and both of her parents are overweight. The patient recalls being obese throughout her childhood and adolescence. Over the past 15 years she had been on seven different diets for periods of 2 weeks to 3 months, losing from 5–25 pounds. On discontinuation of each diet, she regained weight, returning to 185–190 pounds. Which one of the following best describes this patient?

- A. She is classified as overweight.
- B. She shows an “apple” pattern of fat distribution.
- C. She has approximately the same number of fat cells as a normal-weight individual, but each adipocyte is larger.
- D. She would be expected to show lower than normal levels of circulating leptin.

15-Relative or absolute lack of insulin in humans would result in which one of the following reactions in the liver?

- a. Decreased activity of hormone-sensitive lipase
- b. Decreased gluconeogenesis from lactate
- c. Decreased glycogenolysis
- d. Increased formation of 3-hydroxybutyrate

16-Which one of the following protein activates lipoprotein lipase?

- a. Apolipoprotein A-I
- b. Apolipoprotein B-48
- c. Apolipoprotein C-II

d. Cholesteryl ester transfer protein

17-Which one of the following enzymes of nucleotide metabolism is correctly paired with its pharmacologic inhibitor?

- a. Dihydrofolate reductase-methotrexate
- b. Inosine monophosphate dehydrogenase-hydroxyurea
- c. Ribonucleotide reductase-5-fluorouracil
- d. Thymidylate synthase -allopurinol

18-A 42-year-old male patient undergoing radiation therapy for prostate cancer develops severe pain in the metatarsal phalangeal joint of his right big toe. Monosodium urate crystals are detected by polarized light microscopy in fluid obtained from this joint by arthrocentesis. This patient's pain is directly caused by the overproduction of the end product of which of the following metabolic pathways?

- a. De novo pyrimidine biosynthesis
- b. Pyrimidine degradation
- c. De novo purine biosynthesis
- d. Purine degradation

19- Which of the following transporters are insulin dependent?

- a. GLUT-1
- b. GLUT-2
- c. GLUT-3
- d. GLUT-4

20-A coenzyme derived from Vitamin B12 is needed for?

- a. Synthesis of D-Methylmalonyl CoA
- b. Formation of Guanidinoacetate
- c. Decarboxylation of Uroporphyrinogen III
- d. Propionyl CoA metabolism

21-Enzyme common in glycolysis and gluconeogenesis?

- a. Phosphoglycerate kinase

- b. Phosphofructokinase
- c. Phosphoenol pyruvate carboxykinase
- d. Pyruvate Kinase

22-The only AA that will not enter krebs cycle as Succinyl CoA?

- A. Methionine
- b. Histidine
- c. Threonine
- d. Valine

23-One of the following increases ketone bodies synthesis:

- a. High free fatty acids concentration in the blood
- b. Low blood levels of Glucagon
- c. Inhibition of beta oxidation
- d. Inhibitions of hormone sensitive lipases

24-Carabomoyl phosphate synthetase synthesized in hepatic cytosol is used for:

- a. Pyrimidine synthesis
- b. Urea cycle activator
- c. Purine synthesis
- d. Activator of IMP formation

25- Albumin binds all of the following except

- a. Free fatty acids
- b. Steroid hormones
- c. Conjugated billirubin
- d. Ca^{+2}

26-The main acceptor of NH_3 in deamination reactions:

- a. Glutamate

- b. a-ketoglutarate
- c. Glutamine
- d. Alanine

27-True about using acetoacetate as a source of energy:

- a. Utilizes succinly CoA
- b. Occurs in the cytosol
- c. Occurs when oxaloacetate is depleted
- d. Occurs in the liver and in red blood cells

28-To synthesize a 6 carbon fatty acid

- a. 1 malonyl CoA ,4 NADPH ,2 acetyl CoA
- b. 1 malonyl CoA ,2 NADPH ,2 acetyl CoA
- c. 2 malonyl CoA ,3 NADPH ,1 acetyl CoA
- d. 2 malonyl CoA ,4 NADPH ,1 acetyl CoA

29-What happens in both type 1 and type 2 diabetes?

- a. Ketoacidosis
- b. Hyperglycemia
- c. High HDL/LDL ratio
- d. Hypo-triacylglycerolemia

30-Aspirin inhibits the production of?

- a. prostaglandins
- b. thromboxanes
- c. Leukotrienes
- d. A + B
- e. A + C

31- Which of the following can be used to lose weight?

- a. Inhibition of pancreatic lipases

- b. Activation of pyruvate dehydrogenase
- c. Inhibition of HMG-CoA reductase
- d. Increasing absorption of fat

32- Needed to synthesize sphingomyelin from ceramide?

- a. Phosphocholine
- b. UDP-choline
- c. Phosphatidylinositol
- d. lecithin

33- What is used to catalyze degradation of sphingomyelin into ceramide and phosphocholine?

- a. Phospholipase C
- b. Phospholipase A
- c. Phospholipase B
- d. Phospholipase D

34- What inhibits carnitine shuttle?

