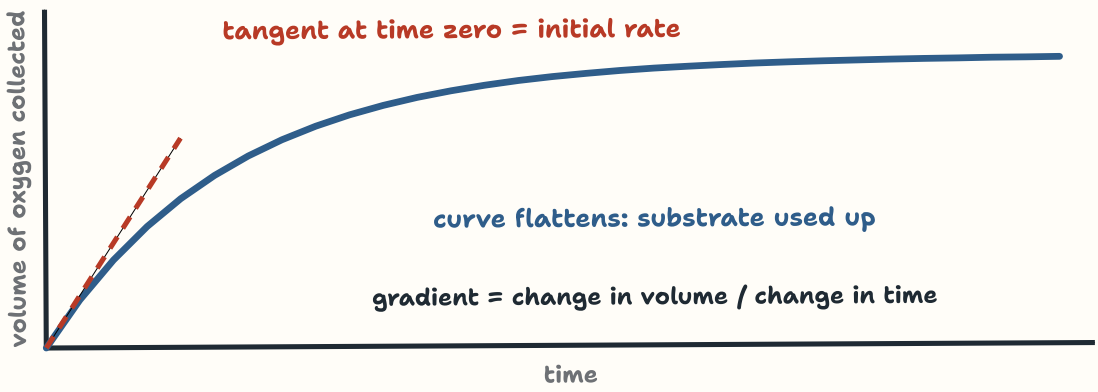
Required Practical 1: Enzyme Rates

Measuring oxygen over time and using a tangent at time zero to find the initial rate.



Key terms

independent variable	the variable you change (here, temperature).
dependent variable	the variable you measure (here, the volume of oxygen collected).
control variable	a variable that must stay the same; say how you control it.
buffer	a solution used to control pH, because pH changes the shape of the active site.
initial rate	the rate at the start, found from the gradient of a tangent at time zero.
uncertainty	can be stated for each measurement, for example from the smallest division on the syringe.

I can...

- [ ] Investigation into the effect of a named variable on the rate of an enzyme-controlled reaction

EXAM TRAP

Writing 'keep everything else the same' earns nothing. Name each control variable and say how it is controlled, for example pH with a buffer.

5 marks: what earns them

1. Water baths set at a range of temperatures (at least five), checked with a thermometer
   Not: 'hot and cold water' with no range; 'a Bunsen burner under the tube'
2. Control pH using a buffer solution
   Not: 'keep pH the same' with no method
3. Keep the volume and concentration of enzyme and of hydrogen peroxide the same each time
   Not: 'keep everything else the same' alone
4. Measure the volume of oxygen collected (gas syringe) at timed intervals, plot volume against time and draw a tangent at time zero to find the initial rate
   Not: 'measure how long it takes' with no product measured; 'average rate over the whole reaction'
5. Repeat at each temperature and calculate a mean
   Not: 'repeat it' with no mean or no reason

Remember

Change one thing, measure oxygen over time.

Control the rest and say how.

Tangent at time zero, then repeat and take a mean.

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