PHA 5127 Dose Optimization I

Case Study IV

1. **For the following situations, indicate whether the drug is: filtered, reabsorbed (if fully or if reabsorbed through transporters), or actively secreted (Assume GFR is 130mL/min, urine flow is 1.5mL/min)**

   a. Drug with fu= 0.3 and a Cl_{ren}=39mL/min

   b. Drug with fu=0.6 and a Cl_{ren}=30mL/min

   c. Drug with fu=0.05 and a Cl_{ren}=15mL/min

   d. Drug with fu=0.2 and a Cl_{ren}=0.3mL/min

   e. Drug with fu=0.8 and a Cl_{ren}=0.3mL/min

2. **A 25 year old, 5'6'', 80kg male patient with a serum creatinine concentration of 1.8mg/dL was given a drug treatment. Knowing this drug is mainly eliminated by glomerula filtration and has 60% plasma protein binding. Please estimate the Clearance of this drug (with Cockcroft-Gault equation)**

3. **TRUE (T) or FALSE (F)**

   For a high extraction drug, liver blood flow is important to both hepatic clearance and oral bioavailability.

   T F

   For low extraction drug, f_u (fraction of unbound drug in plasma) is important to both hepatic clearance and oral bioavailability.

   T F

   Basic drugs that are polar in their unionized form, the extent of re-absorption depends on the degree of its ionization.

   T F

   Secretion is indicated when renal clearance is larger than GFR*fu.

   T F

It is possible for renal clearance to be close to the kidney blood flow.

T F

Assuming no plasma protein binding, the renal clearance equals the urine flow when full re-absorption occurs.

T F