- a. Malonyl coA
- b. Acyl CoA
- c. Acetyl CoA
- d. Acetoacetate

35- Glycerol after TAG hydrolysis

- a. is used in the liver and muscle for glycolysis
- b. used to resynthesize fat in the liver
- c. is used in the liver for gluconeogenesis
- d. is metabolized in the kidney and excreted in the urine

36- Which of the following enzymes is inhibited by lead?

- a. ALA dehydratase

- b. Ferroxidase
- c. ALA synthase
- d. Biliverdin reductase

37- Decrease the activity of TCA cycle?

- a. High ADP/ATP ratio
- b. Low NAD⁺/NADH ratio
- c. High NADP/NADPH ratio
- d. High Ca⁺² concentration

38- Goal of pentose phosphate pathway

- a. Synthesize TAG from glycerol
- b. Generate high amount of ATP
- c. Generate NADPH and pentoses
- d. Degrade glucose to generate NADH

39- What's the common thing between galactose and fructose?

- a. Their transport is insulin independent
- b. Phosphorylated by the same enzyme
- c. Are used to form lactose
- d. Both are epimers of glucose

40- Second substrate for thiolase :

- a. ATP
- b. H₂O
- c. O₂
- d. Coenzyme A

41- Tay sach's disease leads to the accumulation of:

- a. Gangliosides

- b. Lecithin
- c. Sphingomyelin
- d. Cerebrosides

42- Fructose 2,6 bisphosphate is?

- a. Inhibitor of TCA cycle
- b. Activator of pyruvate kinase
- c. Substituent for Fructose 1,6 bisphosphate in glycolysis
- d. Activator of phosphofructokinase

43- A 1-week-old infant, who was born at home in a rural, medically- underserved area, has undetected classic phenylketonuria. Which statement about this baby and/or her treatment is correct?

- a. A diet devoid of phenylalanine should be initiated immediately.
- b. Phenylpyruvate is found in the urine.
- c. Supplementation with vitamin B6 is required.
- d. Tyrosine is a nonessential amino acid

44- A patient with an inherited disorder has blue speckled discoloration of skin, was found to have kidney stones and has black urine, this disorder involves the accumulation of?

- a. Homogentisic acid
- b. Phenylalanine
- c. Homocysteine
- d. Cystathionine

45- Familial hypercholesterolemia involves a deficiency in:

- a. HMG-CoA reductase
- b. Uptake of HDL by the liver
- c. Synthesis of cholesterol
- d. LDL endocytosis

46- Which of the following statements about glucagon is correct?

- a. High levels of blood glucose increase the release of glucagon from the α cells of the pancreas
- b. Glucagon levels decrease following ingestion of a protein-rich meal
- c. Glucagon increases the intracellular levels of cAMP in liver cells, causing an increase in glycogenolysis
- d. Glucagon is the only hormone important in combating hypoglycaemia
- e. Glucagon depresses the formation of ketone bodies by the liver

47- Which of the following is not synthesized by tyrosine?

- a. Melatonin
- b. Dopamine
- c. Melanin
- d. Epinephrine

48- Which of the following is used in the step that introduces double bond in the fatty acid during β -oxidation?

- a. NAD^+
- b. NADP
- c. H_2O
- d. FAD

49- Pantothenic acid is found in the structure of?

- a. NADP
- b. FMN
- c. ACP
- d. NAD^+

50- Which of the following enzymes catalyzes the production of NADPH used in the synthesis of fatty acids?

- a. Aconitase
- b. Cytosolic malate dehydrogenase

c. Citrate synthase

d. Pyruvate dehydrogenase

-----The End-----

A 1-week-old infant, who was born at home in a rural, medically- underserved area, has undetected classic phenylketonuria. Which statement about this baby and/or her treatment is correct?

- a. A diet devoid of phenylalanine should be initiated immediately.
- b. Dietary treatment will be discontinued in adulthood.
- c. Supplementation with vitamin B₆ is required.
- d. Tyrosine is an essential amino acid.

 **ANSWERS :**

Q1	A	Q26	B
Q2	D	Q27	A
Q3	C	Q28	D
Q4	D	Q29	B

Q5	A	Q30	D
Q6	A	Q31	A
Q7	C	Q32	D
Q8	B	Q33	A
Q9	B	Q34	A
Q10	D	Q35	C
Q11	A	Q36	A
Q12	B	Q37	B
Q13	D	Q38	C
Q14	B	Q39	A
Q15	D	Q40	D
Q16	C	Q41	A
Q17	A	Q42	D
Q18	D	Q43	B
Q19	D	Q44	A
Q20	D	Q45	D
Q21	A	Q46	C
Q22	B	Q47	A
Q23	A	Q48	D
Q24	A	Q49	C
Q25	C	Q50	B

SAMIA SAMI ♥

RAMA ABBADY ♥

"وإن خانتك اختياراتك فلن يخونك لطف الله ولن يخذلك انقاذه".

-الشعراوي رحمه الله.. ✨