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| ;Computer lab 2:1  METHOD RK4  STARTTIME = 0  STOPTIME = 50  DT = 0.002  Dose = 1000 ; IV Bolus  thalf = 2.5 ;  thalf\_abs = 0.3 ;  V = 1 ; L  ka = logn(2)/thalf\_abs  k = logn(2)/thalf  CL = k\*V ; L/h  ;PK  d/dt(D) = -ka\*D  d/dt(A1) = ka\*D - k\*A1  C = A1/V  init D = Dose  init A1 = 0  ;PD (Direct effect model)  EC50 = 10  Emax = 1  Base = 0  gam = 1  E = Base+(Emax\*C^gam)/(EC50^gam + C^gam) |

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| ;Computer lab 2:2  METHOD RK4  STARTTIME = 0  STOPTIME = 100  DT = 0.002  Dose = 1000 ; IV Bolus  thalf = 2.5 ;  thalf\_abs = 0.3 ;  V = 1 ; L  ka = logn(2)/thalf\_abs  k = logn(2)/thalf  CL = k\*V ; L/h  ;PK  d/dt(D) = -ka\*D  d/dt(A1) = ka\*D - k\*A1  C = A1/V  init D = Dose  init A1 = 0  ;PD (Direct effect model)  EC50 = 10  Emax = 1  Base = 0  gam = 1  E = Base+(Emax\*C^gam)/(EC50^gam + C^gam)  ;Effect compartment model  ke1 = 1  ke0 = 1  d/dt(CE) = ke1\*C - ke0\*CE  init CE = 0  ECE = (Emax\*CE^gam)/(EC50^gam + CE^gam) |

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| ;Computer lab 2:3  METHOD RK4  STARTTIME = 0  STOPTIME = 35  DT = 0.002  Dose = 1000 ; IV Bolus  thalf = 2.5 ;  thalf\_abs = 0.3 ;  V = 1 ; L  ka = logn(2)/thalf\_abs  k = logn(2)/thalf  CL = k\*V ; L/h  ;PK  d/dt(D) = -ka\*D  d/dt(A1) = ka\*D - k\*A1  C = A1/V  init D = Dose  init A1 = 0  ;PD (Direct effect model)  EC50 = 10  Emax = 1  Base = 0  gam = 1  E = Base+(Emax\*C^gam)/(EC50^gam + C^gam)  ;Indirect effect model  kin = 1  kout = 1  {Model MI}  d/dt(MI) = kin\*(1-E) - kout\*MI  init MI = kin/kout  {Model MII}  d/dt(MII) = kin - kout\*(1-E)\*MII  init MII = kin/kout  {Model MIII}  d/dt(MIII) = kin\*(1+E) - kout\*MIII  init MIII = kin/kout  {Model MIV}  d/dt(MIV) = kin - kout\*(1+E)\*MIV  init MIV = kin/kout |

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| ;Computer lab 2:4  METHOD RK4  STARTTIME = 0  STOPTIME = 100  DT = 0.002  Dose = 1000 ; IV Bolus  thalf = 2.5 ;  thalf\_abs = 0.3 ;  V = 1 ; L  ka = logn(2)/thalf\_abs  ke = logn(2)/thalf  CL = ke\*V ; L/h  ;PK  d/dt(D) = -ka\*D  d/dt(A1) = ka\*D - ke\*A1  C = A1/V  init D = Dose  init A1 = 0  ;PD (Direct effect model)  EC50 = 10  Emax = 1  Base = 0  gam = 1  E = Base+(Emax\*C^gam)/(EC50^gam + C^gam)  {Transit compartment model}  MTT=5  {Three transit compartments}  ktr3 = 3/MTT  kout3 = ktr3  d/dt(T31) = ktr3\*(1+E) - ktr3\*T31  d/dt(T32) = ktr3\*T31 - ktr3\*T32  d/dt(T33) = ktr3\*T32 - ktr3\*T33  d/dt(R3) = ktr3\*T33 - kout3\*R3  init T31 = 1  init T32 = 1  init T33 = 1  init R3 = ktr3/kout3  {Five transit compartments}  ktr5 = 5/MTT  kout5 = ktr5  d/dt(T51) = ktr5\*(1+E) - ktr5\*T51  d/dt(T52) = ktr5\*T51 - ktr5\*T52  d/dt(T53) = ktr5\*T52 - ktr5\*T53  d/dt(T54) = ktr5\*T53 - ktr5\*T54  d/dt(T55) = ktr5\*T54 - ktr5\*T55  d/dt(R5) = ktr5\*T55 - kout5\*R5  init T51 = 1  init T52 = 1  init T53 = 1  init T54 = 1  init T55 = 1  init R5 = ktr5/kout5 |