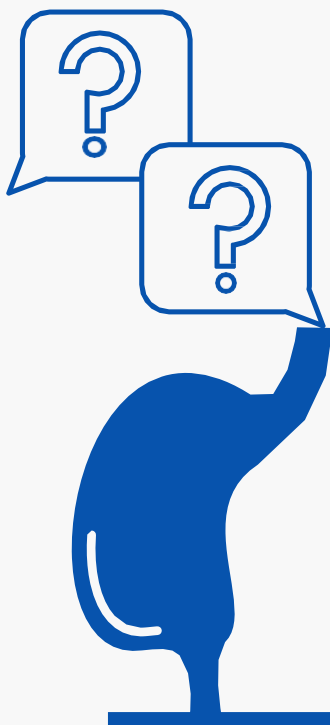


Past Papers



Digestion and absorption

Q1

Q1: The absorption of is not affected by blocking the activity of the Na^+/K^+ pump at the basolateral membrane of absorptive cells.

A) Galactose

B) Dipeptides

C) Water

D) Cl^-

E) Vitamin D

Answer:E

No pump activity = no Na concentration gradient

Q2

Q2: Concerning carbohydrate digestion, which one is correct:

- A) Human enzymes can attack only alpha linkages of the polymers of glucose.
- B) The digestion by amylase depends on enterokinase activity.
- C) Final digestion is taken place by intracellular enzymes.
- D) The pancreatic enzyme involved in carbohydrate digestion is secreted as an inactive form.
- E) The bulk of digestion is by salivary amylase.

Q3

Q3: All of the following about the digestion and absorption of fat are true EXCEPT:

- A) The digestion of fat is taking place at the shell-core interface of micelles
- B) Monoglycerides and triglyceride acids are transported across the luminal membrane by simple diffusion
- C) Absorbed fat is taken away from the villi by blood circulation
- D) The absorbed fat products will combine with lipoproteins to form chylomicrons
- E) Emulsification is required for increasing exposure of fat to enzymes

Answer: C (lipids are removed by lacteals (lymphatic vessels))

Q4

Q4: One of the following concerning the absorption of lipid-soluble vitamins is TRUE:

- A) It is taking place by active transport mechanisms
- B) It is well correlated with bilirubin content in chyme
- C) It depends on the activity of enterokinase
- D) It is decreased by conditions that induce steatorrhea
- E) It is increased by the release of intrinsic factor

Q5

Q5: Which of the following pairs are NOT related to each other:

- A) Mucosal block: Absorption of Fe⁺⁺
- B) Intrinsic factor: Absorption of vitamin B12
- C) Vitamin D: Absorption by passive mechanism
- D) Chylomicrons: B-Lipoproteins
- E) Vitamin K: Expression of calbindin

Q6

Q6: Choose the incorrect pair of (nutrient - mode of entry into absorptive cell):

- A) Glucose - Na⁺-dependent mechanism
- B) Fructose - facilitated diffusion
- C) Bile salts - active transport
- D) Tripeptide - Na⁺-independent mechanism
- E) Monoglycerides - simple diffusion

Q7

Q7: A drug that acts to inhibit the activity of lipase enzyme could result in:

- A) Steatorrhea
- B) increased lipid absorption
- C) more formation of chylomicrons
- D) B12 deficiency
- E) affecting the formation of micells

Answer:A

Q8

Q8: Which of the following substances' absorption is not Sodium-dependent:

- A) Glucose
- B) Fructose
- C) Galactose
- D) Water

Answer:B

Q9

Q9: Intrinsic factor is required for:

A) Reabsorption of bile salts

B) Digestion of fat

C) Absorption of vitamin B12

D) Absorption of vitamin K

E) Absorption of Fe^{++}

Answer:C

Q10

Q10: Digestion and absorption of which of the following is NOT impaired by pancreatic insufficiency:

- A) Triglycerides
- B) Starch
- C) Vitamin D
- D) Proteins
- E) Sucrose

Answer: E (sucrase: brush border enzyme)

Q11

Q11: The absorption of which of the following is blocked at the mucosa by absorptive cells and transported toward interstitial fluids when needed by the body:

A) Mg^{++}

B) Ca^{++}

C) Fe^{++}

D) Vitamin B12

E) Vitamin K

Q12

Q12: One of the following with regard to fat digestion and absorption is TRUE:

