

Homework # 3 (Fall 2008) PHA 5127 Questions

Q1) Drug A is administered as a 125 mg IV bolus dose. 2 hours after administration the concentration in plasma is 2 mg/L and 10 hours after administration the concentration in plasma is 0.5 mg/L. This lipophilic drug is cleared by the liver and this patient has a liver blood flow of 80 L/hr. The tissue protein binding is 0.6. (total 6 points)

A. Calculate  $C_0$  (2 pts)

B. Calculate  $V_d$  (1 pts)

C. Calculate  $f_u$  (1 pts)

D. Is this a high extraction drug or low extraction drug? (1 pt)

E. If this drug were coadministered with Drug B, which is known to cause enzyme induction for the enzymes responsible for the metabolism of Drug A, would you expect to see a change in clearance? (1 pt)

Q2) How will the following parameters change for a drug that is a high extraction drug eliminated by hepatic clearance only if the free fraction in plasma is changed from 0.2 to 0.8. Indicate increase, decrease, or remain the same (half point each- total 2 points).

A.  $V_d$

B.  $E_H$

C. Cl

D.  $K_e$

Q3) Drug A has a hepatic clearance of 70 L/hr and a half life of 4 hrs. The plasma concentration immediately after an IV dose of 200mg of drug A was 0.289 mg/L. Which of the following statements is true and which is false? (0.5 points each- total 2 points)

- Drug A is cleared only by hepatic metabolism -
- Drug A could be well distributed into tissues-
- Drug A cannot have any plasma protein binding as it is distributed into tissues
- Drug A has AUC (0-inf) of approximately 2.87 mg\*hr/ L