SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai

DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME : BIOCHEMISTRY

TOPIC : ENZYMES - FACTORS AFFECTING ENZYME ACTIVITY

Factors affecting enzyme activity

Temperature

Hydrogen ion concentration (pH)

Substrate concentration

Enzyme concentration

Products of the reaction

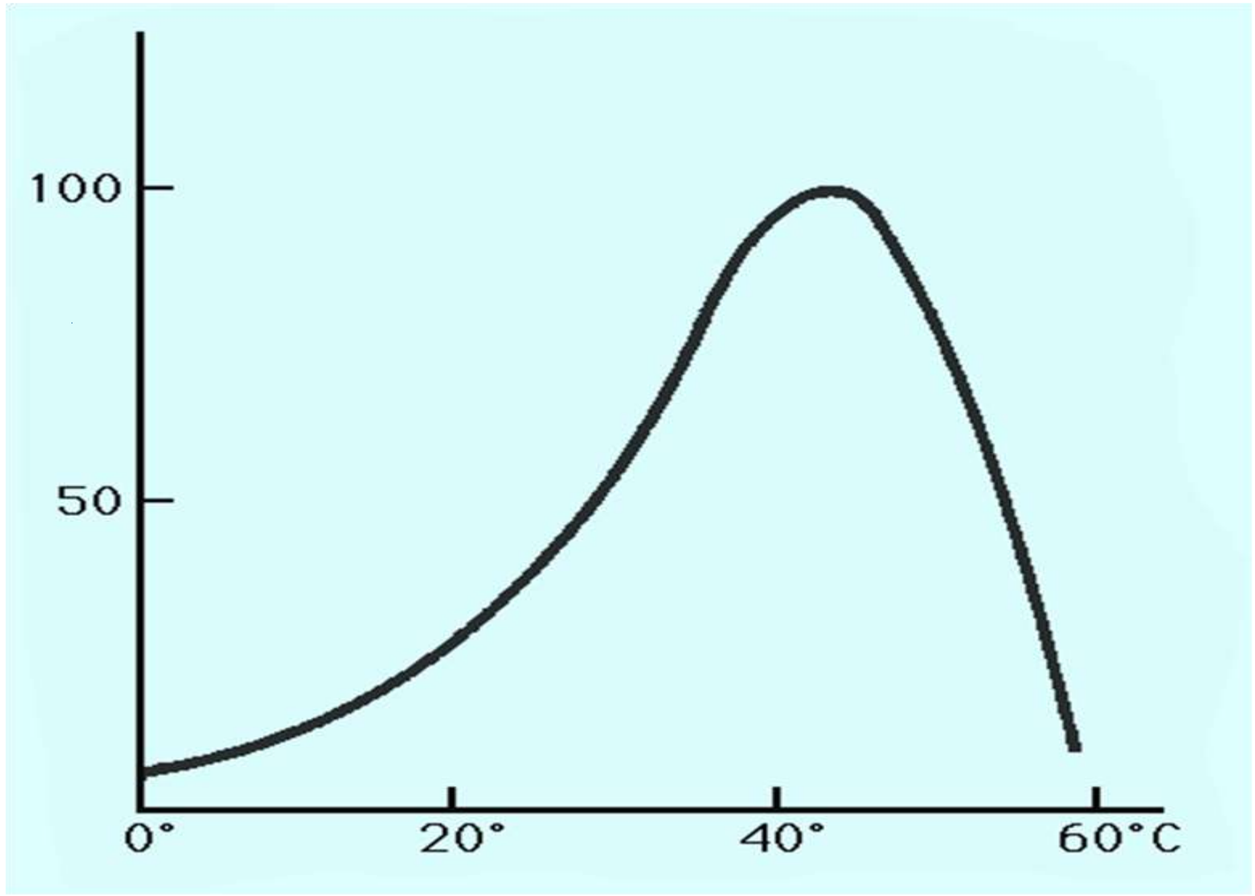
Presence of activator/inhibitor

Cofactors & Coenzymes

