

一. Choose the best answer of each question (五選一; 每題 2 分)

1. Which of the following demonstrations about stage mechanisms in general anesthesia is CORRECT?
 - A) Anesthetics can decrease the activity of hypothalamus that controls body temperature and pain perception in the stage I.
 - B) Substantia gelatinosa in the spinal cord is activated in the stage II.
 - C) Many small inhibitory neurons and excitatory neurotransmitters are depressed in the stage II.
 - D) Neurones in the respiratory and vasomotor centers are not strongly depressed in stage IV.
 - E) Suppression of spinal reflex and ascending reticular system are found in the stage III.
2. Which of the following demonstrations about opioid-receptors is CORRECT?
 - A) μ_2 -receptors that show high affinity to cell membranes mediate respiratory depression and gastrointestinal actions.
 - B) μ_1 -receptors mediate euphoria and supraspinal analgesia.
 - C) κ -receptors mediate spinal analgesia, sedation and miosis.
 - D) σ -receptors mediate antinociception for thermal stimuli at supraspinal site.
 - E) δ -receptors mediate hallucination, euphoria and cough depression.
3. Choose the CORRECT item of the degree of opioid tolerance.
 - A) Bradycardia > miosis > sedation
 - B) Convulsion > miosis > respiratory depression
 - C) Antagonist actions > sedation > vomiting
 - D) Euphoria > convulsion > antidiuresis
 - E) Analgesia > bradycardia > miosis
4. Which of the following demonstrations about ethanol (EtOH) is CORRECT?
 - A) EtOH may inhibit vasomotor activity in the CNS.
 - B) Acetaldehyde derived from EtOH may cause heart abnormality by altering myocardial stores of catecholamines.
 - C) Acetaldehyde may directly act on smooth muscle and cause contraction.
 - D) EtOH tolerance is associated with change in serotonin transport.
 - E) To prevent premature labor, EtOH is better than β_2 adrenergic stimulants and calcium-influx inhibitors.
5. Which illustration about EtOH- and methanol- intoxication is CORRECT?
 - A) Methanol-intoxication is due to folate-dependent production of format metabolites.
 - B) Management of disulfiram should be initiated only the patient is drunk.
 - C) Brain acetylcholine and angiotensin concentrations are decreased in EtOH abusers.
 - D) 4-methylpyrazole can enhance the activity of alcohol dehydrogenase.
 - E) Oxalate, the metabolite of methanol, may cause renal failure and alkalosis.
6. Which of the following demonstrations about sucralfate is FALSE?
 - A) It increases bicarbonate and mucus secretion.
 - B) It increases the binding of sulhydryl compounds.
 - C) It inhibits gastric acid secretion and peptic activity.
 - D) It shows trophic action on gastric mucosa.
 - E) It increases gastric mucosal cell proliferation.

7. Which demonstration about metoclopramide is FALSE ?
- A) It is a potent dopamine agonist that may induce Parkinson's disease at extreme high dose.
 - B) It may hasten esophageal clearance and raise lower esophageal sphincter pressure.
 - C) It possesses antiemetic action.
 - D) It shows cholinergic properties that contribute to enhancing gastric emptying.
 - E) It is widely used in the treatment of gastroparesis found in patients with diabetes mellitus.
8. All of the following agents are antidiarrheal drugs, EXCEPT:
- A) Furazolidone and active charcoal
 - B) Docusate and pectin
 - C) Bismuth subcarbonate and kaolin
 - D) Paregoric and loperamide
 - E) Cholestyramine and berberine tannate
9. The following factors may be involved in the etiology of Helicobacter pylori-induced gastritis and mucosal damage, EXCEPT:
- A) Generation of cytokines and ammonia
 - B) Augmentation of free radical formation
 - C) Elevation of ascorbate synthesis
 - D) Increase in mast cell sensitivity
 - E) Increase in gastrin I7, gastrin releasing peptide and acid secretion
10. Antacid-induced acid rebound is due to:
- A) Increase in gastric mucosal blood flow
 - B) Increase in vagal activity
 - C) Change in psychiatric status
 - D) Increase in parietal cell activity
 - E) Increase in antral gastrin activity
11. Which of the following demonstrations about prostaglandins (PGs) is CORRECT?
- A) They can protect gastric mucosa by increasing cytoprotective substances release.
 - B) They are synthesized from arachdonic acid, and this reaction can be specifically blocked by indomethacin.
 - C) All PGs may cause diarrhea, and thus, they can be used as laxatives.
 - D) PGE₂ is more potent in regulating gastric mucosal blood flow than that does by PGI₂.
 - E) PGs can produce vasoconstriction therefore, they are effective in the amelioration of gastric hemorrhage.
12. Which of the following statements is CORRECT?
- A) Histamine drives a membrane sodium pump, which contributes to extrusion of gastric acid.
 - B) Cimetidine-induced elevation of normal prandial gastrin level is due to its direct action on gastrin cells in the gastric mucosa.
 - C) In man, propantheline can reduce but not abolish gastric acid secretion in both psychiatric and gastric phase.
 - D) Atropine fails to inhibit Menestriene's syndromes.
 - E) Auchbach's plexues are responsible for gastric acid secretion in both man and animals.
13. Which of the following agents can reduce plasma cholesterol concentration?
- A) Magnesium and chromium salts
 - B) Aluminum and calcium hydroxides
 - C) Diphenylmethane and anthraquinone
 - D) Lignen and pectin
 - E) Metoclopramide and carbonyl methylcellulose (CMC)

