APPENDIX

Time to maximal concentration (T_{max})

The T_{max} corresponds to the time required to reach the maximum drug concentration after drug administration. The unit for T_{max} is a unit of time (e.g. hr, min).

The maximal concentration (C_{max})

The C_{max} represents the maximal or the peak plasma drug concentration after drug administration. The unit for C_{max} is a concentration unit (e.g. ug/mL)

The area under concentration-time curve over 24 hour (AUC_{0-24})

The AUC_{0-24} is a measurement of the extent of bioavailability of a drug during 24 hour that reflects the total amount of active drug which reaches the systemic circulation. The AUC_{0-24} is calculated from the area under the graph plotted between the plasma drug concentrations and the time at measurement with use of the trapezoidal rule. The unit for AUC_{0-24} is a unit of drug concentrations multiplied by time (e.g.ug.hr/mL).

The elimination half-life ($t_{1/2}$)

$t_{1/2}$ is defined as the time for the concentration of drug in the blood or plasma to decline to half of its original value. The unit for $t_{1/2}$ is hr.

The volume of distribution (V_d)

V_d is a second fundamental parameter that is useful in discussing processes of drug disposition. The V_d relates the amount of drug in the body to the concentration of drug in the blood or plasma depending upon the fluid measured. This volume dose not necessarily refer to an identifiable physiological volume but merely to the fluid volume that would be required to contain all of the drug in the body at the same concentration as in the blood or plasma. The unit for V_d is L or L/kg.

The plasma clearance (CL_p)

CL_p is the volume of blood or plasma cleared of drug from blood or plasma in a unit time. Unit for CL_p is volume per time (L/hr).

The absorption rate constant (K_a)

K_a is a constant which decribes the rate of absorption of drug from site of administration into systemic circulation. The unit for K_a is hr^{-1}.

The elimination rate constant (K_e)

K_e is a constant which describes the rate of removal (elimination) of drug from the body. The unit for K_e is hr^{-1}.

The relative bioavailability (F_{rel})

Bioavailability refers to the rate and extent (amount) of therapeutically active drug which reaches the general circulation. F_{rel} is the AUC of a drug product as compared to the standard drug . The relative availability of two drug products given at the same dosage level and by the same route of administration can be obtained with the following equation.

$$F_{rel} = (AUC)_{test} / (AUC)_{standard}$$

Where AUC_{test} = AUC of the test drug

$Auc_{standard}$ = AUC of the standard drug

When different doses are administered, the following equation is used

$$F_{rel} = (AUC)_{test} D_{std} / (AUC)_{std} D_{test}$$

where D_{std} = Dose of standard drug

D_{test} = Dose of test drug

VITA

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