Allosteric effects

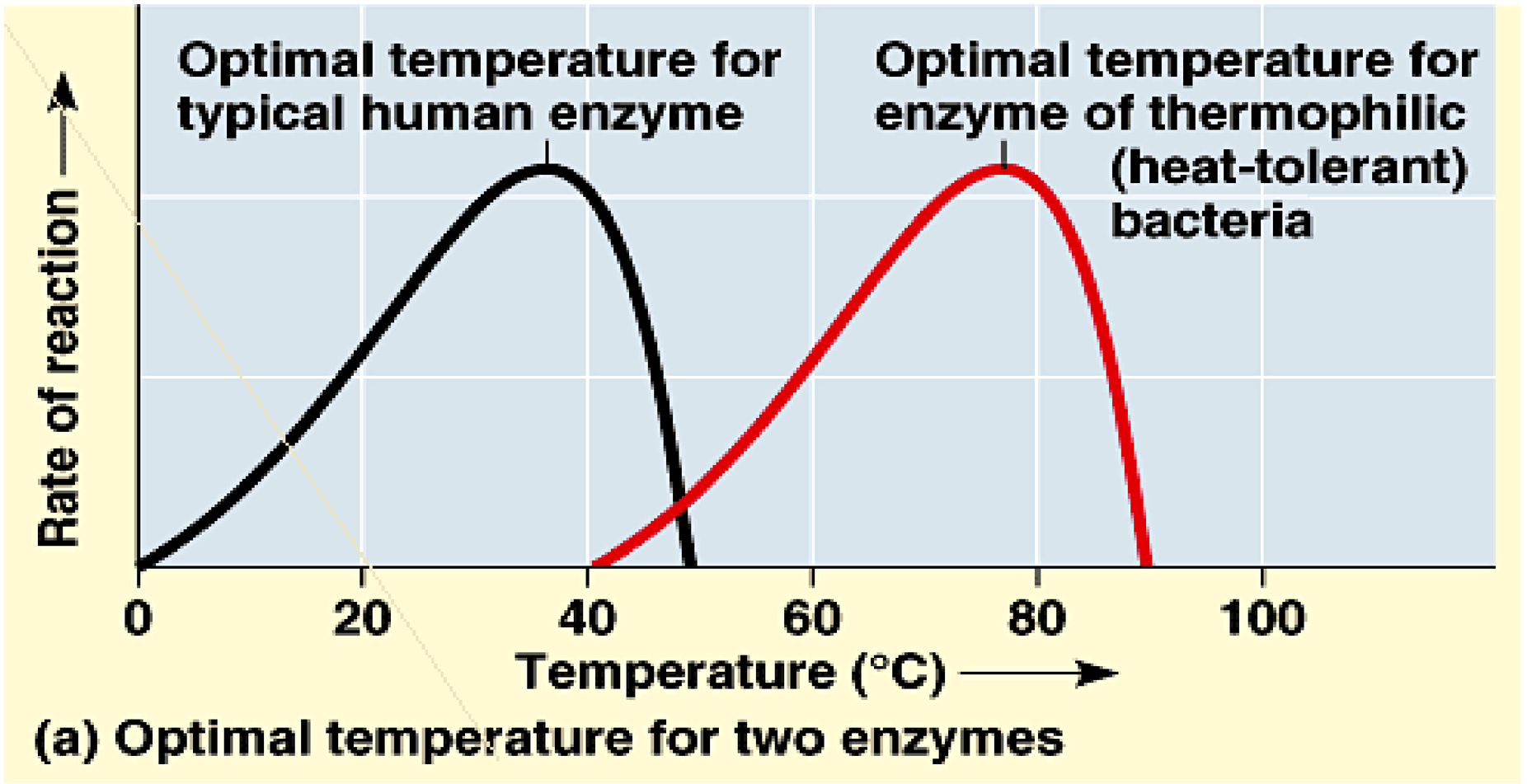
Time

Effect of Temperature



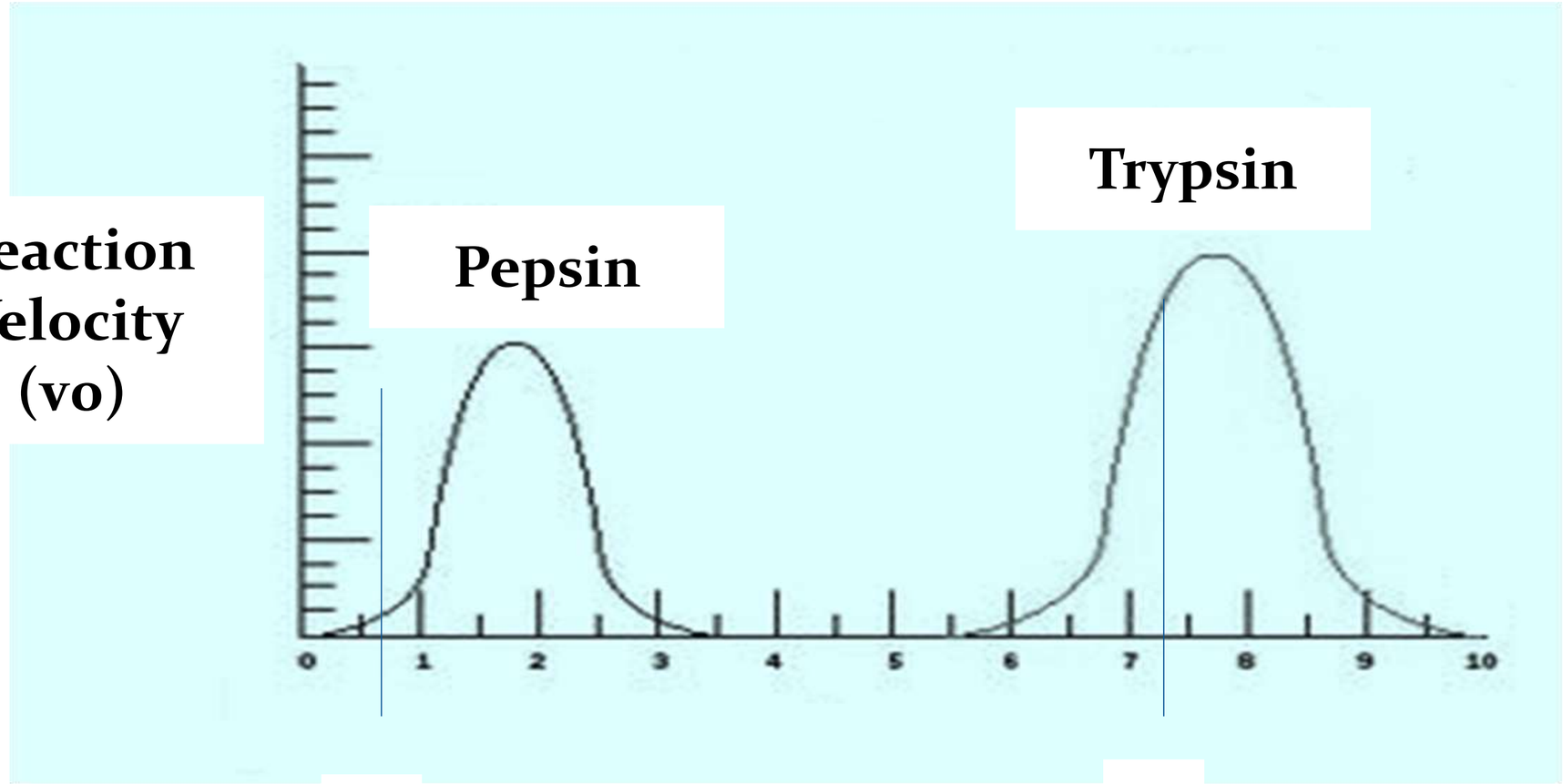
Reaction Velocity (vo)

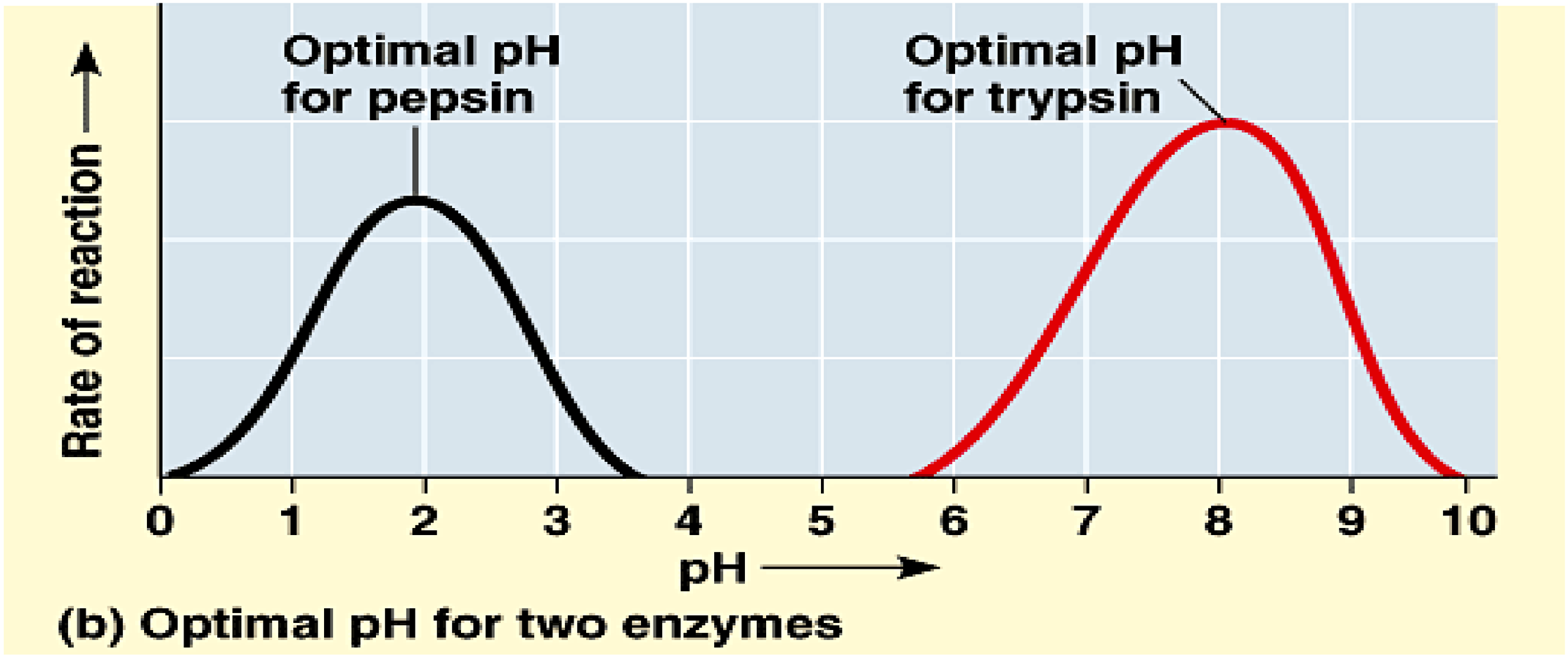
Temperature(°C)



