

AIM: INTRODUCTION TO EXPERIMENTAL PHARMACOLOGY

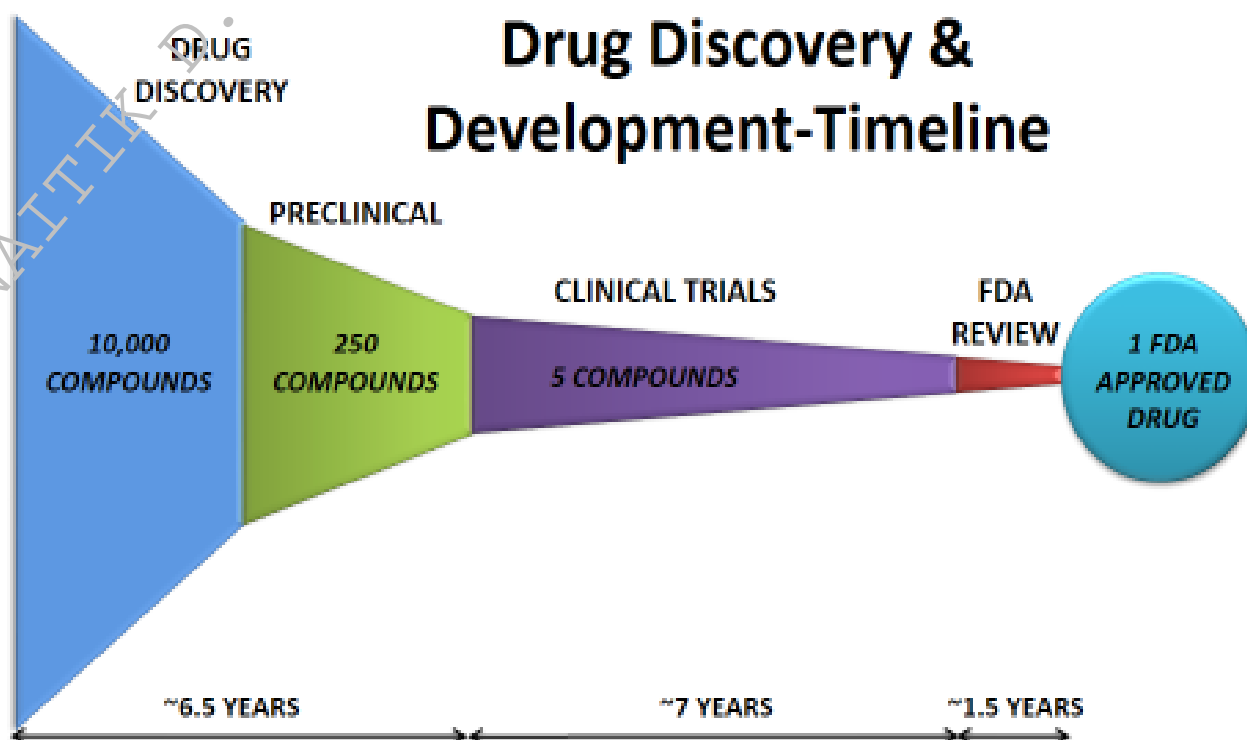
INTRODUCTION:

Experimental Pharmacology involves:

- a) **Preclinical Experiments:** Which consist of animal studies for deciding the safety, efficacy, pharmacokinetics and pharmacodynamics of a new drug or a new drug formulation.
- b) **Clinical Experiments:** These follow preclinical studies. In clinical pharmacology, efficacy, safety, and pharmacokinetics of a drug substance is determined through its use in healthy human volunteers and patient populations under controlled conditions. Only those drugs which are found safe and effective in preclinical (animal) studies are further investigated in such studies.

OBJECTIVES OF EXPERIMENTAL PHARMACOLOGY

- 1. To screen drug substance for their biological activities.
- 2. To study the toxicity of drugs.
- 3. To study mechanism of action and site of action of the drug.





Process of experimental pharmacology to discover drugs

DEFINITIONS:

- 1. PHARMACOLOGY:** The word pharmacology is made of two parts, pharmacon (drug) and logus (discourse or study). Pharmacology means study of drugs, their pharmacodynamics, pharmacokinetics and toxicities.
- 2. CLINICAL PHARMACOLOGY:** The branch concerned with the scientific studies on the effects of drug treatment in human being.
- 3. PHARMACOKINETICS:** It is study of absorption, distribution, metabolism and excretion of drugs. i.e study of what body does to the drug.
- 4. PHARMACODYNAMICS:** It is study of mechanism action and site of action of the drugs i.e it is study of what drug does to the body.
- 5. ABSORPTION:** Drug goes from site of administration to systemic circulation or blood.
- 6. DISTRIBUTION:** Drug goes from systemic circulation to various compartments like fat, muscles, tissue, organ etc.
- 7. METABOLISM:** Conversion of drug in to excretion form.
- 8. ELIMINATION OR EXCRETION:** Removal of drug from the body.
- 9. BIOAVAILABILITY:** Fraction of an administered dose of unchanged drug that reaches the systemic circulation
- 10. DRUG:** It is the active ingredient which is useful for diagnosis, treatment, mitigation and prevention of any disease or disorder in human beings or animals.

- 11. MEDICINE:** The substances used to deliver drug in stable and acceptable form and it consist lubricant, binder, sweetener like other additives constituents with active ingredients.
- 12. PHARMACOEPIDEMIOLOGY:** Study of effects of drugs in large numbers of people.
- 13. PHARMACOGENOMICS:** Application of genomic technologies to new drug discovery and further characterization of older drugs.
- 14. NEUROPHARMACOLOGY:** Effects of medication on central and peripheral nervous system functioning.
- 15. PSYCHOPHARMACOLOGY:** Effects of medication on the psyche; observing changed behaviors of the body and mind, and how molecular events are manifest in a measurable behavioral form.
- 16. PHARMACOGENETICS:** Clinical testing of genetic variation that gives rise to differing response to drugs.
- 17. THEORETICAL PHARMACOLOGY:** Study of metrics in pharmacology.
- 18. POSOLOGY:** How medicines are dosed. It also depends upon various factors like age, climate, weight, sex, and so on.
- 19. PHARMACOGNOSY:** A branch of pharmacology dealing especially with the composition, use, and development of medicinal substances of biological origin and especially medicinal substances obtained from plants.
- 20. PHARMACOVIGILANCE (PV):** It is defined as the science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problem.
- 21. SIDE EFFECTS:** A secondary but predictable effects, typically undesirable effect of a drug or medical treatment.
- 22. ADVERSE EFFECTS:** A secondary but unpredictable effects, typically undesirable effect of a drug or medical treatment.
- 23. TOXIC EFFECTS:** Harmful effects of the drug which is related to dose (Excess).

TEACHER'S SIGNATURE