

The Four Cornerstones of Pharmacokinetics

- Absorption
- Distribution
- Metabolism
- Elimination

Absorption and distribution are influenced by the **formulation**:

Medicinal Agent --> **Formulation** --> **Medication**

Galenic = Science of pharmaceutical formulation

Tinctures of natural products – opium, vegetable drugs

(Galenos of Pergamon, 129-199 AD)

Drug Administration and Absorption

Routes of Drug Administration:

- Oral
- Topical (Percutaneous)
- Rectal or Vaginal
- Pulmonal
- Parenteral

Route of administration determined by chemical properties and stability of the active substance, desired concentration needed at target tissue, sensitivity of the active agent to degradation (enzymatic) and desired duration of action.

Drug Uptake

Drug diffusion through phases:

- Aqueous phase – passive by concentration gradient*
- Lipid phase – passive by both concentration gradient* & lipophilicity of drug

Across barriers:

- Carriers
- Endocytosis / pinocytosis

Fick's Law:

$$\text{Flux} = [C1 - C2] \times \{ P \} \times (\text{Area})$$

P is Permeability

$P = \frac{\text{Permeability coefficient}}{\text{Thickness}}$

