

Case Study 4
PHA 5127
Fall 2006

1 A. What happens to the bioavailability of a high extraction drug when the following parameters are increased: F_u , Q_H , Cl_{int}

B. Explain why changes in the above parameters do not change the bioavailability of a low extraction drug?

2. A patient with liver failure was given 70mg of a drug as an IV bolus injection. The plasma concentrations at 3 hours and 8 hours after injection were 1.31mg/L and 0.65mg/L respectively. The drug is eliminated by hepatic metabolism and renal excretion via glomerula filtration. The plasma protein binding for the drug is 60%... What are the hepatic clearance and the volume of distribution of this drug in this patient? (Use 130ml/min for glomerula filtration rate).

3. Mark True or False

T F highly ionized substances tend to remain in the urine

T F tubular reabsorption can only be an active transport process

T F fluid is filtered across the glomerulus through passive diffusion

4. For the following situations, indicate whether the drug is filtered, reabsorbed or actively secreted: Assume GFR is 130 mL min^{-1} , urine flow is 1.5 ml min^{-1}

A drug with $f_u = 0.1$ and a $Cl_{REN} = 20 \text{ mL min}^{-1}$ is

A drug with $f_u = 0.40$ and a $Cl_{REN} = 52 \text{ mL min}^{-1}$ is

A drug with $f_u = 0.30$ and a $Cl_{REN} = 0.45 \text{ mL min}^{-1}$ is