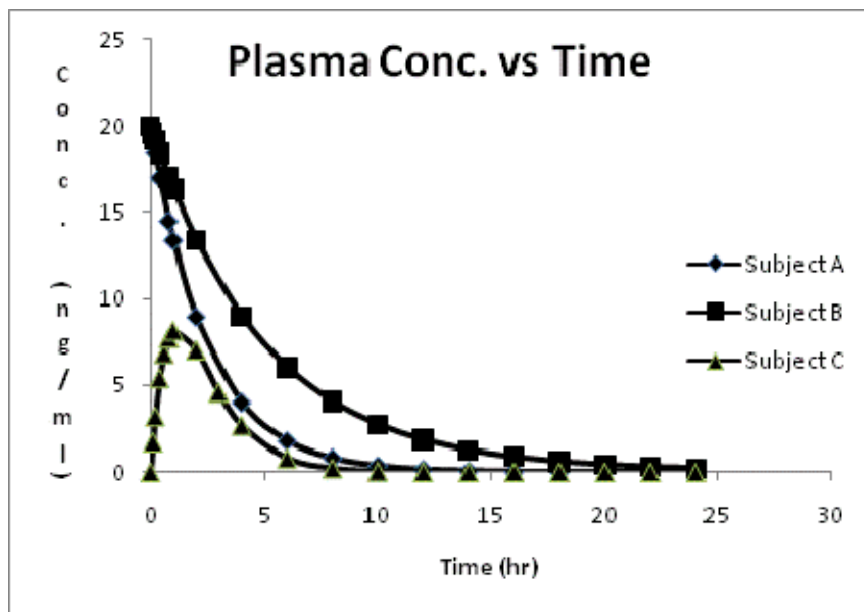


Case Study 1

- 1) a) Define Pharmacokinetics?
- b) Fig 1 shows the plasma concentration time profiles of three subjects A, B and C after the administration of the same dose of a drug X.
 - i) From the profile explain the differences in the route of administration between the subjects. Write a short answer in terms of LADME.
 - ii) Between subjects A and B identify the subject from which the drug X is eliminated faster?

Fig 1



- 2) The table1 shows the serum concentration profiles of a certain drug in patient X. Please specify the units for the Pk parameters to get full credit.
 - a) Determine if the elimination process is a first order or a zero order process. Plot the data on a semilog paper.
 - b) Calculate K_e , the first order elimination rate constant.
 - c) Calculate $AUC_{0-t_{last}}$ and AUC_{0-inf} by trapezoidal rule.
 - d) Calculate the concentration of the drug X in serum at time 5hr.

Table 1

Time (hr)	Conc.(ng/ml)
0	20
1	16.37
1.5	14.82
2	13.41
4	8.99
6	6.02
8	4.04
10	2.71
12	1.81

True or False:

- 1) Therapeutic Drug Monitoring (TDM) in individual patients is important for drugs with a narrow therapeutic index. (T/F)
- 2) When the change in amount of the drug in the body is related to the amount by the following equation $\frac{dX}{dt} = -k * X^0$, where X is the amount of the drug at a given time t, then we say the elimination is a zero order process. (T/F)
- 3) The plasma concentration time profile of a certain drug is dependent on the dosage form. (T/F)