

## 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<sup>+</sup>,K<sup>+</sup> 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



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Not published yet.

Last updated 26th December, 2023.

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