(a) Optimal temperature for two enzymes

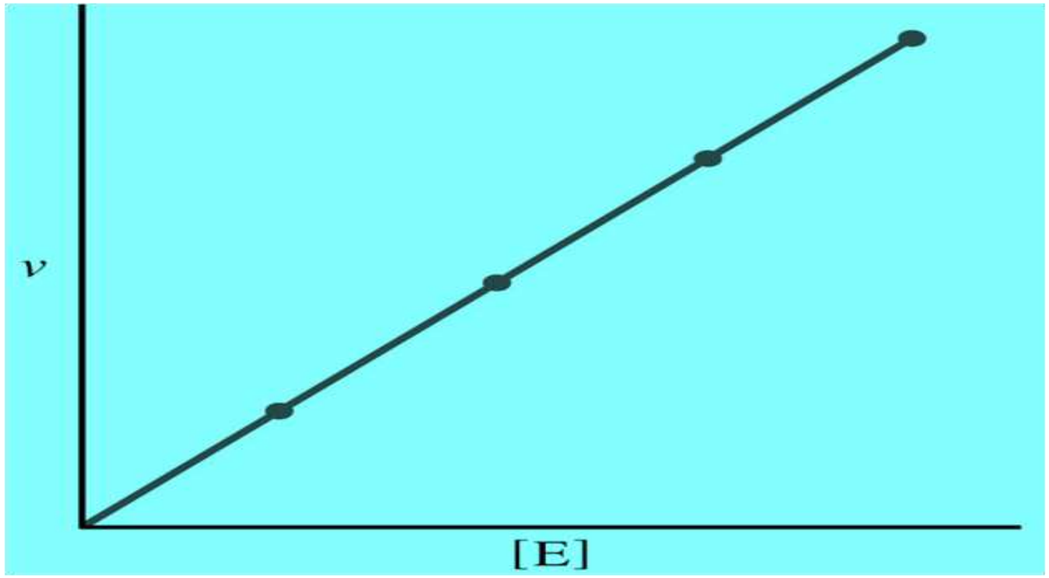
Effect of pH





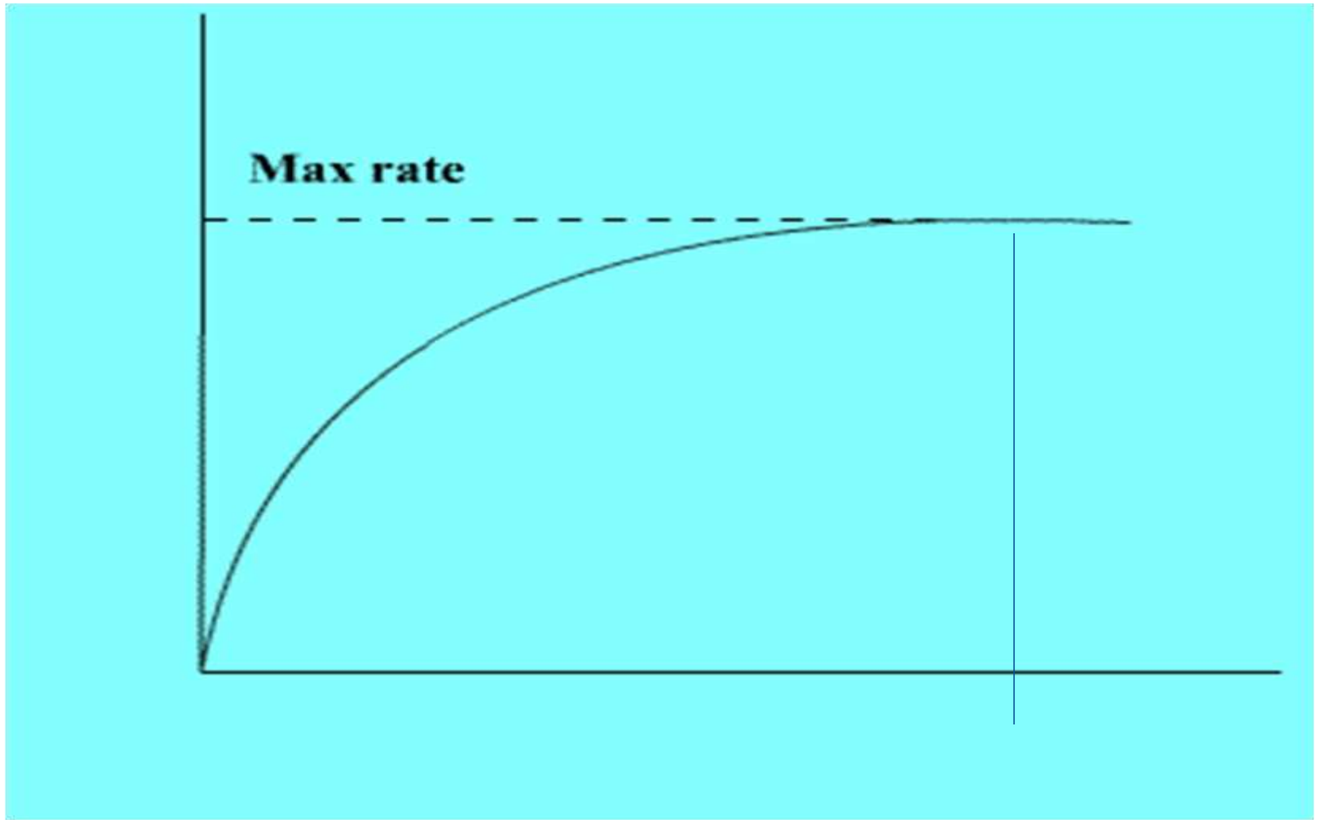
(b) Optimal pH for two enzymes

- Rate of the reaction or velocity is directly propotional to the Enzyme Concentration when sufficient substrate is present.