- A) Fat absorption needs specialized Na⁺-dependent carriers
- B) Decrease fat absorption results in steatorrhea
- C) Enzymes involved in fat digestion are liposoluble
- D) Absorbed fat forms micelles inside the cytosol of absorptive cells
- E) Most fat is absorbed by the luminal membrane in the form of triglycerides

Q13

Q13: Which of the following is a similarity between calcium and iron absorption:

- A) Their absorption is increased by parathyroid hormone
- B) Their extent of absorption is enhanced by vitamins
- C) Their absorption requires binding to proteins secreted into the intestinal lumen
- D) Both are absorbed by passive mechanisms
- E) More than one of the above

Q14

Q14: Which of the following substances has its absorption blocked when it's in excess amounts and absorbed only when needed:

- A) magnesium
- B) Calcium
- C) Iron

Q15

Q15: The site where you have the highest reabsorption of fluid is:

A) Stomach

B) Duodenum

C) Ileum

D) Colon

Answer: C (HIGH ABSORPTION OF FLUIDS IN ILEUM WHILE HIGH ABSORPTION OF FOOD IN DUODENUM)

Q16

Q16: All the following about the digestion and absorption of fat are true, EXCEPT:

- A) All absorbed fat is taken away from the villi by blood circulation.
- B) The absorbed fat products will combine with lipoproteins to form chylomicrons.
- C) The digestion of fat is taking place at the shell-core interface of micelles.
- D) Monoglycerides and free fatty acids are transported across the luminal membrane by simple diffusion.
- E) A and D are both wrong.

Q17

Q17: One of the following about digestion and absorption is true.

- A) Proteins can be absorbed as trimers.
- B) Most of the fat digestion happens in the mouth by saliva.
- C) Steatorrhea is an increase in fat absorption.
- D) Absorption of chloride requires calbindin.
- E) More than one answer is true.

Q18

Q18: One of the following concerning protein digestion and/or absorption is TRUE:

- A) Pepsinogen is more active by the high pH in duodenum
- B) After digestion, proteins can be absorbed as trimers
- C) The bulk of digestion is in the stomach
- D) The final digestion process is carried out in the ileum by brush border enzymes
- E) After digestion, all amino acids are actively absorbed

Q19

Q19: Which of the following does NOT depend on Na⁺/K⁺ pump activity for absorption:

A) Glucose

B) Water

C) Small peptides

D) Na⁺

E) Vitamin D

Q20

Q20: Wrong about lipids:

- A) Bile is used to solubilize lipids
- B) Digestion on brush border
- C) Most of its digestion appears in the intestine
- D) Absorbed by simple diffusion
- E) Reform triglycerides inside epithelial cells in the intestine

Q21

Q21: Which of the following pairs is not correct?

- A) intrinsic factor-B12 absorption.
- B) M block-iron absorption.
- C) obesity-childhood over nutrition.

**Energy Metabolism
and Regulation of
Food Intake**

Q1: One of the followings is true during starvation:

- A. The last depletion is for carbohydrate deposits
- B. The body is in a positive balance
- C. Their metabolic rate is higher than before starting starvation
- D. The first depletion of body nutrient stores is for fat
- E. The rate of protein depletion between weeks 1-6 is slower than for fat

Q2

Q2: Respiratory quotient (RQ) of a body would be the lowest:

- A. When glucose is used as primary fuel for cellular energy
- B. In vegetarians
- C. When mixed food is used as a source of energy
- D. In the 3rd week of starvation
- E. In persons with high protein diet

Q3

Q3: Which of the following produce the highest metabolic rate:

- A. sleep
- B. hypothyroidism
- C. basal state
- D. fever
- E. Malnutrition

Q4

Q4: Which of the following pairs are NOT related to each other:

- A. Inanition: High release of normal leptin
- B. Insulin release: Inhibition of feeding behaviors
- C. Leptin expression: OB gene
- D. Obesity: Childhood over nutrition
- E. Adipocytes: Secretion of leptin

(INANITION=opposite of obesity)

Answer:A

Q5: Which of the following pairs are NOT related to each other:

- A. Adipocytes : Secretion of leptin
- B. Insulin release : Inhibition of feeding behaviors
- C. High release of leptin : Starvation
- D. leptin expression : OB gene
- E. Obesity: Childhood over nutrition

