Dental Pharmacology Quiz #1
January 12, 2004

Name Corrected
(Please Print)

10

Select the single, most appropriate answer. (All questions of equal value)

1. A drug with apparent volume of distribution = 15 L is administered intravenously as a bolus dose of 100 mg. The initial plasma concentration (mg/L) attained is approximately

   $Cp = \frac{X}{Vd}$ $\frac{100}{15}$ 6.6

   A. 0.15
   B. 4.30
   (C.) 6.5
   D. 100
   E. 1500

   C

2. The half-life of a rapidly absorbed drug is 2 hrs. The minimum time for its elimination from the body is approximately

   $2(4.3) = 8.60 \sim 9$

   A. 2 hrs
   B. 4 hrs
   (C.) 9 hrs
   D. 20 hrs
   E. 43 hrs

   C

3. A drug administered by which route is most susceptible to first-pass metabolism?

   A. Intravenous
   B. Transdermal
   C. Intramuscular
   D. Sublingual
   (E.) Oral

   E

4. All of the following statements about the absorption and distribution of drugs are true **EXCEPT**:

   (A.) Weak acids are mostly absorbed from the stomach
   B. Weak bases are mostly absorbed from the small intestine ✓
   C. The non-ionized portion of drug is more readily absorbed than the ionized portion ✓
   D. Binding of a drug to plasma proteins reduces the rate of distribution ✓
   E. A lipid-soluble drug can cross the blood brain barrier ✓

   A

(TURN OVER)

Dental Pharmacology Quiz #1
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5. Which of the following statements about drug elimination is true?

   A. All drugs are metabolized prior to excretion F
   B. All drugs are inactivated by metabolic enzymes F
   C. A lipid-soluble, non-ionized drug is readily excreted in the urine F
   D. Binding of a drug to plasma proteins reduces the rate of glomerular filtration ↓ free = filtered
   E. Only small molecular weight drugs (less than MW=100) are excreted in the bile

E
H_2O
IONIZ

D

E
Water
Ionize

Dental Pharmacology Quiz #1
January 10, 2005

10

Name _____
(Please Print)

Select the single, most appropriate answer. (All questions of equal value)

1. A drug administered by which of the following routes of administration is most susceptible to first pass metabolism?

   A. Inhalation
   B. Intravenous
   C. Oral
   D. Rectal
   E. Sublingual

C

2. All of the following statements are true about the absorption of a drug **EXCEPT**:

   A. Weak acids are mostly absorbed from the stomach
   B. Weak bases are mostly absorbed from the small intestine
   C. Transdermal administration of a drug can lead to systemic effects
   D. Inhalation of a drug can produce central nervous system effects
   E. Increased lipid solubility leads to an increase in the rate of passive absorption

A

3. All of the following are true about drug elimination **EXCEPT**:

   A. Binding of a drug to plasma proteins reduces its rate of glomerular filtration
   B. Liver metabolism of a drug may produce active or inactive products
   C. A gaseous drug (such as nitrous oxide) may be excreted unchanged through the lungs
   D. The ionized portion of a drug in the tubular filtrate of the nephron is more susceptible to reabsorption than the non-ionized portion
   E. Drugs may be eliminated in breast milk, causing effects in a nursing infant

D

4. The protein that couples the ß-adrenergic receptor to the stimulation of adenylyl cyclase is

   A. Gi
   B. Gs
   C. Gq
   D. G12
   E. G13

B

(TURN OVER)

5. A drug has a half-life of 2 hours. When the drug is given intravenously, 95% of the drug will be eliminated from the plasma in which of the following time periods?

Name

A. 1 hour
B. 2 hours
C. 4.3 hours
D. 8.6 hours
E. 43 hours

4.3
2
8.6

D

Dental Pharmacology Quiz # 1 10 Name [redacted]
January 9, 2006 *(Please Print)*

Select the single, most appropriate answer. (All questions of equal value)

1. Which of the following routes of administration is most susceptible to first-pass metabolism?

   A. Inhalation
   B. Intravenous
   C. Oral
   D. Sublingual
   E. Transdermal

C

2. All of the following statements about renal excretion of a drug are true **EXCEPT:**

   A. Both free and bound drug in the plasma is excreted by glomerular filtration ✗
   B. Both free and bound drug in plasma is susceptible to tubular secretion ✓
   C. The lipid-soluble portion of a drug in the nephron is susceptible to passive reabsorption ✓
   D. A weak acid can inhibit the tubular secretion of another weak acid
   E. Increasing the pH of the urine will increase the excretion of a weak acid ✓

A.

3. Aspirin is a weak acid with a pKa=3.5. What is the ratio of non-ionized/ionized drug at a pH=4.5?

   pKa = 3.5
   pH = 4.5
   3.5 - 4.5 = -1
   10^{-1}

   A. 100/1
   B. 10/1
   C. 1/1
   D. 1/10
   E. 1/100

D

4. A patient has been taking the same dose of a drug (Drug A) for the past 3 years to lower his blood pressure. This drug is a weak acid, is taken by mouth, is 90% bound to plasma proteins, is 50% metabolized to inactive products and 50% excreted unchanged by the kidney. The patient begins taking a second drug (Drug B) for an infection, and finds that his blood pressure is significantly elevated. The most likely explanation is that Drug B

↓BP (WA) ↑BP

A. Enhances the absorption of drug A from the small intestine
B. Displaces drug A from plasma proteins ✗
C. Induces cytochrome P450 enzymes in the liver – mutab. drug A to ↓ effects
D. Blocks the tubular secretion of drug A
E. Enhances the passive reabsorption of drug A

C

5. Which of the following receptors is a ligand-gated ion channel that allows calcium or sodium to enter cells?

LGIC – Ca^{2+}, Na^{+}

A. Epidermal growth factor receptor ✗
B. $GABA_B$ receptor ✗
C. β-adrenergic receptor ✗
D. Muscarinic acetylcholine receptor
E. Nicotinic acetylcholine receptor

ACh

B

E