ModelPK

Jia Liang

BioE 537

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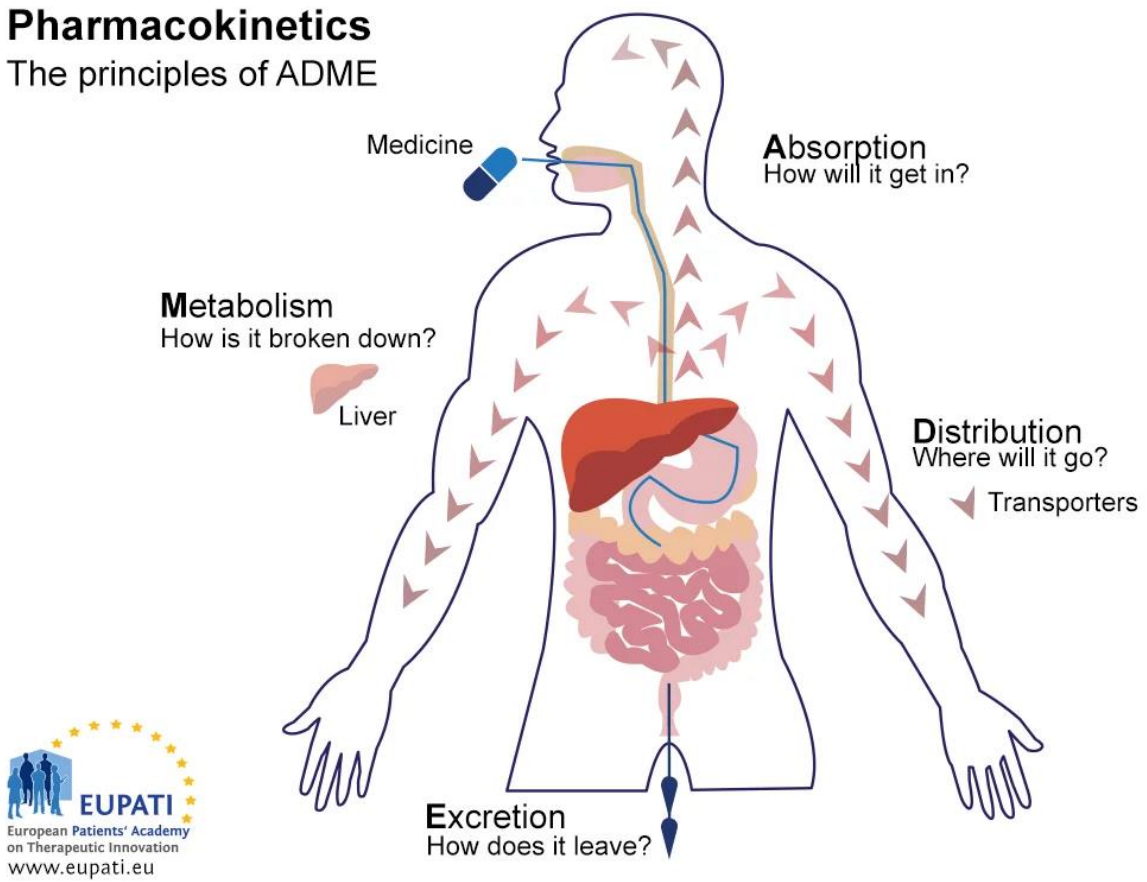
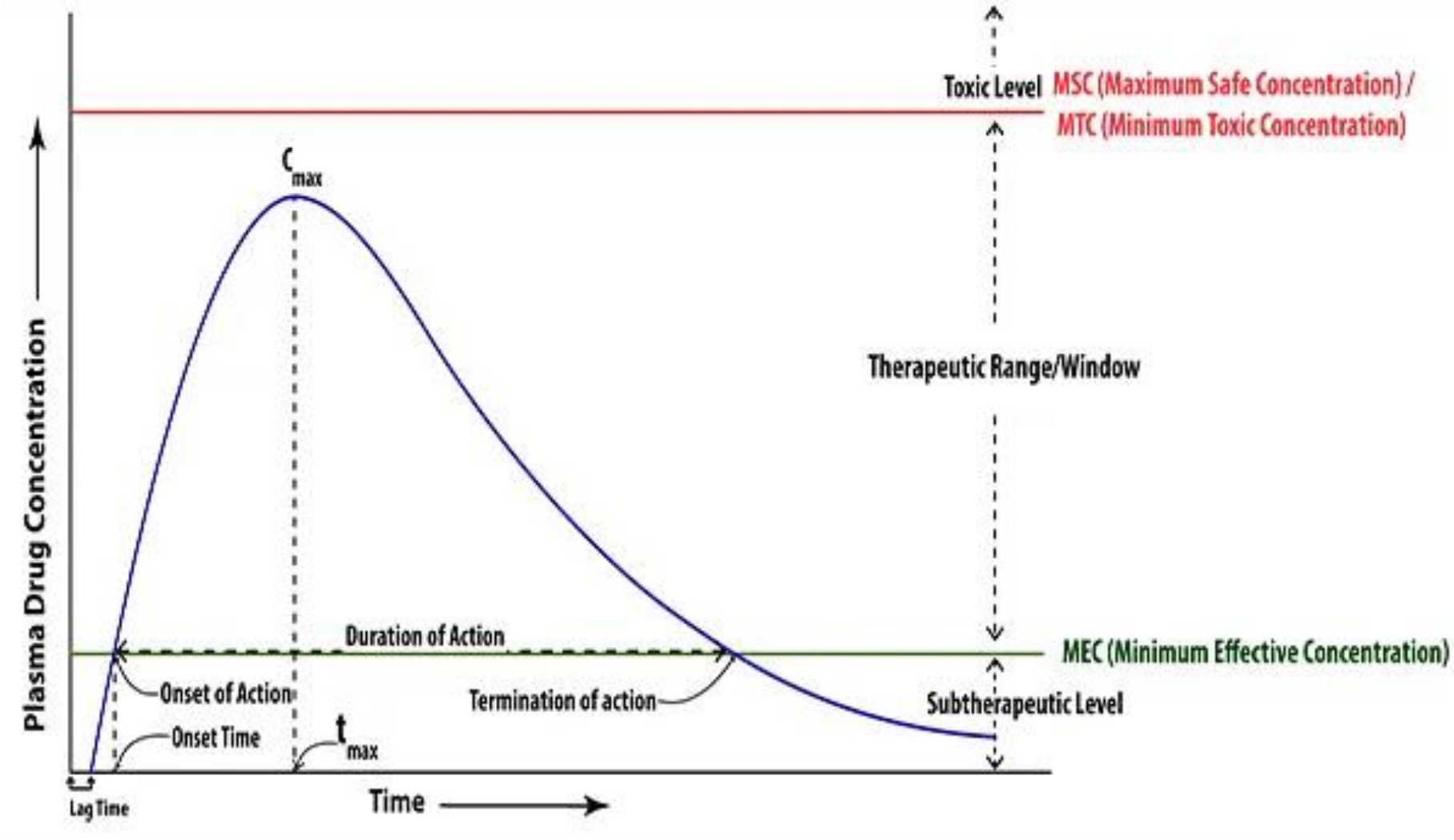
Background



