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| --- | --- | --- | --- | --- |
| Abbreviation | Parameter | 1 Compartment | 2 Compartment | 3 Compartment |
| THALF | Terminal Half-life | LOG(2)/K10 | LOG(2)/BETA | LOG(2)/L3 |
| MRT | Mean Resident Time | 1/K10 | 1/BETA | 1/L3 |
| AREA | Area Under the Curve | DOSE/CL | DOSE/CL | DOSE/CL |
| AUMC | Area Under the Moment Curve | AREA\*MRT | AREA\*MRT | AREA\*MRT |
| Vss | Volume of Distribution (steady-state) | V | V1 + V2 | V1 + V2 + V3 |
| TTAR | Time to Target Concentration | LOG(CTAR/(DOSE/V))/(-K10) |  |  |

**Two Compartment Code**

K10 = CL/V1

K12 = Q/V1

K21 = Q/V2

A0 = K10 \* K21

A1 = K10 + K12 + K21

RT1 = (A1 + SQRT(A1\*A1 - 4\* A0)) / 2

RT2 = (A1 - SQRT(A1\*A1 - 4\* A0)) / 2

IF(RT1.LT.RT2) THEN

BETA = RT1

ALPHA = RT2

ENDIF

IF(RT2.LT.RT1) THEN

BETA = RT2

ALPHA = RT1

ENDIF

AIV = DOSE \*(ALPHA-K32)/(V2 \* Scaling Factor \* (ALPHA - BETA))

BIV = DOSE \*(K32-BETA)/(V2 \* Scaling Factor \* (ALPHA - BETA))

AEV = KA\*F\*AIV/(KA-ALPHA)

BEV = KA\*F\*BIV/(KA-BETA)

**Three Compartment Code**

K10 = CL/V1

K12 = Q2/V1

K21 = Q2/V2

K13 = Q3/V1

K31 = Q3/V3

A0 = K10 \* K21 \* K31

A1 = K10 \* K31 + K21 \* K31 + K21 \* K13 + K10 \* K21 + K31 \* K12

A2 = K10 + K12 + K13 + K21 + K31

PPAR = A1 - (A2 \* A2 / 3)

QPAR = (2 \* A2 \* A2 \* A2 / 27) - (A1 \* A2 / 3) + A0

G1 = SQRT(-(PPAR \* PPAR \* PPAR) / 27)

PHI = ACOS((-QPAR/2) / G1)/3

G2 = 2 \* EXP(LOG(G1) / 3)

PI = 4 \* ATAN(1)

RT1 = -(COS(PHI) \* G2 - A2 / 3)

RT2 = -(COS(PHI + 2 \* PI/3) \* G2 - A2 / 3)

RT3 = -(COS(PHI + 4 \* PI/3) \* G2 - A2 / 3)

IF(RT1.LT.RT2.AND.RT1.LT.RT3) L3 = RT1

IF(RT2.LT.RT1.AND.RT2.LT.RT3) L3 = RT2

IF(RT3.LT.RT1.AND.RT3.LT.RT2) L3 = RT3