

**FORMULARIO DE CONSULTA de BIOFARMACIA Y FARMACOCINÉTICA  
CURSO 2006-2007**

**Modelo monocompartimental**

i.v.  $C = C_0 \cdot e^{-k_{el} \cdot t}$

e.v.  $C = C^0 \cdot e^{-k_{el} \cdot t} - A^0 \cdot e^{-k_a \cdot t} \qquad C = f \cdot C_0 \frac{k_a}{k_a - k_{el}} \cdot (e^{-k_{el} \cdot t} - e^{-k_a \cdot t})$

**Modelo bicompartimental**

i.v.  $C = A_0 \cdot e^{-\alpha \cdot t} + B_0 \cdot e^{-\beta \cdot t}$

$$P = C_0 \cdot \frac{k_{12}}{\alpha - \beta} \cdot (e^{-\beta \cdot t} - e^{-\alpha \cdot t})$$

e.v.  $C = A_0 \cdot e^{-\alpha \cdot t} + B_0 \cdot e^{-\beta \cdot t} + P_0 \cdot e^{-k_a \cdot t}$

$$C = C_0 \cdot k_a \left[ \frac{k_{21} - \alpha}{(\alpha - k_a)(\alpha - \beta)} \cdot e^{-\alpha \cdot t} + \frac{k_{21} - \beta}{(\beta - k_a)(\beta - \alpha)} \cdot e^{-\beta \cdot t} + \frac{k_{21} - k_a}{(k_a - \alpha)(k_a - \beta)} \cdot e^{-k_a \cdot t} \right]$$

$$\alpha + \beta = k_{12} + k_{21} + k_{13} \qquad A_0 = C_0 \frac{\alpha - k_{21}}{\alpha - \beta}$$

$$\alpha \cdot \beta = k_{21} \cdot k_{13} \qquad B_0 = C_0 \frac{k_{21} - \beta}{\alpha - \beta}$$

$$V_{d(extr.)} = \frac{D}{B_0} \qquad V_{d(área)} = \frac{D}{\beta \cdot AUC_0^\infty} \qquad V_{d(ee)} = V_c \cdot \left(1 + \frac{k_{12}}{k_{21}}\right)$$

$$t_{\max} = \frac{1}{k_a - \alpha} \ln \frac{k_a - k_{21}}{\alpha - k_{21}} \qquad t_0 = \frac{\ln \left( \frac{A_0}{A_\infty} \right)}{k_a}$$

## Orden cero

$$\text{M.C:} \quad C = \frac{k_0}{k_{el}} (1 - e^{-k_{el} \cdot t})$$

$$\text{B.C:} \quad C = \frac{k_0}{k_{13}} \left[ 1 - \frac{k_{13} - \beta}{\alpha - \beta} \cdot e^{-\alpha \cdot t} + \frac{k_{13} - \alpha}{\alpha - \beta} \cdot e^{-\beta \cdot t} \right]$$

## Aclaramiento

$$Cl_t = \frac{\Delta Q_{el} / \Delta t}{C} \quad Cl_t = \frac{D}{AUC_0^\infty}$$

$$Cl_t = k_{el} \cdot V_d = k_{13} \cdot V_c = \beta \cdot V_{d(\text{área})}$$

## Dosis múltiples: Modelo Monocompartimental

$$\text{i.v.} \quad C_{\min}^n = C_0 \frac{1 - e^{-n \cdot k_{el} \cdot \tau}}{1 - e^{-k_{el} \cdot \tau}} \cdot e^{-k_{el} \cdot \tau} \quad C_{\max}^n = C_0 \frac{1 - e^{-n \cdot k_{el} \cdot \tau}}{1 - e^{-k_{el} \cdot \tau}}$$
$$D^* = \frac{D}{1 - e^{-k_{el} \cdot \tau}}$$

$$\text{e.v.} \quad C_{\min}^n = f \cdot C_0 \cdot \frac{k_a}{k_a - k_{el}} \left[ \left( \frac{1 - e^{-n \cdot k_{el} \cdot \tau}}{1 - e^{-k_{el} \cdot \tau}} \right) \cdot e^{-k_{el} \cdot \tau} - \left( \frac{1 - e^{-n \cdot k_a \cdot \tau}}{1 - e^{-k_a \cdot \tau}} \right) \cdot e^{-k_a \cdot \tau} \right]$$

$$C_{\max}^n = f \cdot C_0 \cdot \frac{k_a}{k_a - k_{el}} \left[ \left( \frac{1 - e^{-n \cdot k_{el} \cdot \tau}}{1 - e^{-k_{el} \cdot \tau}} \right) \cdot e^{-k_{el} \cdot t_{\max}^n} - \left( \frac{1 - e^{-n \cdot k_a \cdot \tau}}{1 - e^{-k_a \cdot \tau}} \right) \cdot e^{-k_a \cdot t_{\max}^n} \right]$$

$$D^* = \frac{D}{(1 - e^{-k_{el} \cdot \tau}) \cdot (1 - e^{-k_a \cdot \tau})}$$

$$t_{\max}^\infty = \frac{1}{k_a - k_{el}} \cdot \ln \frac{k_a (1 - e^{-k_{el} \cdot \tau})}{k_{el} (1 - e^{-k_a \cdot \tau})}$$