

Gastrointestinal System

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Physiology

إِنَّ اللَّهَ وَمَلَائِكَتَهُ يُصَلُّونَ عَلَى النَّبِيِّ يَا أَيُّهَا الَّذِينَ آمَنُوا صَلُّوا عَلَيْهِ وَسَلِّمُوا تَسْلِيمًا

Lecture 1

- *Choose the correct statement regarding the interstitial cells of Cajal (ICCs):*
 - *A. ICCs are responsible for tonic contraction of GI smooth muscle cells*
 - *B. ICCs are responsible for the slow action potentials (slow waves) in smooth muscle*
 - *C. ICCs are neurons that communicate with smooth muscle cells through gap junctions*
 - *D. ICCs control ENS activity*
 - *E. None of the above*
-
- *Answer: B (about (D) ICCs controled by ENS but not the opposite)*

- *One of the followings regarding control functions of GI is NOT TRUE:*
 - *A. Parasympathetic system generally causes increase in secretions*
 - *B. Sympathetic generally is decreasing blood flow by direct effect over vessels*
 - *C. Basic electrical rhythm (BER) is controlling phasic contraction*
 - *D. Tonic contraction is set by released neurotransmitter*
 - *E. Salivary secretion is increased by intrinsic reflexes*
-
- *Answer: E*

- *One of the followings is NOT true with regard to the ICCs:*
 - *A. Are generating action potentials*
 - *B. Are considered as pace maker cells in the gastrointestinal tract*
 - *C. Are under the control of autonomic nervous system*
 - *D. Are connected by gap junctions*
 - *E. Are responsible for generation of basic electrical rhythm (BER) at smooth muscle cells*
-
- *Answer: C*

- Which of the following *DOES NOT affect* blood flow to the GI tract:
 - A. CCK
 - B. Secretin
 - C. GIP
 - D. CCI
 - E. kinins
-
- Answer: D

- *One of the followings regarding control systems of the gastro-intestinal functions is NOT TRUE:*
 - *A. Tonic contraction is set by released neurotransmitters.*
 - *B. Sympathetic generally is decreasing blood flow by direct effect over vessels.*
 - *C. Parasympathetic system generally causes increase in secretions.*
 - *D. Salivary secretion is increased by intrinsic reflexes.*
 - *E. Basic electrical rhythm (BER) is controlling phasic contraction*
-
- *Answer: D*

- *GI transit can decrease by:*
 - *A. muscarinic receptors activation*
 - *B. release of VIP*
 - *C. high cellulose in chyme*
 - *D. intestinal irritation*
 - *E. lactase deficiency*
-
- *Answer: B (VIP activates secretions (the chyme remain more time in intestine))*

- *One of the following with regard to the blood flow of the gastrointestinal tract is NOT true:*
 - *A. Is controlled by enteric nervous system*
 - *B. Increase blood flow results in increased water and electrolyte secretion*
 - *C. Is increased by more release of VIP*
 - *D. Is increased by higher sympathetic tone*
 - *E. Is increased after meals*
-
- *Answer: D*

Lecture 2

- About *swallowing*, all true EXCEPT:
 - A. composed of voluntary and involuntary phases
 - B. primary peristalsis is initiated at the pharynx
 - C. secondary peristalsis is initiated in the esophagus by remnant of food in the esophagus
 - D. preceded by relaxation wave to open the lower esophageal sphincter
 - E. closure of epiglottis is voluntary
-
- Answer: E

- *One of the following with regard to esophageal movements is NOT true:*
 - *A. They are part of swallowing*
 - *B. Primary esophageal peristalses are initiated at the pharynx*
 - *C. Secondary esophageal peristalsis can be initiated in esophagus by the presence of food residues*
 - *D. Distention of lower esophagus stimulates extrinsic reflexes to induce relaxation of lower esophageal sphincter*
 - *E. They are controlled mainly by enteric nervous system*
-
- *Answer: D (extrinsic reflexes = voluntary)*

