

Pharmacological Drugs

Pharmacology:

Scientific study of effects of drugs and chemicals on living organisms.

Drug:

Any chemical substance, natural or synthetic, which affects a biological system.

Drug Discovery and Development Process:

→ It is a complex multiphase process that takes several years.

→ It involves several important steps:

1. Drug Discovery:

a) Target Identification:

New target molecule (a protein or other molecule) involved in disease is identified.

b) Target Validation:

Therapeutic effect of the target confirmed by the experiment.

c) Hit Identification:

Large libraries of the compounds screened to find the "Hit" that interact with target.

d) Hit to lead optimization:

Hits refining to improve their potency, selectivity and pharmacokinetic properties.

2. Preclinical Development:

In Vitro Studies:

Testing of lead compounds in labs to evaluate their effects on cell and biological system.

In Vivo Studies:

Conducting tests in animal models to assess the safety, efficacy and pharmacokinetics of compounds.

Toxicology Studies:

Evaluation of toxicology and side effects through rigorous testing.

Formulation Development:

Developing the drug formulation for stability, delivery and dosage.