

Exercise 8: chemical and physical processes of digestion

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Lab Report 8 April 15th Exercise 8: Chemical and Physical Processes of Digestion Lab Report Questions Activity 1 What is the difference between the IKI assay and Benedict's assay? IKI assay detects the presence of starch, and the Benedict assay tests for the presence of reducing sugars as well as IKI turns blue black whereas Benedict is a bright blue that changes to green to orange to reddish brown with increasing levels of maltose What was the purpose of tubes #1 and #2? Why are they important?\n

Because they are the controls and the controls must be prepared to provide a known standard against which all comparisons must be made. Positive controls all of the required substances are included and negative a negative result is expected validating the experiment. What effect did pH level have on the enzyme? It partially allowed the enzyme to do its job because there were positive signs of both starch and its reducing sugars. What effect did boiling and freezing have on the activity of amylase?

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Boiling did not allow the breakdown of starch because the reduced sugars were not present and the starch was where the freezing showed a ++ for the reducing sugars and a negative result in the starch showing that it reduced the starch. Activity 2 What was the effect of the enzyme peptidase? Why? The enzyme peptidase could not break down the starch by showing that there is positive IKI test for starch and a negative Benedict test for its reduced sugars. What is cellulose? According to your results, does salivary amylase digest cellulose?

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Cellulose is a polysaccharide found in plants to provide rigidity to their cell walls and salivary amylase is not able to digest it because there were no positive signs of the Benedict test which should have been positive if a breakdown did occur. What happened to the cellulose in tube #6? It was digested by the bacteria showing a very positive sign for the Benedict test.

Activity 3 What is the optimal pH level for pepsin? Why do you think that is? The optimal pH for pepsin is around 2.0 because it showed a higher optimal density showing that more BPNA has been hydrolyzed.

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Also the stomach is very acidic adding to the reasoning that pepsin will work well in acidic environments. How was optical density measured? What is the significance of this measurement? A spectrometer shine light through the sample and then measures how much light is absorbed. The fraction of light absorbed is expressed as the sample of optical density. The higher the optical density is greater than zero the more hydrolysis has occurred.

Activity 4 Why do lipids pose special problems for digestion?

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Because the insolubility of the triglycerides presents a challenge because they tend to clump together leaving surface molecules exposed to lipase enzymes. How do bile salts effect lipid digestion? Bile salts are secreted into the small intestine during digestion to physically emulsify lipids. They act as a detergent separating the lipid clumps and increase the surface area accessible to the lipase enzymes. What factors affect digestive enzymes?

Some factors that affect digestive enzymes are pH and the amount of lipase and bile salts in a solution.