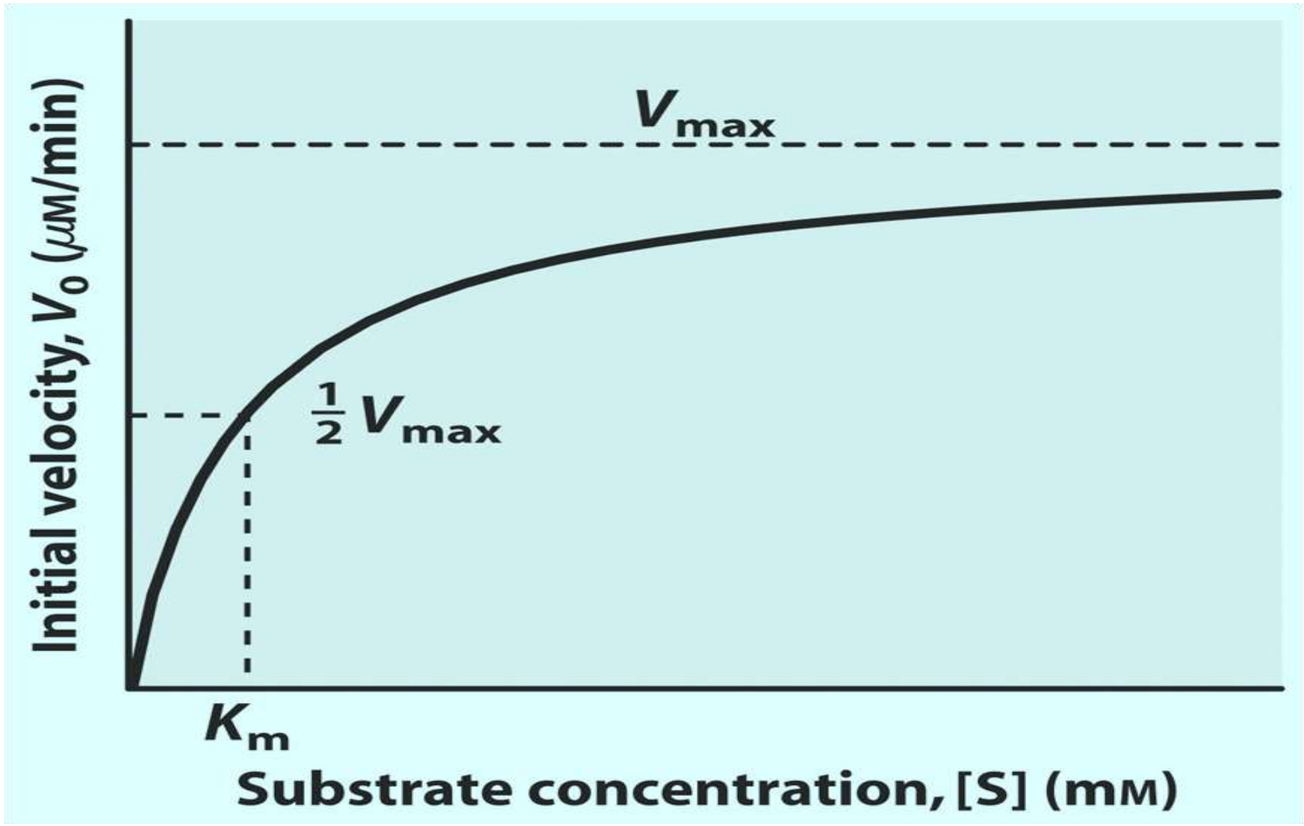


- Accumulation of Product in a reaction causes inhibition of enzyme activity.

