Correction Notice for *Basic & Applied Pharmacokinetics Self Assessment* by John E. Murphy

Please replace page 8 with the attached page 8.

- Answer 9A has been changed to 13.5 hours and 9B changed to 12 hours

Please replace page 74 with the attached page 74.

- Answer 9A the third tΔ has been changed to 13.5 hours
- Answer 9B has been changed to:

  A logical interval would be 12 hours. Although once daily (every 24 hours) dosing might be attractive in terms of adherence, if it were used for the interval at least one of the concentrations would be above or below the stated therapeutic range and both could be outside the range.

Answers

1. 31.3 mg
2. 6 hours
3. 2 hours
4. ~3.4 hours
5. 3.5 hours
6. 10.4 hours
7. 4.5 hours
8. 4.6 days
9. A. 13.5 hours
   B. 12 hours
10. 783 mg
11. 210 mg
12. 0.25 L/kg
13. 31.3 L
14. 25 mg/L
15. 1.31 mg/L
16. 26.2 mg/L
17. A. $k = 0.126\ hr^{-1}$ $t\frac{1}{2} = 5.5$ hours
    B. 24.5 L
18. A. 30 mg/hr
    B. 2 L/hr
    C. 16 mg/L
    D. Exact = 213 mg
    Dose used would be 200 mg
19. A. 5.4 mg/L
    B. 1.1 mg/L
20. A. $k = 0.126\ hr^{-1}$ $t\frac{1}{2} = 5.5$ hours
    B. 31.4 L
21. A. $k = 0.126\ hr^{-1}$ $t\frac{1}{2} = 5.5$ hours
    B. 33.4 L
22. A. C = 17.85 mg/L
    B. C = 1.50 mg/L
23. A. Dose = 2657 mg
    B. Dose = 1947 mg
24. A. Dose = 305,188 mcg or 305 mg
    B. Dose = 99,010 mcg or 99 mg
25. A. $Css_{avg} = 0.8$ mg/L
    B. Dose = 24 mg every 12 hours
    C. 2, 3, 4, 5, 6, 7

5. Begin by solving for k using **Equation 1.***

$$k = \frac{\ln\left(\frac{C_i}{C}\right)}{t_\Delta}$$

$$k = \frac{\ln\left(\frac{32\ \text{mcg/mL}}{8\ \text{mcg/mL}}\right)}{(10\ \text{hr} - 3\ \text{hr})}$$

$k = 0.198\ \text{hours}^{-1}$

Next, solve for t½

$$t½ = \frac{0.693}{k}$$

$$t½ = \frac{0.693}{0.198\ \text{hr}^{-1}}$$

t½ = 3.5 hours

Note: This answer could have easily been estimated because two half-lives elapsed (32 to 16 to 8) in 7 hours (10–3).

6. Begin by solving for k using **Equation 1.**

$$k = \frac{\ln\left(\frac{6.8\ \text{mg/L}}{3.5\ \text{mg/L}}\right)}{(11\text{p.m.} - 1\text{p.m.})}$$

$k = 0.066\ \text{hours}^{-1}$

Next, solve for t½ using **Equation 2.**

$$t½ = \frac{0.693}{k}$$

$$t½ = \frac{0.693}{0.066\ \text{hr}^{-1}}$$

t½ = 10.4 hours

7. $$k = \frac{\ln\left(\frac{22\ \text{mg/L}}{4.5\ \text{mg/L}}\right)}{10.25\ \text{hr}} = 0.155\ \text{hr}^{-1}$$

$t½ = 0.693/0.155\ \text{hr}^{-1}$

= 4.5 hours

Note: Since half of 22 is 11 and half of 11 is 5.5, you could have estimated this to be a bit less than 5.1 hours.

8. First, solve for k by revising **Equation 2.**

$$k = \frac{0.693}{t½}$$

$$k = \frac{0.693}{2\ \text{days}}$$

$k = 0.347\ \text{days}^{-1}$

Next, solve for t_Δ using **Equation 1** (altered to isolate t_Δ rather than k).

$$t_\Delta = \frac{\ln\left(\frac{C_i}{C}\right)}{k}$$

$$t_\Delta = \frac{\ln\left(\frac{5\ \text{mcg/L}}{1\ \text{mcg/L}}\right)}{0.347\ \text{d}^{-1}}$$

t_Δ = 4.6 days

What would your estimate have been based on the half-life?

9. A. $$t½ = \frac{0.693}{k}$$

$$k = \frac{0.693}{8\ \text{hr}}$$

$k = 0.087\ \text{hours}^{-1}$

$$t_\Delta = \frac{\ln\left(\frac{C_i}{C}\right)}{k}$$

$$t_\Delta = \frac{\ln\left(\frac{13\ \text{mg/L}}{4\ \text{mg/L}}\right)}{0.087\ \text{hr}^{-1}}$$

t_Δ = 13.5 hours

B. A logical interval would be 12 hours. Although once daily (every 24 hours) dosing might be attractive in terms of adherence, if it were used for the interval at least one of the concentrations would be above or below the stated therapeutic range and both could be outside the range.

* Equation 1 and other numbered equations used in this chapter can be found in ***Select Pharmacokinetic Equations***, p xix.