NO Date

Pharmacokinetics III (excretion)

- in the Kidney execretion occurs throug →
  - Glomerular filtration: occurs when molecules size < glomerular pores
  - PCT: active secretion
    - acid carrier
    - basic carrier
  - DCT

- other sites of excretion →
  - Bile
    - Doxycyclin
    - Azithromycin
  - Lung
  - Saliva
    - Iodides
  - Sweat
    - Rifampicin
  - Milk

- Parameters of Elimination
  - Kinetics order
    - first order
    - zero order
  - elimination half life
  - CLs

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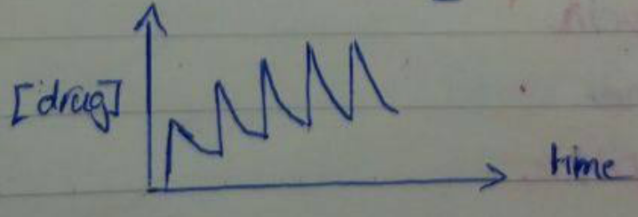
first order kinetics : elimination rate ∝ [drug]

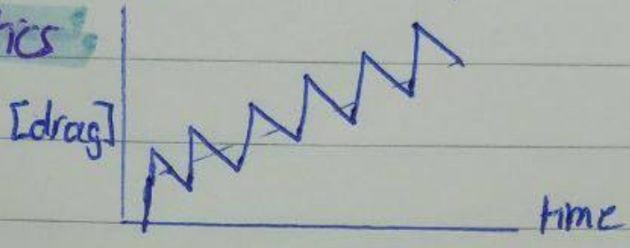
- Constant $t_{\frac{1}{2}}$
- C_{ss} can be reached after 4-5 $t_{\frac{1}{2}}$
- C_{ss} ∝ dose



Zero order kinetics: phenyl Salicylate (phenytoin + Salicylate): rate of elimination is constant

- not constant $t_{\frac{1}{2}}$
- C_{ss} can not be reached by repeated dosing
- Any change of dose may cause toxicity

- Saturation kinetics:



- Elimination $T_{\frac{1}{2}}$: time is required [drug] in plasma to $\frac{1}{2}$ [drug]$_{initial}$, it determines dosage interval.

$$T_{\frac{1}{2}} = 0.7 \frac{V_d}{CL_s}$$

- Systemic Clearance (CL_s): Volume of fluid cleared from drug per unit of time

$$CL_s = CL_r + CL_{nr}$$

$$\text{Maintenance Dose} = CL_s \times T_c \quad (\text{maintain } C_{ss})$$

$$\text{Loading Dose} = V_d \times T_c \quad (\text{achive } C_{ss} \text{ rapid})$$