

Graphing Enzyme Activity

The following table shows the relative activity of two digestive enzymes, pepsin and salivary amylase, in solutions of various pH.

Table 1 Activity of two enzymes at various pH

pH	Enzyme Activity (units/s)	
	Pepsin	Salivary amylase
0	0	0
1	37	0
2	100	0
3	67	0
4	33	0
5	19	19
6	5	58
7	0	100
8	0	40
9	0	13
10	0	0

1. Plot the data for both enzymes on the same graph and draw curves of best fit. Make sure to label the two curves.

2. According to these data, what is the optimal pH of each enzyme? How can you tell?

3. What is the relationship between the optimal pH for each enzyme and the environment the enzyme works in?

4. Explain the effect of a change in pH on the enzyme activity.

5. Salivary amylase breaks down starch into glucose. The digestion of starch by salivary amylase begins in the mouth, ceases in the stomach, and resumes in the small intestine. Use the graph to explain this observation.

6. Draw a graph to show the expected activity of a typical human enzyme as the temperature is increased from 0°C to 50. Justify your graph.