Pharmacodynamics

The biochemical and physiologic mechanisms of drug action.

What the drug does when it gets there.

The actions of the **drug on the body.**

this determine the group in which the drug is classified and play the major role in deciding whether that group is appropriate therapy for a particular symptom or disease.

RECEPTORS

• The component of a cell or organism that interacts with a drug and initiates the chain of biochemical events leading to the drug`s observed effects.

1. RECEPTORS... **Largely determine the quantitative relations between dose or concentration of drug and pharmacologic effects** (affinity for binding);

2. **Are responsible for selectivity of drug action**

3. **Mediate the actions of both pharmacologic agonists and antagonists.**

• Most receptors are proteins.

• **"orphan" receptors** - so called because their ligands are presently unknown, which may prove to be useful targets for the development of new drugs.

• The best-characterized drug receptors are **Regulatory proteins**

• Other classes of proteins that have been clearly identified as drug receptors include **Enzymes**

• **Transport proteins** (eg, **Na+,K+ ATPase,** the membrane receptor for cardioactive digitalis glycosides); and

RECEPTOR RESERVE OR SPARE RECEPTORS

RECEPTORS (cont)

Receptors are said to be "spare" for a given pharmacologic response if it is possible to elicit a maximal biologic response at a concentration of agonist that **does not result in occupancy of the full complement of available receptors.**

• Maximal effect does not require occupation of all receptors by agonist.

SPARE RECEPTORS --- are receptors that does not bind drug when the drug concentration is sufficient to produce maximal effect.

Receptor Interactions

• Lock and Key Mechanism

TYPES of DRUG-RECEPTOR INTERACTIONS:

a. AGONIST	drugs that bind to and activate the receptor which directly or indirectly brings about the effect.
a.1 FULL AGONIST	drugs bind to receptors and activate them but do not evoke as great a response
a.2 PARTIAL AGONIST	
b. ANTAGONIST	A drug is said to be an antagonist when it binds to a receptor and prevents (blocks or inhibits) a natural compound or a drug to have an effect on the receptor. An antagonist has NO activity. Its intrinsic activity is = 0