

## \* Drug-Target Interaction :-

Macromolecule of biological origin perform various functions in the body.

• Enzymes :- Proteins which perform the role of biological catalysts in the body are called enzymes.

• Receptors :- Proteins which are crucial to communication system in the body are called receptors.

Nucleic Acid — are coded genetic information for the cell.

Lipids and carbohydrates — are structural parts of the cell membrane.

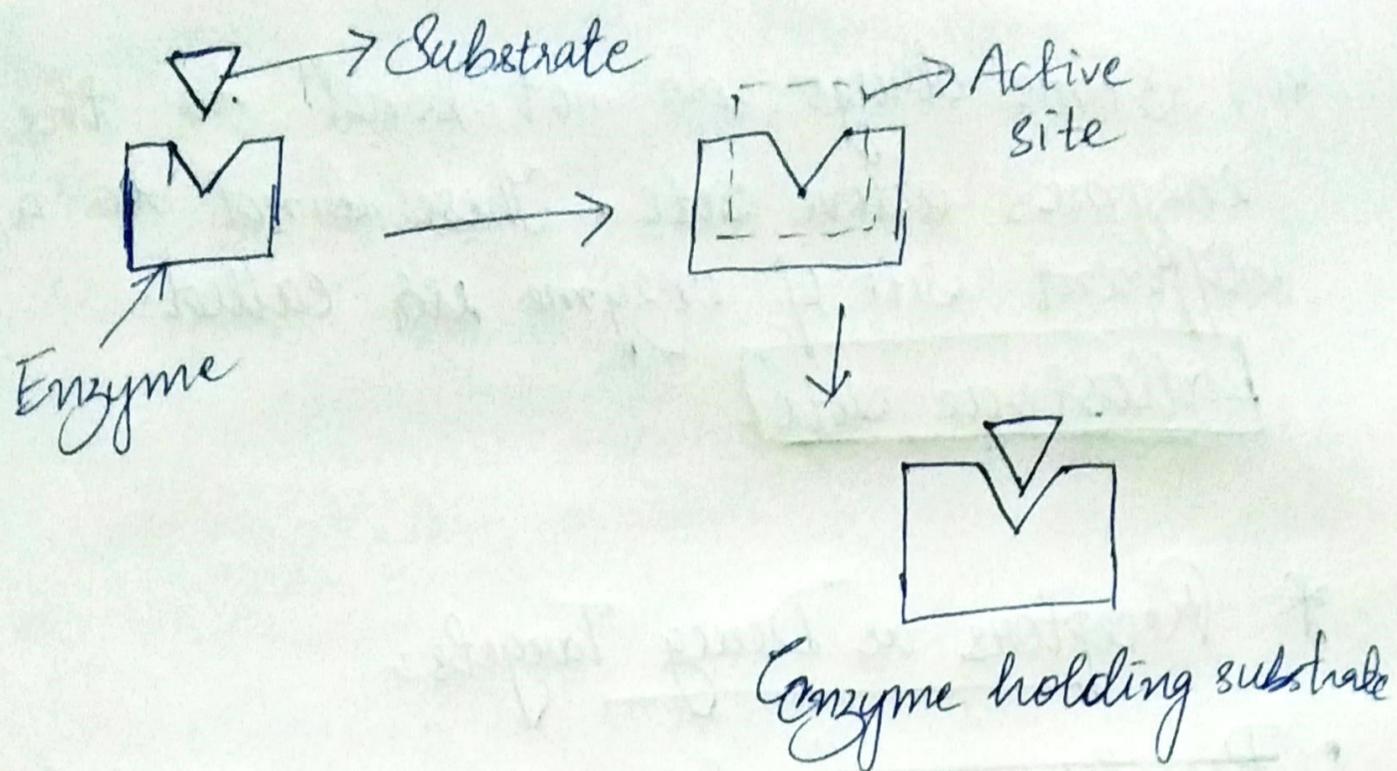
### 1) Enzyme as Drug Targets :-

#### a) Catalytic action of enzymes :-

• In catalytic activity, enzymes perform two major functions :-

i) The ~~force~~ of enzyme is used to hold the substrate for a chemical reaction.

Substrates bind to the active site of the enzyme through a variety of interactions such as ionic bonding, hydrogen bonding, Van der Waals interaction.



## ~~b) Drug enzyme interaction~~

ii) The 2nd function of an enzyme is to provide functional groups that will attack the substrate and carry out chemical reaction.

## b) Drug - enzyme interaction:-

- Drug ~~can~~ <sup>can</sup> i) block the binding site of the enzyme  
 ii) prevent the binding of substrate or can inhibit the catalytic activity of the enzyme.

Such drugs are called enzyme inhibitors.

The ways are :-

- i) Drugs compete with the natural substrate for their attachment on the active site of enzymes. Such drugs are called competitive inhibitors.

ii) Some drugs do not bind to the enzyme's active site. These bind to a different site of enzyme called allosteric site.

### \* Receptors as Drug Targets:-

- Receptors are proteins that are crucial to body's communication process.
- Majority of ~~these~~ <sup>these</sup> are embedded in cell membranes.

### • Chemical messengers:-

The message between two neurons and that between neurons to muscles is communicated through certain chemicals is known as chemical messengers, are received at the binding sites of receptor proteins.

### Antagonists:-

Drugs that bind to the receptor site and inhibit its natural function are called antagonists.

These are useful when blocking of message is required.

Agonists :- Drugs that mimic the natural messenger by switching on the receptor.

• These are useful when there is lack of natural chemical messenger.