- *The remaining food particles in the esophagus initiate:*
 - *A. Primary peristalsis*
 - *B. Secondary peristalsis*
 - *C. MMC*
-
- *Answer: **Secondary peristalsis***

- Regarding *gastro-esophageal motilities*, one of the followings is NOT true:
 - A. Primary esophageal peristalses are initiated at the pharynx
 - B. Relaxation of lower esophageal sphincter is ensured by extrinsic reflexes
 - C. The patterns of primary and secondary peristaltic contractions are the same
 - D. More tone of pyloric sphincter is achieved when gastric peristaltic contractions are reaching pyloric region
 - E. At early stages of gastric movements only chyme of fluid consistency is emptied by pyloric pump activity
-
- Answer: B

- *All of the following are true about **deglutition** EXCEPT:*
 - *A. It is initiated voluntarily*
 - *B. It involves reflex centers in the brain*
 - *C. Respiration is impeded during the esophageal phase*
 - *D. It is less effective when lying down*
 - *E. All of the above are true statements*
-
- *Answer: C*

Lecture 3



- *With regard to mass contractions at the colon, all the followings are true EXCEPT:*
 - *A. Are mainly controlled by released gastro-intestinal hormones*
 - *B. Have propulsive effect over the content of the colon*
 - *C. Are similar with peristaltic contractions in the small intestine*
 - *D. Can induce activation of defecation reflexes*
 - *E. Are initiated by gastro-colic reflexes*
-
- *Answer: A*

- All the followings with regard to *defecation* reflexes are true EXCEPT:
 - A. Appears as involuntary intrinsic reflexes by the distension of the colon
 - B. They have parasympathetic component that fortifies the contractions of the rectal smooth muscle
 - C. As a result of increased activity of defecation reflexes, in normal adults defecation is finally can take place as a voluntary act
 - D. Relaxation of the external anal sphincter is ensured by the activity of cranial parasympathetic fibers
 - E. The intrinsic component of the reflex is provided by enteric nervous system
-
- Answer: D

- One of the following is true with regard to *defecation* reflexes in normal adult:
 - A. voluntary control is ensured by relaxation of external anal sphincter
 - B. appears as series of voluntary reflexes after the distention of rectum
 - C. generate motor activities which are present all the day over the colon
 - D. the intrinsic component of the reflex is provided by sympathetic neurons
 - E. as a result of increased activity of intrinsic reflex, defecation will follow without the voluntary stage of defecation
-
- Answer: A

- *Tracing a food bolus along the GI tract, choose the correct chronological order of motility patterns that this bolus will go through:*
- *1. Receptive Relaxation*
- *2. Segmentation Contractions*
- *3. Primary Peristaltic Wave*
- *4. Pyloric Pump*

- *A. 1 , 3 , 4 ,2*
- *B. 1 , 3 , 2 ,4*
- *C. 3 , 1 , 4 ,2*
- *D. 3, 2 , 1 , 4*
- *E. 2 , 3 , 1 , 4*

- *Answer: C*

- *Contractions along the intestine can be described by all EXCEPT:*
 - *A. tonic contractions are set by the activity of interstitial cells of Cajal*
 - *B. the rhythm of segmentation contraction is set by basic electrical rhythm at that segment*
 - *C. segmentation and peristaltic contractions propel chyme in analward direction*
 - *D. coordinated movements during peristaltic reflex need intact neural activities of myenteric plexus*
 - *E. increased velocity of chyme propulsion decreasing absorption of fluids*
-
- *Answer: E*

- About *defecation* :
 - A. *parasympathetic to muscle of anus*
 - B. *Intrinsic reflexes caused by parasympathetic innervation*
 - C. *Intrinsic reflexes are strong enough to cause defecation*
 - D. *Voluntary act while defecation causes internal sphincter to relax*
 - E. *Closure in glottis uses decreasing in abdominal pressure*
-
- *Answer: A*

