

Enzymes

Define:

Enzymes are proteins that:

- function as biological catalysts which can alter or speed up reactions.
- They remain chemically unchanged at the end of the reaction.

Characteristics:

- Speed up chemical reactions
- Required in minute amounts
- Specific in action

Examples:

- Salivary amylase
- protease
- pepsin
- lipase
- maltase

*Lock-and-Key Hypothesis:

Substrates: substances on which enzymes act on

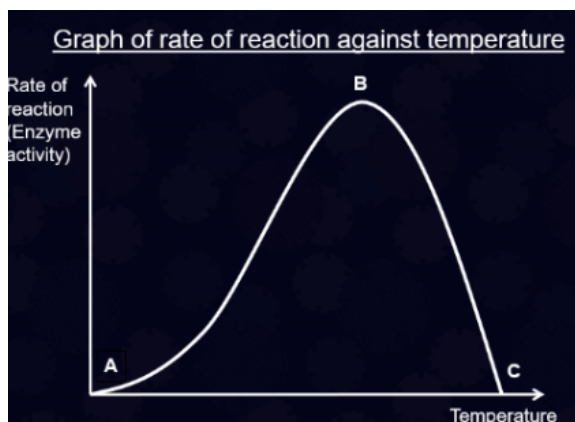
Active sites: depression on surface of enzyme molecule (can be fit by substrate molecule)

Substances on which enzymes act on are called substrates. According to the lock-and-key hypothesis, enzyme reaction depends on the presence of active sites. Active sites are depressions on the surface of an enzyme molecule into which the substrate molecule can fit, just like a lock and a key

Factors affecting enzymes:

1. Temperature
2. pH

Graph example:



A:

- enzyme activity: zero.
- water is frozen at 0c, so no reactions can occur.

Near A:

- enzyme activity: very low
- enzymes are inactive at low temperatures

A-B:

- as temperature increases, enzyme activity increases.
- kinetic energy of substrate and enzyme molecules increases
- rate of collision between enzyme and substrate molecules increases

B:

- optimum temperature reached.
- Enzyme activity: highest

BC:

- change in 3d structure occurs.
- Enzyme denatures