1. H.P., a male patient, 52 years of age, 150 lbs in weight and 5’11” in height received a kidney transplant and treated with cyclosporine tablet 200 mg TID (F=0.3). After achieving steady state, his “true” trough level is 65 ng/mL. If the desired peak and trough concentrations at steady state are 300 ng/mL and 100 ng/mL, what would be the new dosing regimen? (Vd = 4.5L/kg) (Cyclosporine is rapidly absorbed)
2. D.S., a 42 year old, 57 kg woman, 5’6” tall, who received a liver transplant, is to be started on oral treatment with cyclosporine. Recommend a dosing regimen that would achieve free steady state concentrations of 40 and 15 ng/mL. Cyclosporine is available in oral doses of 25 mg, 50 mg and 100 mg. Suggest a dosing regimen. You may assume a rapid absorption process and, thus, use the equations for IV bolus administration.
3. A 75 kg male became nauseated after receiving i.v. aminophylline 90mg/h for several days. A plasma sample for theophylline was obtained and the infusion was discontinued. Ten hours later a second plasma sample was obtained. The reported plasma theophylline concentrations were 40μg/mL and 20μg/mL, respectively. Estimate the hourly dose of aminophylline required to maintain the plasma theophylline concentration at 15mg/L. (Use aminophylline $S = 0.85$, $Vd = 0.5L/kg$)
4. H.C. is a 55 kg, 45 years old woman with heart failure. Predict the loading IV dose of lidocaine to achieve the plasma level of 5 mg/L. (Vc=0.3 L/kg, Vd=0.88L/kg, S=0.87) Calculate the maintenance infusion rate of lidocaine to keep the concentration to 3 mg/L. (CL=6 mL/kg/min)