- *All the following may describe the contractions that appear along the small intestine EXCEPT:*
 - *A. Increased velocity of chyme propulsion may lead to an increased intestinal absorption*
 - *B. Tonic contractions are set by release of neurotransmitters*
 - *C. Contractions are controlled by the activity of autonomic nervous system as well as by hormones secreted along the gastrointestinal tract*
 - *D. Both segmentation and peristaltic contractions propel chyme in anal-ward direction*
 - *E. The rhythm of segmentation contractions is set by the basic electrical rhythm of that segment*
-
- *Answer: A*

- *One of the following concerning gastric motility is true:*
 - *A. After food ingestion, tonic contraction of gastric muscle is decreased*
 - *B. Is regulated by hormone only*
 - *C. Increases by activation of entero-gastric reflex*
 - *D. Increases by inhibition of parasympathetic control*
 - *E. Increases by more release of CCK (cholecystokinin)*
-
- *Answer: A*

- *With regard to haustral contractions at the colon, all the followings are true EXCEPT:*
 - *A. Have propulsive effect over cecal content*
 - *B. Are phasic contractions*
 - *C. Are similar with segmentation contractions in the small intestine*
 - *D. Are present all the day*
 - *E. Initiated by activation of gastrocolic reflexes*
-
- *Answer: E*

- *Wrong about mass contractions:*
- *A. Causes feces to be forced to move into the rectum*
- *B. facilitated by gastrocolic and duodenocolic reflexes*
- *C. Present all the day*
- *D. Mucosal irritation causes it to increase*
- *E. begin at transverse colon*

- *Answer: C*

- *One of the following is true with regard to defecation reflexes in normal adult:*
 - *A. voluntary control is ensured by relaxation of external anal sphincter*
 - *B. appears as series of voluntary reflexes after the distention of rectum*
 - *C. generate motor activities which are present all the day over the colon*
 - *D. the intrinsic component of the reflex is provided by sympathetic neurons*
 - *E. as a result of increased activity of intrinsic reflex, defecation will follow without the voluntary stage of defecation*
-
- *Answer: A*

Lecture 4

- Compared to the **BASAL RATE** of salivary secretion, by parasympathetic stimulation all the followings are increased in the final saliva EXCEPT:
 - A. Amount of saliva
 - B. pH of saliva
 - C. K⁺ concentration
 - D. Na⁺ concentration
 - E. Cl⁻ concentration

- Answer: C

- *One of the following about salivary secretion is true:*
 - *A. At low rate of secretion, the final (secondary) saliva has a higher Na⁺ concentration than the primary saliva*
 - *B. Decreases during cephalic phase*
 - *C. The pH is lower at high rate of secretion than at low rate*
 - *D. Regulated by hormones secreted along the gastrointestinal tract*
 - *E. During high rate of secretion, HCO₃⁻ content is higher than at low rate*
-
- *Answer: E*

- *Blood Flow to GI glands could be affected by all EXCEPT:*
 - *A. autonomic nervous system*
 - *B. submucosal plexus*
 - *C. hormones secreted along GIT*
 - *D. secretory glands stimulation*
 - *E. Interstitial cells of Cajal*
-
- *Answer: E*

- *True about salivary gland secretion:*
 - *A. during the low rate of secretion the final (secondary) saliva has lower K^+ concentration than primary saliva*
 - *B. at high rate of secretion, it contains lower Cl^- concentration than primary saliva*
 - *C. decreases by unconditioned reflexes*
 - *D. regulated by hormones secreted along the GIT*
 - *E. condition reflexes are stimulating sympathetic control*
-
- *Answer: B from primary to secondary saliva :*
 - *Na^+ , Cl^- >>>> decrease by 10 fold*
 - *K^+ , HCO_3^- >>>> increase by 7 fold*

- *One of the following is NOT a function of saliva:*
 - *A. Keeping the mouth clean*
 - *B. Facilitated the absorption of carbohydrates by oral mucosa*
 - *C. Helps in stimulation of taste buds*
 - *D. Has protective action*
 - *E. Due to its much content, it facilitates the slippage of food bolus along the esophagus*
-
- *Answer: B*

