Candidate 4 evidence

Factors Affecting enzyme activity

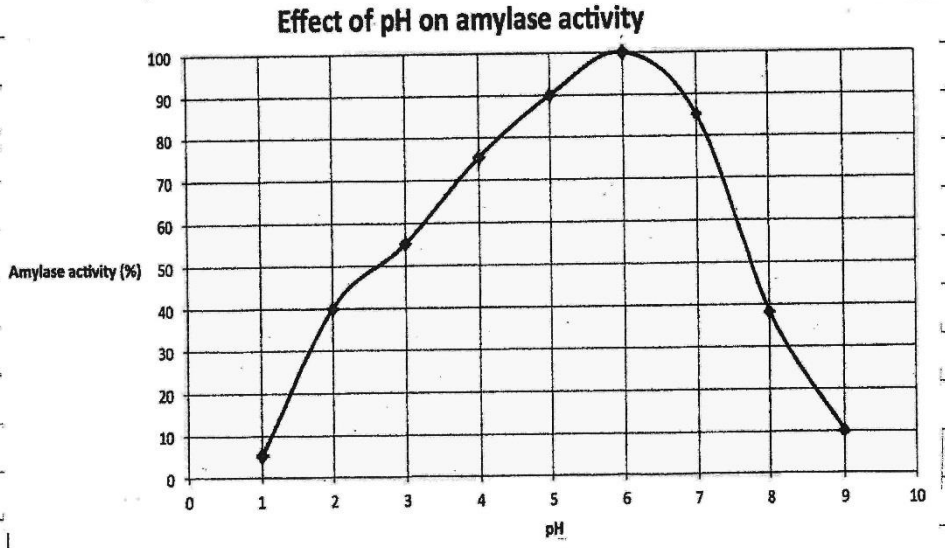
Aim:
To investigate the effect of pH on enzyme activity.

Underlying Biology:
All enzymes have conditions that allow for it to work at its best. This is called the optimum conditions. This includes the right temperature and suitable pH. Without these factors being correct the enzyme won't be able to function properly. As temperature or pH increases enzyme activity will also increase. Most enzymes work best at about 40°C and about pH7. But most can work within a range to either side of the optimum value, this is known as the working range of an enzyme. At the pH or temperature's maxium rate of reaction is reached is known as its optimum. If the pH or temperature continues to increase this decreases enzyme activity. The increase in pH or temperature begins to break apart the enzyme. This leads to the active site losing its shape. The substrate then can no longer fit inside the active site. At this point the enzyme is denatured.

Brief Description:
5 test tube with different pH buffers and 20% hydrogen Peroxide were collected. The enzyme catalase was added then timed for 5 minutes After 5 minutes the height of froth produced was measured which relates to enzyme activity.

Data Collected:

pH	Height of froth (mm)			Average (mm)
	1	2	3	
3	6	4	4	4.67
4	11	11	8	10.00
5	80	76	62	72.67
7	79	80	79	79.33
10	77	72	79	76.00



