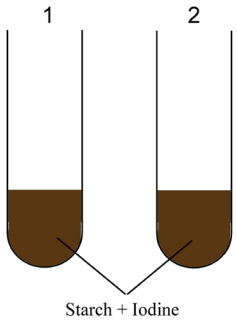
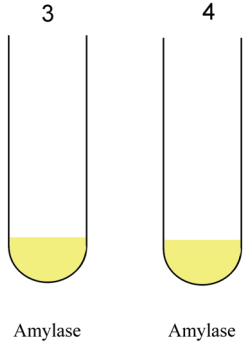
4.5 (a) To investigate the effect of heat denaturation on amylase activity

1



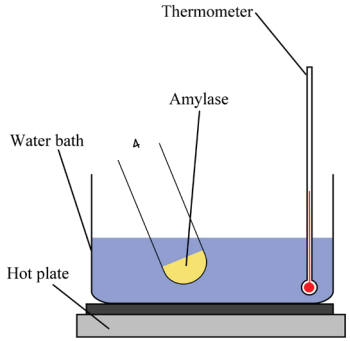
Put 5 ml starch solution and 3 drops of iodine solution into 2 boiling tubes. Label these '1' and '2'.

2



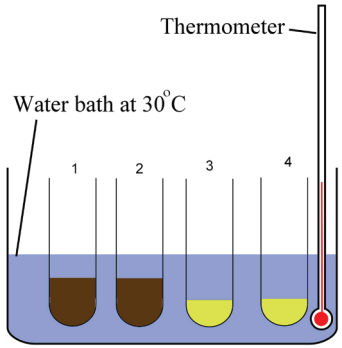
Put 2 ml of amylase into two other boiling tubes and label these '3' and '4'.

3



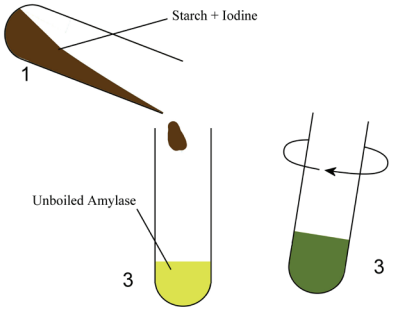
Place tube '4' into a water bath at 100°C for 10 minutes.

4



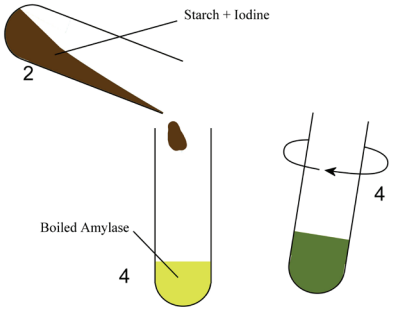
Place all four boiling tubes in a water bath at 37°C for 5 minutes.

5



Pour the contents of tube '1' into tube '3' - this is the un-boiled amylase. Gently shake.

6



Pour the contents of tube '2' into tube '4' – this is the boiled amylase. Gently shake. Note any colour changes

Always remember – Leave time to tidy up

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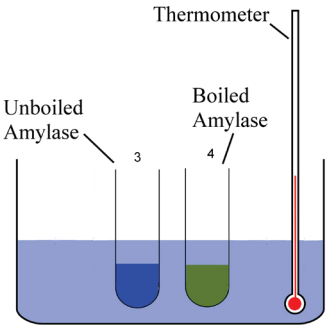
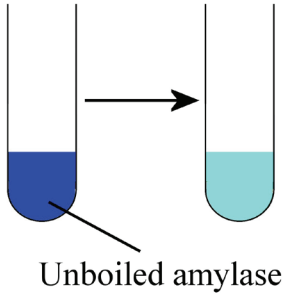
7



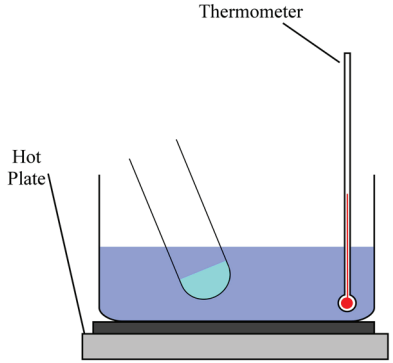
Replace the boiling tubes in the 37^{O}C water bath for 15 minutes.

8



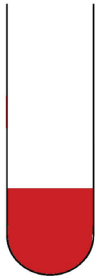
Expected result: In the un-boiled amylase the blue/black colour fades.

9



Test for reducing sugar by adding Benedict's solution and heating.

10



A brick red colour indicates the presence of a reducing sugar.

11

The un-boiled amylase will turn red on heating with Benedict's solution.

The blue colour will not disappear in the boiled amylase.

Table of Results

	Unheated enzyme	Heated enzyme
Time taken for blue/black colour to disappear		

Always remember – Leave time to tidy up

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