Lecture 5

- *Gastric HCL secretion can be decreased by stimulation of:*
 - *A. S cells (somatostatin releasing cells)*
 - *B. H2 receptors a-somatostatin*
 - *C. Enterochromaffin like cells*
 - *D. Vagus nerve*
 - *E. G cells*
-
- *Answer: A*

- *Loss of G cells Decreases acid secretion mainly by which of the following mechanisms:*
 - *A. Increased acetylcholine release*
 - *B. Reduced parietal cell inhibition*
 - *C. Decreased gastrin secretion*
 - *D. Decreased Secretin Release*
 - *E. Parasympathetic stimulation*
-
- *Answer: C*

- *The effects of cholecystokinin on gallbladder smooth muscle, sphincter of Oddi, and exocrine pancreas, respectively, are:*
 - *A. Contraction, contraction, stimulation of secretion from duct cells*
 - *B. Contraction, contraction, stimulation of secretion from acinar cells*
 - *C. Contraction, contraction, stimulation of secretion from duct cells*
 - *D. Contraction, relaxation, stimulation of secretion from acinar cells*
-
- *Answer: D*

- *One of the followings with regard to gastric secretions is NOT true:*
 - *A. Proton pump inhibitors are reducing HCl secretions*
 - *B. Enterochromaffin like cells are releasing intrinsic factor*
 - *C. Pepsinogen is released by chief cells*
 - *D. Is stimulated by vagus nerve*
 - *E. Increased activity of enteric neurons that release GRP results in activation of hormonal control*
-
- *Answer: B*

- *Which of the following would completely eliminate the cephalic phase of gastric secretion:*
 - *A. Histamine H2 blockers*
 - *B. CCK-B receptor blockers*
 - *C. Vagotomy (i.e. cutting the vagus nerve or branches of it)*
 - *D. Sympathectomy (i.e. cutting sympathetic nerves)*
 - *E. Atropine*
-
- *Answer: C (Somatostatin acts on receptors of parietal cells to decrease cAMP)*

- *All of the following stimulate HCl secretion EXCEPT:*
 - *A. Gastrin*
 - *B. Histamine*
 - *C. Parasympathetic Stimulation*
 - *D. Somatostatin*
-
- *Answer: D*

- true about *pancreatic* secretion:
 - A. secretion is inhibited by pancreatic poly peptide
 - B. pancreatic amylase is secreted from pancreas as inactive form
 - C. optimal activity of pancreatic enzymes is at low PH
 - D. enterokinase is important for activation of amylase
 - E. at low rate of secretion concentration of CL-is lower than at high rate of secretion
-
- Answer: A

- *One of the following is TRUE with regard to pancreatic proteolytic enzymes:*
 - *A. Have optimal activity at high pH*
 - *B. Are secreted as active enzymes from the pancreas*
 - *C. All of them act as endopeptidases*
 - *D. Are activating brush border enzymes*
 - *E. Are responsible for final digestion of proteins to amino acids*
-
- *Answer: A*

- *Secretion of pancreatic enzymes by:*
 - *A. Duct cells*
 - *B. Endocrine portion of the pancreas*
 - *C. Acinar cells*
 - *D. Zymogen granules*
 - *E. duodenal mucosa*
-
- *Answer: C*

- *Pancreatic proteolytic enzymes, which is true:*
 - *A. Secreted from acinar cells*
 - *B. Play a role in glucose homeostasis*
 - *C. More than one of the above*
-
- *Answer: A*

- *One of the followings is TRUE regarding pancreatic proteolytic enzymes:*
 - *A. Have optimal activity at low PH*
 - *B. Are activating brush border enzymes*
 - *C. All of them act as endopeptidases*
 - *D. Are responsible for final digestion of proteins*
 - *E. Are secreted as inactive enzymes from the pancreas*
-
- *Answer: E*