Q6

Q6: Wrong about RQ (respiratory quotient):

- A. it is higher when glucose is used as a source of energy
- B. it is higher in diabetic patients during crises
- C. brain tissue has the highest RQ
- D. increase by increasing the ratio of CO₂ production / O₂ consumption
- E. for a given body it is low in the third week of starvation

Q7

Q7: Wrong about leptin:

- A. is important in long term regulation of the body weight.
- B. Produced when there is high storage of fat in adipose cells
- C. acts on specific receptors in the hypothalamic centers
- D. activates feeding centers
- E. secreted by adipose cells

Q8

Q8: All of the following may induce obesity EXCEPT:

- A. Defect in OB gene
- B. Over-nutrition during childhood
- C. Overproduction of normal leptin by adipocytes
- D. Neurogenic abnormalities of feeding or satiety centers
- E. In hypothyroidism

Q9

Q9: One of the following with regard to the metabolic rate is NOT true:

- A. It is increased by sympathetic stimulation
- B. It represents the heat produced by a body per meter square surface area per hour
- C. It reflects the metabolic activities that are taking place in the body per time unit
- D. O₂ consumption is used for indirect calorimetric measurements of metabolic rate
- E. It is decreased in persons on a protein diet

Q10

Q10: One of the followings with regard to the metabolic rate is NOT true:

- A. It represents the heat produced by a body per meter square surface area per hour
- B. It is increased during sympathetic stimulation
- C. To measure the BMR the tested person must be in sleep during measurement
- D. It reflects the metabolic activities that are taking place in the body per time unit
- E. O₂ consumption is used for indirect calorimetric measurements of metabolic rate

Q11

Q11: True about Leptin:

- A. is secreted by endocrine cells along the GI
- B. gene defect that produces nonfunctional leptin hormone can induce obesity
- C. it acts on hypothalamus centers to increase food intake
- D. its concentration in blood is high in thin people
- E. low fat store in body is stimulatory factor for its secretion

Answer:B

Q12

Q12: Feeding behaviors can be inhibited in all the following conditions EXCEPT:

- A. Increased leptin level in blood
- B. Increased metabolic rate in the body
- C. Increased Insulin level
- D. Defect in OB gene
- E. Increased fat deposits

Q13

Q13: Which cause stimulation in the feeding centres:

- A. Increased metabolic rate
- B. Increased leptin hormone
- C. Low glucose level
- D. Distension of stomach and duodenum
- E. More than one of the above

Answer:E (ACC are correct)

Q14

Q14: Which of the following pairs are NOT related to each other:

- A. Endocrine cells: Secretion of leptin
- B. Insulin release: Inhibition of feeding behaviors
- C. Starvation: low (RQ)
- D. leptin expression: OB gene
- E. Obesity: Childhood over nutrition

Q15

Q15:One of the followings with regard to starvation is NOT TRUE:

- A. First depletion is for carbohydrate stores.
- B. Protein depletion is high in the final stage of starvation
- C. High rate of fat depletion is during weeks 2-6
- D. Lowest respiratory quotient will be between weeks 3 and 6
- E. The metabolic rate is higher than before starting starvation

(make sense to conserve the energy)

Answer:E

Q16

Q16: In healthy person, the increase of feeding behaviors is well correlated with the increase in:

- A. Leptin level in blood
- B. Cholecystokinin (CCK) release
- C. GIP (Glucose dependent Insulinotropic Polypeptide) release
- D. Activity of thermoregulatory centers in hypothalamus
- E. Expression of OB gene

"Some believe that there is an interaction between temperature regulatory centers and feeding centers in the hypothalamus to cause an increase in feeding in cold which provides more stores of nutrients and cover the needs of the body for the increase in metabolic rate." - the handout

Q17

Q17: The WRONG sentence about metabolic rate

- A. Co₂ is used in indirect calorimetry
- B. Cold weather increases MR
- C. MR is increased with sympathetic

Answer:A

Q18

Q18: One of the followings is NOT true regarding to the metabolic rate :

- A. Energy equivalent of O₂ is needed to calculate metabolic rate by indirect calorimetry.
- B. It is higher in a person on a diet of fat than on protein diet.
- C. It represents the heat produced by a body per hour per meter square surface area.
- D. It is lower in a person during starvation and malnutrition.
- E. O₂ consumption is used for indirect calorimetric measurements of metabolic rate

