PHA 5127 Dose Optimization I

Case Study II

1. Two patients (A and B) were given a same drug through IV bolus, and this drug is 40% bound to plasma proteins in both two patients but has different tissue binding. There is 70% and 80% tissue binding in patient A and patient B, respectively. In order to reach same initial total plasma concentration of 2mg/L in both two patients, which doses should be given to them?

2. The plasma protein binding of drug A and drug B is 5% and 98% respectively. If the protein bindings of both drugs decreased 50% in one patient, what percentage of change will happen in Vd (volume of distributions) and initial free drug concentration? (Assume IV bolus application, fuT=0.1, V_p=3L, V_T=38L for both two drugs)?

3. TRUE (T) or FALSE (F)

To determine the loading dose, volume of distribution is an important factor.

T F

Drug A has 3% protein binding and has a narrow therapeutic window. Small differences in protein binding are not so important since 97% drug is free and available for receptors.

T F

For a drug with high tissue binding, the volume of distribution will be always very high.

T F

Apparent volume of distribution (Vd) will never excess the total body volume.

T F

Lipophilic drugs are generally taken up fast by highly perfused organs

T F

The uptake of a hydrophilic drug into tissue can be increased significantly by increasing the blood flow through the tissue. (Assume permeability limited distribution)

T F