

Effect of Amylase on Starch

Amylase is an enzyme produced by the pancreas and salivary glands and plays an important role in the digestion of starch. To determine the effect of amylase on starch, some students performed the investigation described below.

1. Propose a hypothesis about the effect of amylase on starch.
2. Describe the purpose of the Lugol test for starch and the Clinitest reagent test for glucose.

The students prepared five test tubes as described in Table 1 and recorded the results of the Lugol or Clinitest test on each tube.

Table 1 Preparation of tubes and results.

Test tube	amylase	starch	HCl	Lugol's iodine	Clinitest reagent	initial color	final color
1	-	10 mL	-	2 drops		purple	purple
2	2 mL	10 mL	-	2 drops		purple	yellow
3	2 mL	10 mL	1 drop	2 drops		purple	purple
4	-	10 mL	-	-	5 drops	blue	blue
5	2 mL	10 mL	-	-	5 drops	blue	red

3. State the purpose of each tube.
4. a) What molecule disappeared from the mixture in tube 2 when amylase and starch were both present?
5. a) What new molecule appeared when amylase and starch were present together in tube 5?
6. Do the results support or reject your hypothesis?
7. What is the effect of HCl on amylase?
8. Design a simple experiment that would show if the amylase is used up during starch digestion or if it is still present after digestion.
9. Why is it not surprising that carnivores like dogs and cats have no amylase in their saliva?
10. How could a plant make use of an enzyme like amylase?