14. Which demonstrations about laxatives is FALSE?
- A) Anthraquinones stimulate colonic motility via activation of Auchbach's plexues.
 - B) Stimulant laxatives may inhibit $\text{Na}^+\text{-K}^+$ ATPase.
 - C) Carbonyl methylcellulose may reduce the absorption of glycosides and nitrofurantoin.
 - D) Using castor oil may produce Steve-Johnson Syndrome.
 - e) Stimulant laxatives may increase biosynthesis of prostaglandins and cAMP that contribute to increasing the secretion of water and electrolytes.
15. Physostigmine and bethanechol in small doses have similar effects on all of the following, EXCEPT:
- A) Neuromuscular junction
 - B) Salivary gland
 - C) Ureteral tone
 - D) Sweat gland
 - E) Gastric secretion
16. All of the following can be blocked by atropine pretreatment, EXCEPT:
- A) Vagal bradycardia
 - B) Tachycardia induced by infusion of acetylcholine
 - C) Sweating induced by pilocarpine
 - D) Increased blood pressure induced by nicotine poisoning
 - E) Salivation induced by neostigmine
17. Dilation of vessels in muscle, constriction of cutaneous vessels, and positive inotropic and chronotropic effects on the heart are all actions of:
- A) Metaproterenol
 - B) Norepinephrine
 - C) Acetylcholine
 - D) Epinephrine
 - E) Isoproterenol
- 18.. Full activation of sympathetic nervous system can produce all of the following responses, EXCEPT:
- A) Mydriasis
 - B) Increased renal blood flow
 - C) Decreased intestinal activity
 - D) Bronchial relaxation
 - E) Increased heart rate
19. Drugs that can reverse one or more smooth muscle effects of circulating histamine in human include all of the following, EXCEPT:
- A) Epinephrine
 - B) Terbutaline
 - C) Lysergic acid diethylamine
 - D) Chlorpheniramine
 - E) Phenylephedrine
20. A vasodilator that can be inactivated by proteolytic enzymes is:
- A) Serotonin
 - B) Bradykinin
 - C) Histamine
 - D) Angiotensin I
 - E) Angiotensin II

(背面仍有題目,請繼續作答)

二、問答題

1. 下列兩題中選答一題 (20%)。
 - A. 試討論六十年代以後任何一項重要的藥理學發現及其重要性。
 - B. 什麼是藥理學? 它的研究範疇包括什麼? 對人類有何貢獻?

2. 下列五題中選答三題 (各 10%)。
 - A. 試討論月經週期中賀爾蒙的變化, 及避孕藥的作用機轉。
 - B. 治療糖尿病的藥物有那幾類? 請舉列說明其藥理作用, 及指出那些可作 combination therapy 之用。
 - C. 試比較 NSAID 及類固醇消炎劑 (corticosteroids) 的異同。
 - D. 什麼是藥物的 phase I 及 phase II 代謝? 老人的 phase II 代謝功能衰退及體脂肪增加, 會如何影響其對 valium 及 lithium 的 pharmacokinetics?
 - E. 請作一心肌細胞的動電位圖。請說明其中各離子濃度的變化及抗心律不整藥物對動電位的影響。