- *Regarding gastric secretion which one of the followings is NOT true:*
 - *A. Somatostatin inhibits release of HCl*
 - *B. Oxyntic cells are secreting intrinsic factor*
 - *C. Gastrin increases HCl secretion via CCK-B receptors*
 - *D. H2 blockers can reduce HCl secretion*
 - *E. Paracrine control is achieved by the release of cholecystokinin (CCK)*
-
- *Answer: E (HISTAMINE & SOMATOSTATIN, WORK IN PARACRINE PATTERN)*

- *Which of the followings is NOT true with regard to proteolytic enzymes*
 - *A. Intracellular peptidases are responsible for final digestion of proteins*
 - *B. Chymotrypsin is activated in duodenum by phosphorylation with enterokinase*
 - *C. Aminopeptidase is a brush border enzyme*
 - *D. Pepsin is endopeptidase*
 - *E. Pancreatic proteolytic enzymes are having optimal activity at alkaline pH*
-
- *Answer: B*

- *Which of the followings is describing the secretion of the colon:*
 - *A. Is mainly serous secretion*
 - *B. Is mainly mucus secretion*
 - *C. Is controlled by interstitial cells of Cajal*
 - *D. Is controlled by CCK*
 - *E. Is increased by sympathetic stimulation*
-
- *Answer: B*

Lecture 6

- *Wrong about CCK (cholecystokinin):*
 - *A. causes contraction of the gallbladder*
 - *B. causes relaxation of Oddi sphincter*
 - *C. activates pancreatic duct cells*
 - *D. stimulates enzyme secretion from the pancreas*
 - *E. its release is stimulated by high fat content in meal*
-
- *Answer: C (CCK works on acinar cells)*

- *One of the following regarding cholecystokinin is NOT True:*
 - *A. Causes contraction of the gallbladder*
 - *B. Reduces the muscle tone of Oddi sphincter*
 - *C. Activates parasympathetic control of the pancreas*
 - *D. Stimulates pancreatic duct cells*
 - *E. Its release is stimulated by high fat content in meal*
-
- *Answer: D*

- *Regarding bile secretion, one of the following is NOT true:*
 - *A. Bilirubin content is important for the formation of micelles*
 - *B. Is stored in the gallbladder between meals*
 - *C. Its secretion is well correlated with the fat content in meal*
 - *D. Water and electrolyte content is stimulated by secretin*
 - *E. Is increased by parasympathetic stimulation*
-
- *Answer: A*

- *One of the following concerning pancreatic secretion is True:*
 - *A. Cl⁻ concentration is lower at low rate of secretion*
 - *B. HCO₃⁻ secretion is increased by parasympathetic stimulation*
 - *C. Enzymatic secretion is stimulated by secretin*
 - *D. Is controlled mainly by enteric nervous system*
 - *E. Is increased by release of pancreatic polypeptide*
-
- *Answer: B (Secretin: major stimulant of water and HCO₃⁻ secretion (acts on duct cells))*

- *Regarding bile secretion which one of the followings is NOT true:*
 - *A. Is stored in the gall bladder between meals*
 - *B. Its secretion is well correlated with the fat content in meal*
 - *C. The main hormone involved in controlling secretion is cholecystokinin*
 - *D. Enterohepatic circulation is ensuring recycling of bile salts*
 - *E. Same concentration of constituents is found in bile released from gallbladder and liver*
-
- *Answer: E (bile salt secreted diluted from liver and concentrated in gallbladder)*

- *Regarding pancreatic secretions, one of the followings is NOT true:*
 - *A. It contains enzymes for digestion of disaccharides*
 - *B. Enzyme secretion is under the control of cholecystikin (CCK)*
 - *C. HCO₃ content in pancreatic juice is increased upon vagal stimulation*
 - *D. Secretin hormone can increase secretory activity of duct cells*
 - *E. All pancreatic proteolytic enzymes are released from the pancreas as inactive enzymes*
-
- *Answer: A (Protelytic = digesting of protein (note ** Pancreatic amylase not proteolytic**)*

