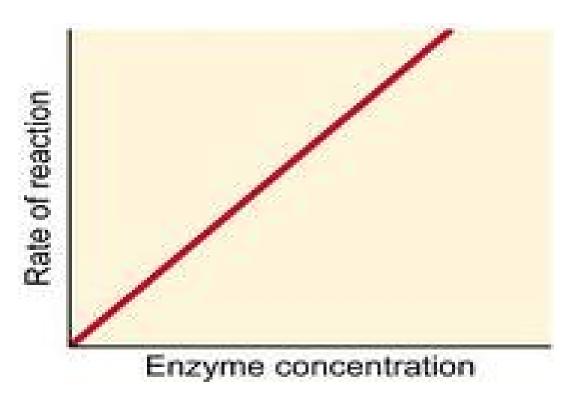
Learning objectives

- Explain the function are mode of action of enzymes
 Explain the time course of an enzyme-catalysed reported by measuring the rate of formation of product(s) or rate of disappearance of substrate(s) as the rate of reaction;
- 3. Deduce the Michaelis-Menten constant (Km) from the Michaelis-Menten and Lineweaver-Burk plots
- Explain the significance of Km and Vmax 4.
- 5. Explain the effects of temperature, pH, enzyme concentration and substrate concentration on the rate of an enzyme-catalysed reaction.

3. Enzyme concentration
OMore enzyme present, more attive site availablesubstrate to bind
OSubstrate in the excess 2 ate of reaction increase linearly with enzyme concentration



5. pH OEach enzyme has is 9wn optimum pH ODeviation in pH value will cause enzyme denaturation

OpH is the measure of [H⁺]

OAt extreme pH, [H⁺] alter the ionic charge of the acidic and basic group of enzyme

ODisrupt the hydrogen and ionic bonding- enzyme is altered and denatured.

- The Michaelis- Menten equation
- shows how reaction velocity varies with substrate concentration $V_{0} = \frac{fr^{OM} 21[of_{Max}]}{(K_{M} + [S])}$

$$V_0$$
 - Initial reaction velocity
 V_{max} - Maximal Velocity
 K_M - Michaelis constant ~~~~> (K_1 + K_2)
 K_1

[S] - Substrate concentration

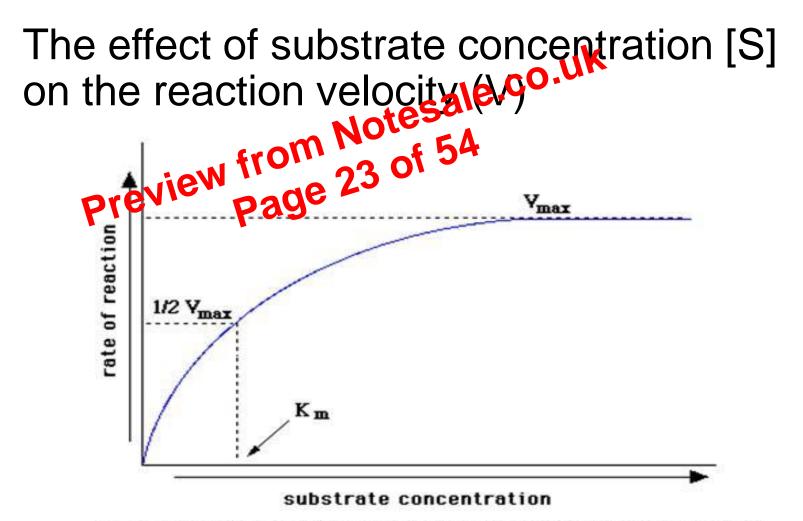


Fig.3 The effect of increases in substrate concentration on the rate of an enzyme-catalyzed reaction. At saturation (horizontal dashed line), further increases in substrate concentration do not increase the rate of the reaction.

Enzyme inhibitors

OSubstance that inhibit/slaws down/ stop the enzyme reaction No 54

OInhibitors

Competitive

- similar shape to the natural substrate
- ✤ attach to active site

Non-competitive

no structural similarities to the natural substrate

bind to allosteric site

OReversible inhibitor > cause no damage totenzyme > Bind temporarily 27 of 54

OIrreversible inhibitor

Cause permanent damage to enzymeBind tightly

O Competitive reversible inhibitors

Compete with substrate for active site

- Bind temporarily and every come by adding substrate and every come by adding
 Eg. Malonic acid compete with succinic acid for
- succinic dehydrogenase



Function of Coenzymes A coenzyme prepared the astave site for catalytic activity, jew page 42 Coenzyme