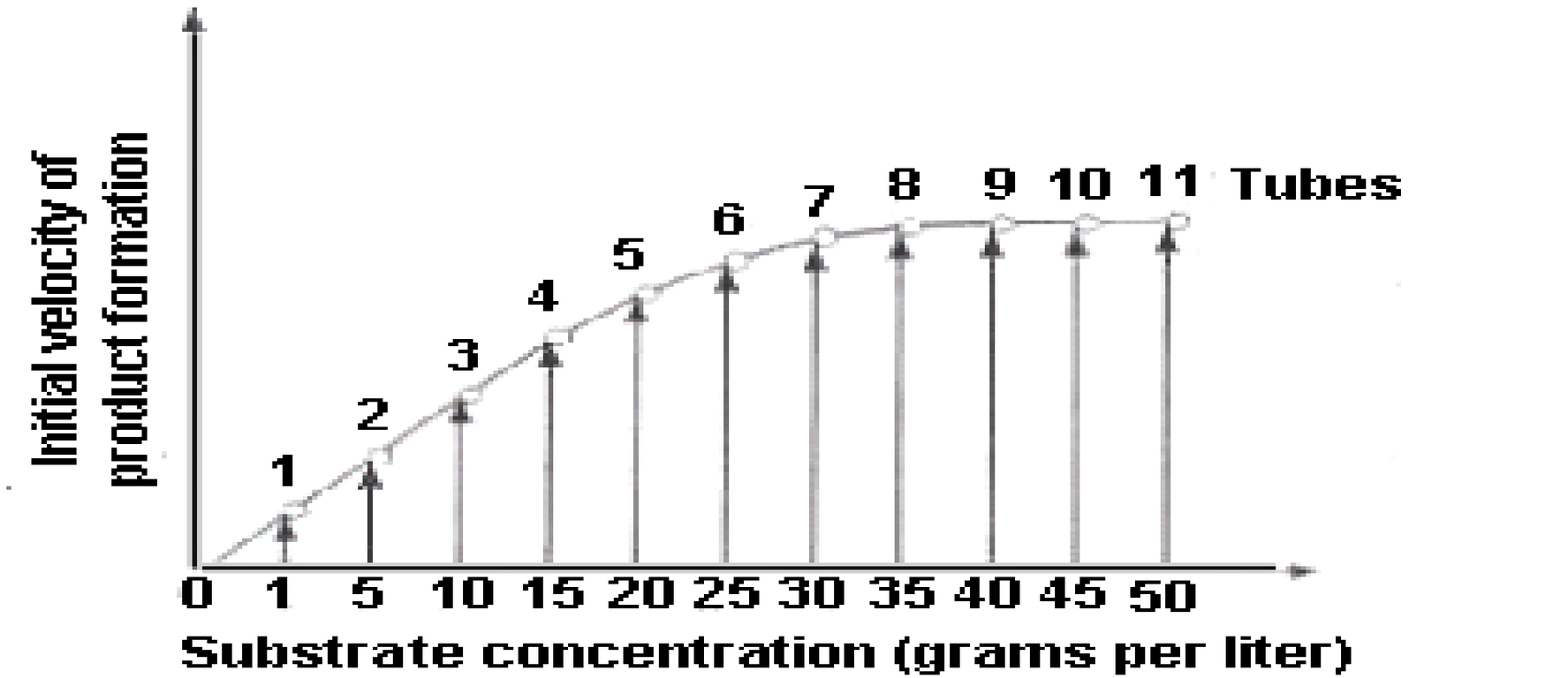
Effect of Substrate Concentration



Effect of Substrate Concentration on Reaction Velocity



Effect of Increasing Substrate Concentration



Fixed amount of enzyme, but increasing amounts of substrate