- *All of the following increase pancreatic secretion EXCEPT:*
 - *A. Cholecystokinin*
 - *B. Secretin*
 - *C. Acetylcholine*
 - *D. Vasodilation of pancreatic blood vessels*
 - *E. Pancreatic polypeptide*
-
- *Answer: E*

Lecture 7

- *The absorption of is not affected by blocking the activity of Na^+/K^+ pump at the basolateral membrane of absorptive cells*
 - *A. galactose*
 - *B. Dipeptides*
 - *C. Water*
 - *D. Cl^-*
 - *E. Vitamin D*
-
- *Answer: E*

- *Concerning carbohydrates 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 taking place by intracellular enzymes*
- *D. Pancreatic enzyme involved in carbs digestion is secreted as inactive form*
- *E. The bulk of digestion is by salivary amylase*

- *Answer: A*

- *All the followings 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 free fatty acids are transported across luminal membrane by simple diffusion,*
 - *C. Absorbed fat is taken away from 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))*

- *One of the followings concerning the absorption of lipid-soluble vitamins is TRUE:*
 - *A. It is taking place by active transport mechanisms*
 - *B. 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 release of intrinsic factor*
-
- *Answer: D*

- *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*
-
- *Answer: E*

- *One of the followings concerning the absorption lipid-soluble vitamins is TRUE:*
 - *A. it is decreased by conditions that induce steatorrhea*
 - *B. It is taking place by active transport mechanisms*
 - *C. it is increased by release of intrinsic factor*
 - *D. It depends on the activity of enterokinase*
 - *E. It is well correlated with bilirubin content in chyme*
-
- *Answer: A*

- *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*
-
- *Answer: D*

- *Drug that acts to inhibit 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*

- *Which of the following substances' absorption is not Sodium-dependent:*
 - *A. Glucose*
 - *B. Fructose*
 - *C. Galactose*
 - *D. Water*
-
- *Answer: B*

- *Which of the following is true regarding protein digestion:*
 - *A. pepsin is acting as exopeptidase*
 - *B. optimal activity of pancreatic enzymes is at high PH*
 - *C. the final digestion process is carried out by brush border enzymes*
 - *D. pancreatic proteolytic enzymes are secreted from acinar cells as active enzymes*
 - *E. pepsinogen is activated in duodenum by enterokinase*
-
- *Answer: B (pepsinogen is activated by HCl while Trypsinogen activated by enterokinase in the duodenum)*

- *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*

- *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)*

- *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*
-
- *Answer: C*

- *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*
-
- *Answer: B*

- *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*
-
- *Answer: B For sure, but maybe C also. (K^+ , Cl^- : passively absorbed but the other electrolytes active (about the materials that we taken in our course))*

- *Which of the following substances its absorption is blocked when it's in excess amounts and absorbed only when needed:*
- *B. Calcium*
- *C. Iron*

- *Answer: C*

- *One of the following is released in blood according to demand, and it is stored in epithelial cells before the release:*
 - *A. Fe⁺²*
 - *B. Cat²*
 - *C. Glucose*
 - *D. Galactose*
 - *E. Proteins*
-
- *Answer: A*

- *the site where you have highest reabsorption of fluid is:*
 - *A. Stomach*
 - *B. Duodenum*
 - *C. Ileum*
 - *D. Colon*
-
- *Answer: C (HIGH ABSORPTION OF FLUIDS IN ILEUM WHILE HUGH ABSORPTION OF FOOD IN DUODENUM)*

- *All the followings about the digestion and absorption of fat are true, EXCEPT:*
 - *A. All absorbed fat is taken away from 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 luminal membrane by simple diffusion*
 - *E. A and D are both wrong*
-
- *Answer: A*

- *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 mouth by saliva*
 - *C. Steatorrhea is an increase in fat absorption*
 - *D. Absorption of chloride requires calbindin*
 - *E. More than one answer is true*
-
- *Answer: A*

