

Homework 7

Bio pharmaceutics & Pharmacokinetics/PHAR434

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7. Park and associates (1983) studied the pharmacokinetics of amrinone after a single IV bolus injection (75 mg) in 14 healthy adult male volunteers. The pharmacokinetics of this drug followed a two-compartment open model and fit the following equation:

$$C_{p} = Ae^{-\alpha t} + Be^{-\beta t}$$

where

$$A = 4.62 \pm 12.0 \,\mu\text{g/mL}$$

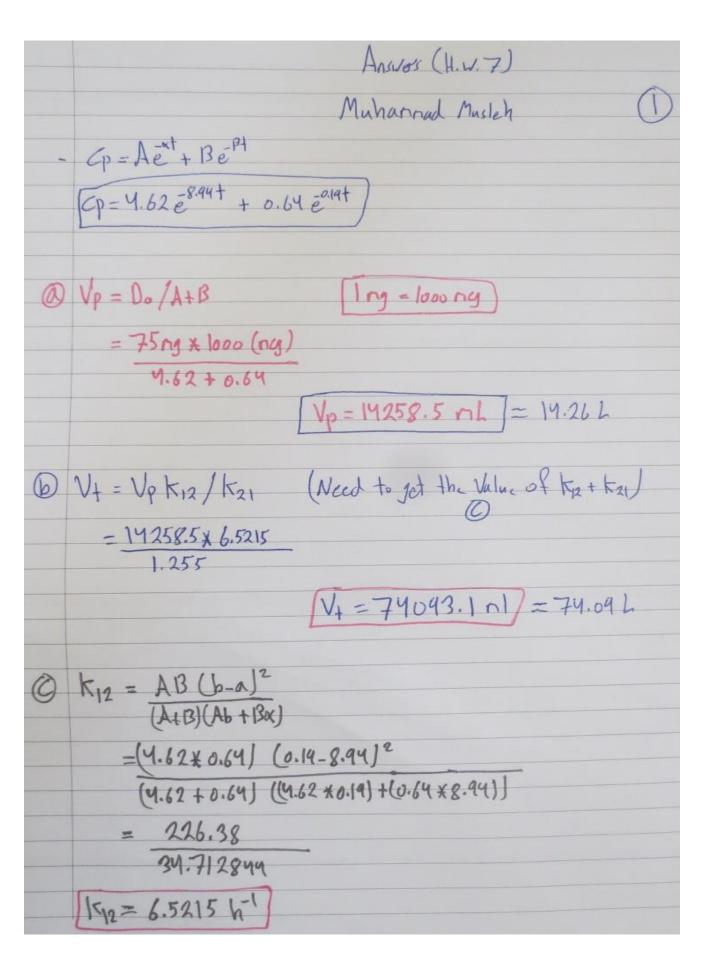
$$B = 0.64 \pm 0.17 \,\mu \text{g/mL}$$

$$\alpha$$
 = 8.94 ± 13 h⁻¹

$$\beta = 0.19 \pm 0.06 \,\mathrm{h}^{-1}$$

From these data, calculate:

- a. The volume of the central compartment
- **b.** The volume of the tissue compartment
- **c.** The transfer constants k_{12} and k_{21}
- d. The elimination rate constant from the central compartment
- e. The elimination half-life of amrinone after the drug has equilibrated with the tissue compartment



$$|x_{21}| = |Ab + Bx|$$

$$= |(4.62 \times 0.19)| + (0.64 \times 8.94)$$

$$|(4.62 + 0.64)|$$

$$|(x_{21} = 1.255 \text{ h}^{-1})|$$

$$|Ab + 13a|$$

$$= 8.94 \times 0.19 + (0.64 \times 8.94)$$

$$= 8.934636$$

$$= 8.934636$$

$$= 6.5994$$

$$|(x_{21} = 0.643)|$$

$$= 8.934636$$

$$= 0.643$$

$$= 0.19$$

$$|(x_{21} = 0.643)|$$

$$= 0.643$$

$$= 0.19$$

too