Chapter 5
Pharmacokinetics

Figure 5.1. The four processes of pharmacokinetics: absorption, distribution, metabolism, excretion.

Figure 5.2. Effect of pH on drug absorption: (a) a weak acid such as aspirin (ASA) is in a nonionized form in the acidic environment and absorption occurs; (b) in a basic environment, aspirin is mostly in an ionized form and the absorption is prevented.

Figure 5.3. Plasma protein binding and drug availability: (a) drug exists in a free state or bound to plasma protein; (b) drug-protein complexes are too large to cross membranes.

Figure 5.4. First-pass effect: (a) drugs are absorbed; (b) drugs enter hepatic portal circulation and go directly to liver; (c) hepatic microsomal enzymes metabolize drugs to inactive forms; (d) drug conjugates, leaving liver; (e) drug is distributed to general circulation.

Figure 5.5. Enterohepatic recirculation.
Figure 5.6: Single-dose drug administration: pharmacokinetic values for this drug are as follows: onset of action = 2 hours; duration of action = 6 hours; termination of action = 8 hours after administration; peak plasma concentration = 10 mcg/ml; time to peak drug effect = 5 hours; t₁/₂ = 4 hours.

Figure 5.7: Multi-dose drug administration: drug A (---) and drug B (---) are administered every 12 hours; drug B reaches the therapeutic range faster because the first dose is a loading dose.