- *One of the followings 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 trimmers*
 - *C. The bulk of digestion is in the stomach*
 - *D. The final digestion process is carried out in ileum by brush border enzymes*
 - *E. After digestion, all amino acids are absorbed actively*
-
- *Answer: B*

- *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*
-
- *Answer: E*

- *Which of the following is WRONG:*
 - *A. Carboxypeptidases is an exopeptidases*
 - *B. beta-glycosidase is present in human secretion*
 - *C. iron is transported in the ferrous form rather than the ferric form*
 - *D. The final saliva is a hypotonic solution*
 - *E. In intestine, bilirubin is transformed into urobilinogen*
-
- *Answer: B*

- *The final digestion of protein is taking place in (at):*
 - *A. Stomach*
 - *B. Lumen of duodenum*
 - *C. Brush border of jejunum mucosa*
 - *D. Inside absorptive cells*
 - *E. Lumen of ileum*
-
- *Answer: D*

- *All of the following are true regarding lipid digestion and absorption except:*
- *A. Pancreas secretes enzymes and coenzymes for lipid digestion*
- *B. Bile salts are important for micelle formation*
- *C. Micelle formation helps lipids absorption*
- *D. The digestion products of triglycerides (monoglycerides) are transported inside the absorptive cells by Na⁺ dependent secondary transport*
- *E. Chylomicrons are formed inside the enterocytes and taken away from the villi by lacteals*

- *Answer: D*

- *Right about proteins:*
 - *A. continue the last part of digestion inside the enterocytes*
 - *B. Absorbed as mono-amino acids only*
 - *C. Their digestion starts in the mouth by the action of amylase*
 - *D. Proline is absorbed by Na⁺ independent carriers*
 - *E. Most of its digestion takes place in the stomach*
-
- *Answer: A*

- *Wrong about lipids:*
 - *A. Bile is used to solubilize lipid*
 - *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*
-
- *Answer: B*

Lecture 8

- 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
-
- Answer: E

- *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*
-
- *Answer: D*

- *Which of the following produce the highest metabolic rate:*
 - *A. sleep*
 - *B. hypothyroidism*
 - *C. basal state*
 - *D. fever*
 - *E. Malnutrition*
-
- *Answer: D*

- *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*
-
- *Answer: A (INANITION may occurs by : 1- inadequate availability of food
2- psychogenic or hypothalamic abnormalities)*

- *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*
-
- *Answer: C*

- *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*
-
- *Answer: B (diabetic patients depends mainly on lipids special in crises because glucose doesn't enter the cells)*

- *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*
-
- *Answer: D*

- *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*
-
- *Answer: C*

- *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 meter² 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*
-
- *Answer: E*

- *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*
-
- *Answer: C*

- *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*

- *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*
-
- *Answer: D & B*

- *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 (A&C are correct)*

- *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*
-
- *Answer: A*

- 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
-
- Answer: E (make sense to conserve the energy)

- *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*
-
- *Answer: D (ACTIVITY OF THERMOREGULATORY CENTERS MEAN INCREASE METABOLIC RATE (THE ENRGY WILL DECREASE))*

Lecture 1-8

- *Which of the following increases feeding behaviors:*
- *Answer: Increase in thermoregulatory centers in the hypothalamus*

- *Which of the following is INCORRECT:*
- *Answer: Pancreatic enzymes released to digest disaccharides*

- *Which of the following is CORRECT:*
- *Answer: Primary and Secondary peristaltic waves have the same pattern*

- *Pancreatic secretions, which is true:*
- *Answer: Amylase is secreted in active form*

- *Which of the following is INCORRECT:*
- *Answer: ICCs control secretions*

- *Which of the following are Not RELATED:*
- *Answer: Proteins and decreased metabolic rate*

- *Which of the following is INCORRECT:*
- *Answer: Paracrine control of gastric secretions is achieved by CCK*

- *Which of the following statements is wrong:*
- *Answer: Mass contractions occur all the time*

الله يوفقكم جميعاً أدعولنا

best of luck <3