The Equations

$$Cp = \frac{Dose}{V} \cdot e^{-kel \cdot t}$$

$$Cp = \frac{k0}{kel \cdot V} \cdot \left[1 - e^{-kel \cdot T}\right] \cdot e^{-kel \cdot (t-T)}$$

$$Cp = \frac{F \cdot Dose \cdot ka}{V \cdot (ka - kel)} \cdot \left[e^{-kel \cdot t} - e^{-ka \cdot t}\right]$$

$$t_{max} = \frac{1}{ka - kel} \cdot \ln \frac{ka}{kel}$$

$$\frac{A}{V} = Cp + kel \cdot \int_0^t Cp \cdot dt$$

$$AUMC^{last} = \frac{Cp^{last} \cdot t^{last}}{k} + \frac{Cp^{last}}{k^2}$$

$$pKa - pH = \log \frac{[HA]}{[A^-]}$$

$$\frac{F^A}{F^B} = \frac{Dose^B \cdot kel^A \cdot V^A \cdot AUC^A}{Dose^A \cdot kel^B \cdot V^B \cdot AUC^B}$$

$$kel = knr + a \cdot CL_{CR}$$

$$D = \frac{\text{Total in blood}}{\text{Total in GI tract}}$$

$$CL_{CR} = \frac{(140 - age) \cdot Wt(kg)}{72 \cdot S_{CR}} \cdot 0.85$$

$$Slope = \frac{\ln Cp_1 - \ln Cp_2}{t_1 - t_2} \quad \Big| \quad \tau = \frac{Dose \cdot F}{\overline{Cp} \cdot V \cdot kel}$$

$$Cp_{max} = \frac{Dose}{V \cdot (1 - R)}$$

$$Cp_{min} = Cp_{max} \cdot R$$

$$Cp_n^t = \frac{Dose}{V} \cdot \left[\frac{1 - e^{-n \cdot kel \cdot \tau}}{1 - e^{-kel \cdot \tau}}\right] \cdot e^{-kel \cdot t}$$

$$Cp_{min} = \frac{F \cdot Dose \cdot ka}{V \cdot (ka - kel)} \cdot \left[\frac{e^{-kel \cdot \tau}}{1 - e^{-kel \cdot \tau}}\right]$$

$$Cp_{min} = \frac{F \cdot Dose}{V} \cdot \left[\frac{e^{-kel \cdot \tau}}{1 - e^{-kel \cdot \tau}}\right]$$

$$\frac{dM}{dt} = -\frac{D \cdot A \cdot (Ch - Cl)}{X}$$

$$CL_L = \frac{Q_L \cdot (Ca - Cv)}{Ca} = Q_L \cdot E$$

$$CL = \frac{Q \cdot fu \cdot CL_{int}}{Q + fu \cdot CL_{int}}$$

$$\alpha + \beta = kel + k12 + k21 \text{ and}$$
$$\alpha \cdot \beta = kel \cdot k21$$

$$\alpha, \beta = \frac{(\alpha + \beta) \pm \sqrt{(\alpha + \beta)^2 - 4 \cdot \alpha \cdot \beta}}{2}$$

$$k21 = \frac{A \cdot \beta + B \cdot \alpha}{A + B} \quad \Big| \quad kel = \frac{\alpha \cdot \beta}{k21}$$

$$V_1 = \frac{Dose}{A + B} \quad \Big| \quad V_{area} = \frac{Dose}{\beta \cdot AUC}$$

$$Area = \left(\frac{C_1 + C_2}{2}\right) \times (t_2 - t_1)$$

$$V_{extrap} = \frac{Dose}{B} \quad \Big| \quad AUC^{last} = \frac{Cp^{last}}{k}$$

$$CL = \beta \cdot V_{area}$$

$$V_{ss} = V_1 \cdot \frac{k12 + k21}{k21}$$

$$MRT = \frac{AUMC}{AUC} \quad \Big| \quad k = \frac{1}{MRT}$$

$$CL = \frac{Dose}{AUC} \quad \Big| \quad ka = \frac{1}{MAT}$$

$$MAT = MRT(po) - MRT(iv)$$

$$R = \frac{Vm \cdot Cp}{Km + Cp} \quad \Big| \quad CL = kel \cdot V_1$$

$$Cp = A * e^{-\alpha * t} + B * e^{-\beta * t}$$

$$R = e^{-kel \cdot \tau}$$

$$V_{ss} = CL \cdot MRT$$

$$\frac{A}{a} \cdot t - \frac{A}{a^2} \cdot \left(1 - e^{-a \cdot t}\right) \Leftrightarrow \frac{A}{s^2 \cdot (s + a)}$$

$$\alpha = \frac{(kel + k12 + k21) + \sqrt{(kel + k12 + k21)^2 - 4 \bullet kel \bullet k21}}{2}$$

$$\beta = \frac{(kel + k12 + k21) - \sqrt{(kel + k12 + k21)^2 - 4 \bullet kel \bullet k21}}{2}$$

$$A = \frac{Dose \bullet (\alpha - k21)}{V_1 \bullet (\alpha - \beta)}$$

$$B = \frac{Dose \bullet (k21 - \beta)}{V_1 \bullet (\alpha - \beta)}$$

$$CL = kel \cdot V$$

$$k12 = \alpha + \beta - kel - k21$$

$$V_{area} = \frac{V_1 \bullet kel}{\beta}$$

$$Cp_{late} = B \bullet e^{-\beta \bullet t}$$

$$Vm = \frac{DR_1 \bullet DR_2 \bullet (C_2 - C_1)}{(DR_1 \bullet C_2 - DR_2 \bullet C_1)}$$

$$Km = \frac{Vm \bullet C_1 - DR_1 \bullet C_1}{DR_1}$$