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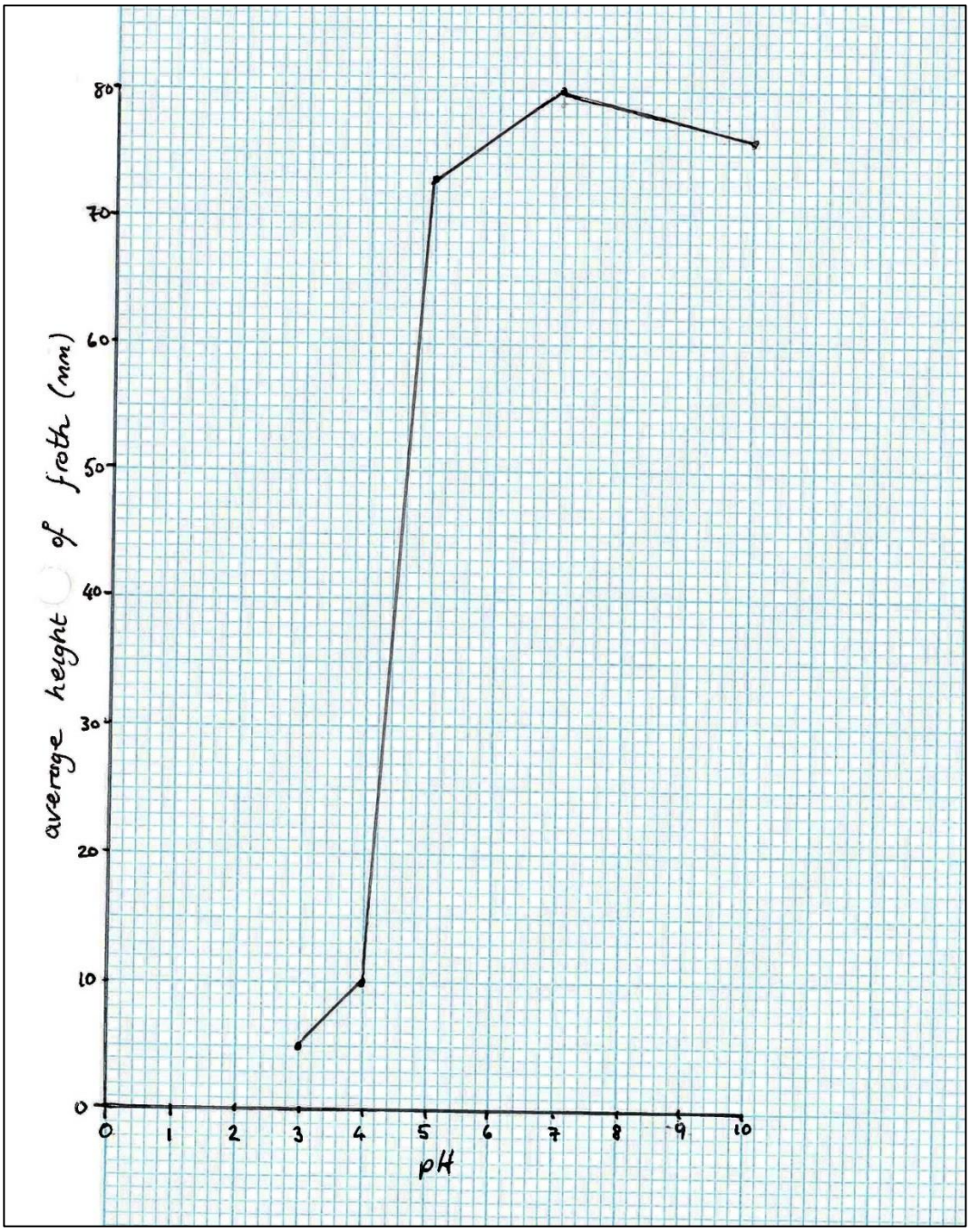
average height of froth (mm)
80
70
60
50
40
30
20
10
0
0 1 2 3 4 5 6 7 8 9 10
pH

Analysis:

The internet source's graph increases from pH 1 to pH 6. This shows that the internet source's optimum temperature is pH 6. As the source's pH increases to its optimum the enzyme activity increases. As the pH continues to increase passt its optimum the graph decreases. This shows that the enzyme activity decreases.

In my graph it increases from pH 3 to pH 7. This shows that my enzyme's optimum pH is pH 7. As the pH continues to increase the graph decreases. This shows that different enzyme's have different optimum pHs.

Conclusion:

As pH increases the enzyme activity increases until its optimum pH is reached. As the pH continues to increase enzyme activity decreases and then the enzyme's becoming denatured. Different enzymes have different optimum conditions of pH.

Evaluation:

To improve reliability of this experiment a water-soluable pen was used mark the starting level of the combined solutions. This increased reliability due to it was easier to measure the height of foam after the enzyme was added.