carried out in eleven test tubes

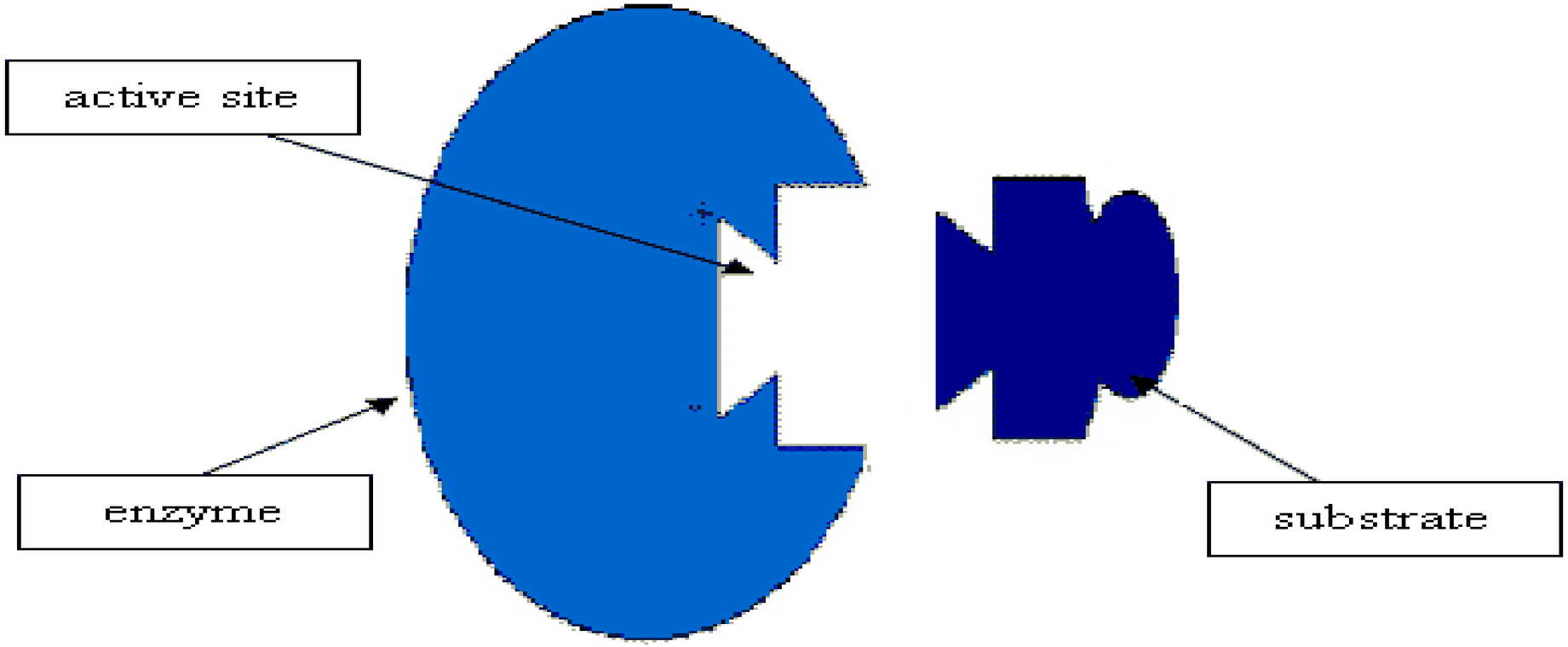
Mechanism of enzyme action

The enzymatic reactions takes place by binding of the substrate with the active site of the enzyme molecule by several weak bonds.

