

DISTRIBUTION

The rate of distribution to organs or tissues is determined primarily by blood flow and the rate of diffusion out of the capillary bed into the cells of a particular organ or tissue, and usually occurs rapidly.

The final distribution depends largely on the affinity of a xenobiotic for various tissues. In general, the initial phase of distribution is dominated by **blood flow**, whereas the eventual distribution is determined largely by **affinity**. The penetration of toxicants into cells occurs by passive diffusion or special transport processes.

Volume of Distribution

A key concept in understanding the disposition of a toxicant is its volume of distribution (V_d), a primary determinant of the concentration of a toxicant in blood that is used to quantify distribution throughout the body. It is defined as the volume in which the amount of drug would need to be uniformly dissolved in order to produce the observed blood concentration.