Lab

Q1

Q1: As part of a physiology experiment, an intestinal preparation is placed in a solution at an appropriate temperature to preserve its viability. The smooth muscle cells in the preparation exhibited a slow wave frequency of 8 waves/minute, and a contraction frequency of 4 contractions/minute. Upon treatment of the preparation with norepinephrine, the most likely observed recordings of slow wave frequency and contraction frequency, respectively, would be:

- A. 4 and 0
- B. 4 and 4
- C. 8 and 0
- D. 8 and 8
- E. 0 and 0

Answer:C

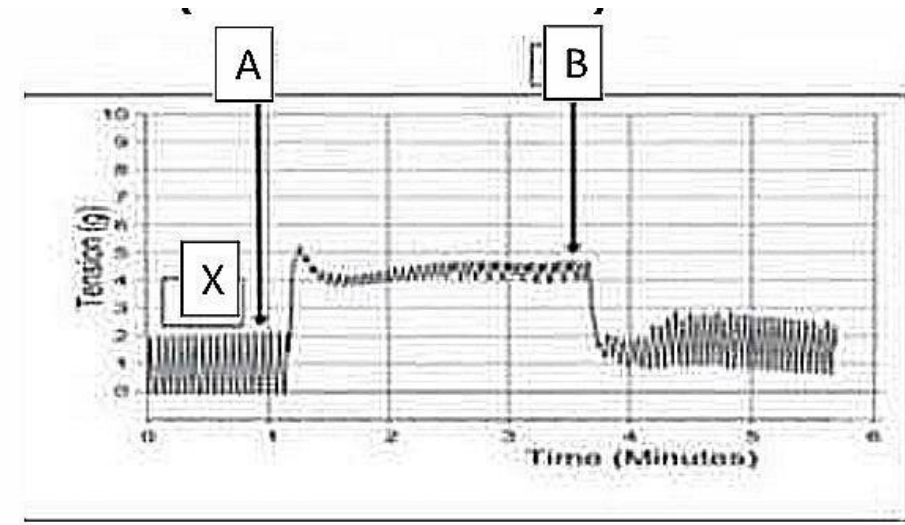
Q2

Q2. What happens by adding Ach to the previous experiment?

- A. Increases tonic contraction
- B. Decreases tonic contraction
- C. Increases phasic contraction
- D. B+C

Q3

The graph below represents the rat's small intestinal motility as shown in the physiology lab, before and after adding substance A and substance B. All the following sentences are true, EXCEPT.



- A. Substance A mimics the effect of acetylcholine.
- B. The effects of substance A could be mediated via muscarinic receptors.
- C. The part of the graph labelled as X represents slow waves
- D. Substance A has increased tonic contraction.
- E. Substance B could be a competitive antagonist for substance A.

'mechanical contractions NOT slow waves

Answer:C

رسالة من الفريق العلمي:

يقول نبينا محمد صلى الله عليه وسلم: "عَجِبْتُ لِأَمْرِ الْمُؤْمِنِ، إِنَّ أَمْرَهُ كُلَّهُ خَيْرٌ، إِنْ أَصَابَهُ مَا يَحِبُّ حَمْدَ اللَّهِ وَكَانَ لَهُ خَيْرٌ، وَإِنْ أَصَابَهُ مَا يَكْرَهُ فَصَبَرَ كَانَ لَهُ خَيْرٌ، وَلَيْسَ كُلُّ أَحَدٍ أَمْرُهُ كُلَّهُ خَيْرٌ إِلَّا الْمُؤْمِنُ"

لا بدّ للمؤمن أن يبتهل تارة في نفسه وتارة في عائلته وتارة في عمله وتارة في أحبائه وتارة في المسلمين؛ فلا بدّ من الصبر، يكون المؤمن صبوراً عند البلاء شكوراً عند الرخاء، والصبر عند البلاء يكون بكفّ لسانه عمّا لا ينبغي وكفّ جوارحه عمّا لا ينبغي ويكون قلبه مطمئناً شريحاً لا جزعاً. أمّا الجزع فلا يردّ عن صاحبه شيئاً بل يآثم بلا فائدة دنيوية أو لحظية حتى.

نسأل الله أن نكون وإياكم من ذوي الصبر على الشديد والشكر على النعيم وأن نحشر مع المؤمنين يوم الدين.



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



Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			