

Pectinase Demonstration Video

Name _____ Period # _____

<https://www.sophia.org/tutorials/pectinase-an-enzyme-reaction?playlist=biology--11>

1. What is pectinase?
2. To what group of organic molecules does pectinase belong?
3. What does pectinase break down?
4. How does this explain the results of this demonstration?
5. Why would organisms such as bacteria and fungi produce pectinase?
6. What industrial uses are there for pectinase?
7. Name 4 factors that affect the rate of reaction of enzymes.
8. What is the optimal environment for pectinase? In other words, at what temperature and pH does it work the best?

9. How could I speed up the rate of the reaction in the 4mL pectinase beaker?

10. What is amylase? Where in the human body can it be found and what does it break down?

11. What is pepsin? Where in the human body can it be found and what does it break down?

12. What is the optimal pH for amylase and pepsin?

13. Students in my Anatomy classes were recently studying enzymes in the digestive system. We had this experimental setup.



Contents:

<p>Tube #1 pH of 1 Amylase Starch Iodine (indicator for starch) Hydrochloric acid</p>	<p>Tube #2 pH of 7 Amylase Starch Iodine (indicator for starch) distilled water</p>	<p>Tube #3 pH of 10 Amylase Starch Iodine (indicator for starch) Sodium Hydroxide</p>
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The iodine turns black in the presence of starch. When all starch is digested, the black color disappears and the tube is clear.

The **results** were:

	Tube #1	Tube #2	Tube #3
time for starch to be completely digested (seconds)	no digestion after 1800 seconds	721	180

What should the students conclude from these results? Why does the starch digest faster in pH 10?

If this experiment were repeated in a similar fashion, but using pepsin instead of amylase, the protein albumin instead of starch, and Biuret reagent instead of iodine. What color will the solution in the tube be if protein is present? _____ When all the albumin protein is digested, the solution will turn clear. Fill in the data table with fictitious results that show what might occur when using pepsin instead.

	Tube #1 pH 1	Tube #2 pH 7	Tube #3 pH 10
Time for albumin to be digested (seconds)			

Explain what happened in the above experiment and why.