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Lab #1

Bio 2312

Tuesday 2:30-5:00 pm

Bio 2312 OL57(15490)

Chemical Breakdown of Food Stuff

**Introduction:**

In this experiment we will examine the breakdown of foods through enzymes.

Chemical Digestion is broken down into three parts, proteins, fats and carbs. Proteins are broken down into amino acids which are used to bind cells together and make tissues. Fats are separated into glycerol and fatty acid. Glycerol react to fatty acids.

Glycerides are used for fat storing molecules and fatty acids are used for energy sources and membrane constituents.

In this experiment starch is being digested by salivary amylase. Amylase is a enzyme that catalyses of hydrolysis of starch and made into sugars. Amylase is found in the saliva of humans and other mammals, this is during the process of digestion. Digestion is broken down into chemical and mechanical digestion.

Starch is found in solution when the reaction with iodine results in a yellow/brown color change, when looking for starch the color reactant results in a blue/black change.

**Materials:**

6 cultural tubes

Amylase

1% Starch

1% Maltose

DI water

Pipettes

Clamps

Cup of ice

Hot plate

Sharpie (1)

Lugol Iodine

Benedicts solution

Lab coat

Lab glasses

Gloves

Disposable tile

### **Procedure: Starch digestion of Amylase**

Step 1- Turn water bath on to 37 degrees Celsius

Step 2- Turn on hot plate

Step 3- Label all tubes from 1A to 6A

Step 4- Three drops of DI water go into tube "1A" and then add three drops of the 1% pf Amylase into same test tube and put the cap on to avoid contamination.

Step 5- Add three drops of DI water and three drops of 1% Starch in tube "2A" and cap the tube when done.

Step 6- Add three drops of DI water and three drops of 1% Maltose and cap the tube.

Step 7- In tube "6A" add three drops of Amylase and put the cap on and put tube in ice.

Step 8- In tube "4A" add amylase and put the tube in your hot plate and let it sit for 5 minutes.

Step 9- In tube "5A" add three drops of Amylase and three drops of starch and cap the tube.

Step 10-Take tube “4A” out of the hot plate and put it back in the holder with the rest of the tubes, now add three drops of starch to it and cap the tube and turn off the hot plate.

Step 11- Now go to tube “6A” and add three drops of starch and cap the tube and still keep it in the ice.

Step 12- Now all the remaining tubes in the holder can go in the water bath for one hour.

Step 13- After one hour passes take out all the tubes from the hot bath and turn on hot plate again.

Step 14- On the spotting dial label with your sharpie label each with “1A-6A”

Step 15- Use a individual pipette and add one drop of each solution into the wells repeat this for all remaining tubes including “6A” taking it out of the ice bath.

Step 16-Take a drop of starch and put it into each well determining if there is starch in each solution.

Step 17- Add three drops of Benedicts Solution into each of the tubes

Step 18-Add each tube into the hot plate and let them sit for five minutes ,after five minutes pass take each tube out and put back in the holder.

**Procedure:**Protein Digestion of Trypsin

Step 1- Label tubes 1A-6A

Step 2-Add 5 Ggts of Trypsin to water in tubes 1A and 2A

Step 3-

Activity 1:Salivary Amylase Digestion of Starch

Tube number	1A	2A	3A	4A	5A	6A
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Additives(3 gtt ea)	Amylase, Water	Starch, Water	Maltose, Water	Amylase (boil 4 min then add starch)	Amylase, Starch	Amylase, Starch
Incubation Condition	37 degrees Celsius	37 degrees Celsius	37 degrees Celsius	37 degrees Celsius	37 degree Celsius	37 degrees Celsius
IKI Test (color change)	No color change	Color change	No color change	Color change	No color change	Color change
Positive or Negative result	Negative Result	Positive change	Negative change	Positive Change	Negative Change	Positive change
Benedicts Color change	No color change	No color change	Color change	No color change	Color change	No color change
Positive or negative result	Negative	Negative	Positive	Negative	Positive	Negative

### Activity 2: Trypsin Digestion of Protein

Tube no.	1T	2T	3T	4T	5T
Additives (3 drops of each)	Trypsin, Water	BAPNA, Water	Boil trypsin 10 min, then add BAPNA	Trypsin, BAPNA	Trypsin, BAPNA

Incubation condition	37 Degrees Celsius	37 Degrees Celsius	37 Degrees Celsius	37 Degrees Celsius	On Ice 4 degrees Celsius
Test results/Final color	None	None	-	Yellow	Yellow
Results (positive/negative)	Negative	Negative	Negative	Positive	Positive

Conclusion:

In this experiment we are shown what happens when Iodine is mixed with water and mixed with starch. When mixed with water it turns to a yellowish color and when mixed with starch it chemically reacts and turns a purplish/dark color meaning that starch is present. Amylase which is found in your Saliva is used to help break down the food you eat which starts the process of chemical digestion. Amylase is a enzyme that converts starch into sugars. When the starch is digested into the enzyme the purple/blackish goes away. You

Benedict's Solution is used to see if the simple sugars was actually broken down when heated precipitate is formed meaning that the simple sugars was actually broken down.

Chemical Digestion is when the enzymes cut apart the nutrients, Mechanical digestion is when you tear apart micro nutrients break it down into Fats, Proteins, and carbs.

Refrecenses :

Marieb, E.N., Mitchell, S.J., & Zao, P.Z(2016) Human Anatomy &

Physiology Laboratory Manuel:Fetal Pig Version.Pearson.

Patrick Haney, (June 1,2015) Youtube Video ;The Digestion of Starch by the Enzyme  
Amylase

<https://www.youtube.com/watch?v=ISf6CITbg78>

Dr.Matt & Dr.Mike, (August 13,2017) Youtube Video; Chemical Digestion

<https://www.youtube.com/watch?v=KzfCOteRoxw>