- Pharmacokinetics, or PK, is the study of how a drug moves through the body:

Background


Toxic Level
MSC (Maximum Safe Concentration) /
MTC (Minimum Toxic Concentration)
C max
Therapeutic Range/Window
Plasma Drug Concentration
Duration of Action
MEC (Minimum Effective Concentration)
Onset of Action
Termination of action
Subtherapeutic Level
Onset Time
t max
Lag Time
Time

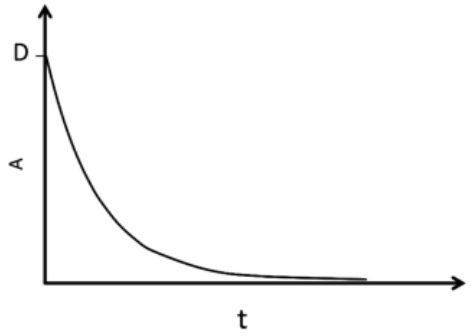
ModelPK

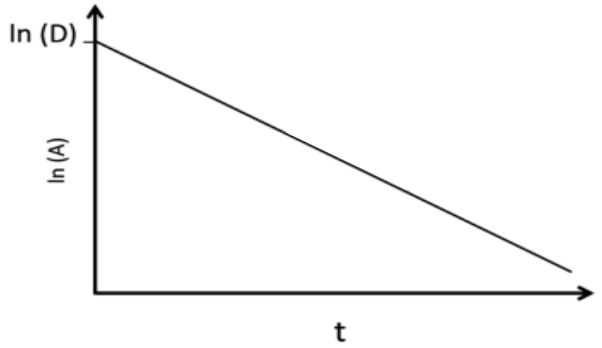
- Enables a bench scientist who is not familiar with PK modeling to extract basic information about the pharmacokinetic profile of a drug from experimental data.

1. Users would input name of an Excel or CSV file with experimental data (drug concentrations over time)
2. System will load the data into a dataframe
3. System will clean and prepare the data (remove null values, log transform drug concentrations)
4. System will extract PK parameters (Co, k, Cmax, Tmax, t_half)

Design

LoadData → PrepData → findPK





Co
k
Cmax
Tmax
t_half

Project Structure

https://github.com/jyliang27/ModelPK

Next Steps

- Finish testing functions
- Create the package
- Develop functions to handle:
  - Other routes of administration
  - Multi-compartment models