

**Homework # 2**  
**(PHA 5127)**  
**(Total 10 Points)**  
**Fall 2006**

**Question 1 (2 points each part):**

A teenager was admitted into hospital due to drug intoxication. Patient A is female with a body weight of 60kg. Clinicians decide to give her an IV bolus of Drug XY-134 to control the symptoms. XY-134 is administered at a dose of 0.25 mg/kg. After drug exposure, they found that drug concentration-time profile can be best described by one-compartmental linear model with the equation,  $\{ C = 0.33 \cdot e^{-0.116t}$  (Unit: mg/L)}, where C represents Drug XY-134 concentration at time t (hr).

A: Calculate dose that was given, drug XY-134 concentration at time zero, volume of distribution, half-life of Drug XY-134.

B: If the free fraction of Drug XY-134 in plasma is 0.3 in this patient, what is the free fraction of Drug XY-134 in tissues for the patient?

C: When the patient was in the hospital, a stroke reduced the blood flow to the brain. After the stroke, it took a longer time for the effect of the following injections of XY-134 to kick in. A less lipophilic drug acting also in the brain showed normal onset- of action. Explain?

**Question 2 (1 point each):**

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| T | F | The volume of distribution depends only on the degree of plasma binding. |
| T | F | Drugs are generally less well distributed to highly perfused tissues.    |
| T | F | Ionized drug are hard to cross most membrane barriers.                   |
| T | F | Blood flow rate does not affect drug distribution rate at all.           |