## Mechanism of organic reactions.

When a chemical reaction takes place between two or more chemical species, new products are formed. This change is represented by a chemical equation. In a chemical equation, reactants are written on the left hand side while the products are written on the right hand side. The two are separated by an arrow (→). The reactants normally consists of two species,

(1) **Substrate:**The species, which is attacked by some other chemical species, is called a substrate.

(2)**Reagent:** The species, which attacks the substrate in order to get the major product, is called a reagent.

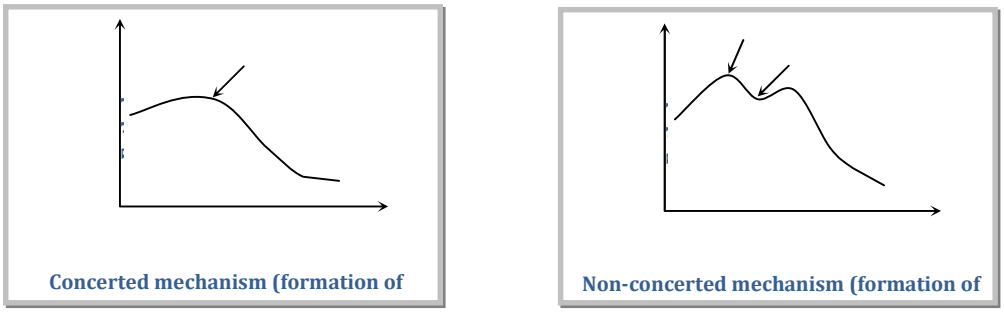
Thus, Substrate + Reagent → Products.

Normally, a substance and a chemical reagent form a highly energetic species, called **activated complex**, before it changes into the product. In certain cases, a relatively energetically more stable species than the activated complex may also be formed. It is called **reaction intermediate**. Thus, a chemical reaction, in general, may follow either of the following two paths,

**Path I**: Substrate + Reagent → Activated complex → Products

**Path II**: Substrate + Reagent → Activated complex → Intermediate → Products.

The detailed step by step description of a chemical reaction is called mechanism of a reaction which is only a hypothesis. If the reaction mechanism involves the breaking and making of bonds simultaneously without the formation of any intermediate, it is called **concerted mechanism**. On the other hand, if the reaction mechanism involve the formation of intermediates before the formation of products, it is called **non-concerted mechanism**.




Enthalpy curves for concerted and Non-concerted mechanisms

To understand clearly the mechanism of various organic reactions, it is essential to have knowledge about the following concepts;

- Electronic displacements in covalent bonds,
- Cleavage (fission or breaking) of covalent bonds,
- Nature of attacking reagents.