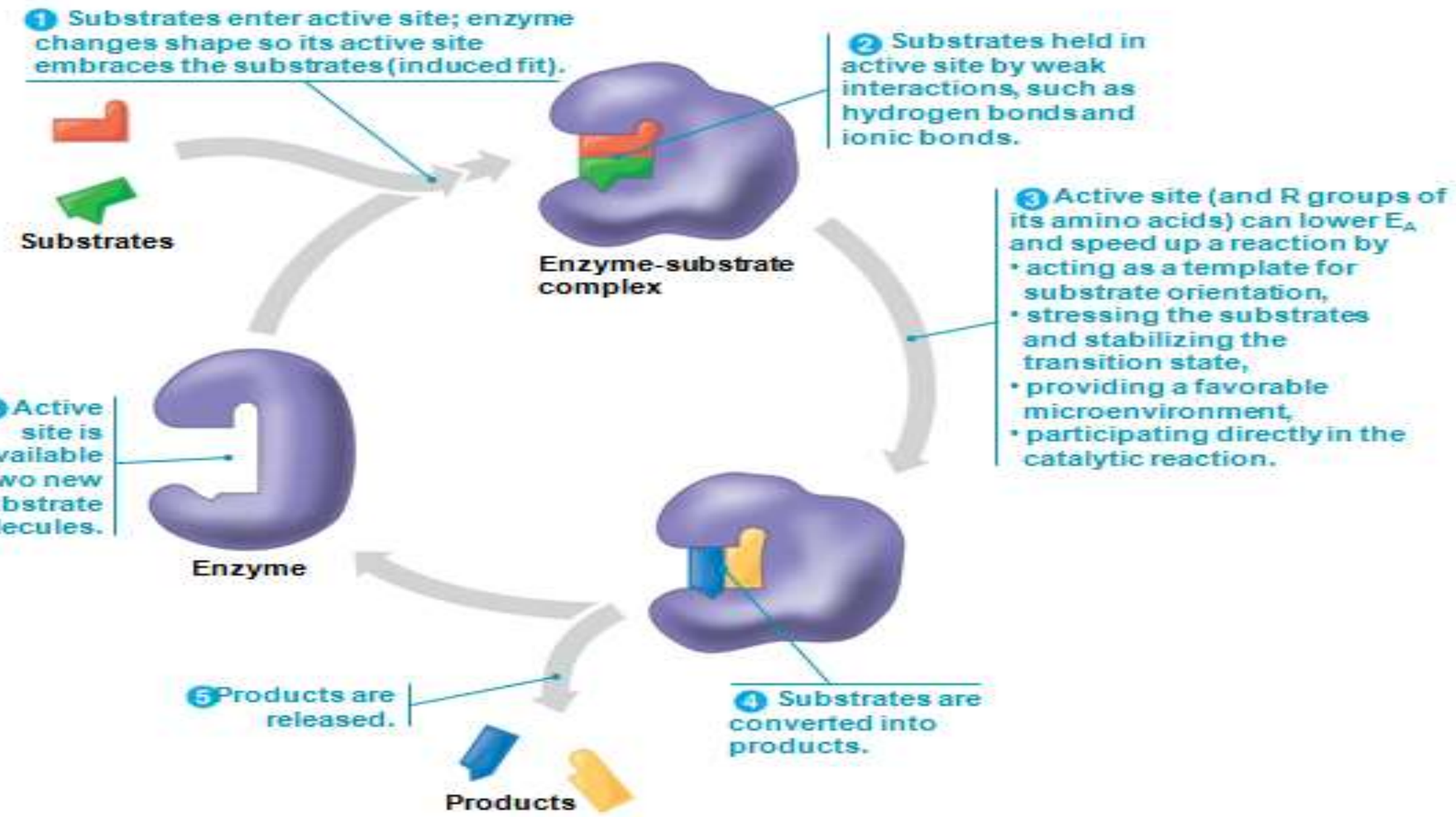
E + S ‹--------› ES --------› E + P

Formation of ES complex is the first step in the enzyme catalyzed reaction then ES complex is subsequently converted to product and free enzyme.

"Lock and key" or Template model



Induced-fit model



Assessment

1. List out the factor affecting on enzyme activity?

2. How does the pH affects the rate of enzyme activity?

3. How does the temperature affects the rate of enzyme activity?

4. Two mechanism of enzyme action?

5. What is Lock and Key model?

6. What is Induced fit model?

THANK YOU