Basic Testing for Starch with enzymes Lab

Introduction:

The purpose of this lab is to look at the action of the enzyme *amylase* on starch.

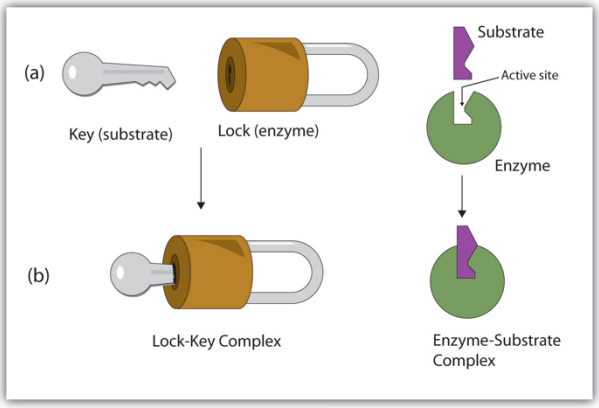
What is an enzyme?

An enzyme is a **protein** that is produced by the body to help with many functions such as breaking down complex molecules into simpler ones, speeding up reactions, and provide energy.

Enzymes are unique as each enzyme has a specific role and is only activated if it is finds its 'pair'. An analogy of enzyme is the "key and lock" where the enzyme is the key, and it will only be activated if it finds the matching "lock".

In this lab, we are looking at the actions of our *salivary amylase* enzyme in digesting starch. The amylase would be the "key" while the starch is the "lock".

Some enzymes are only activated in the presence of heat, or extreme pH (like in our stomach). However, if an enzyme that is not usually found in extreme temperatures are heated, they will become *denatured or deactivated*.



<u>Materials</u>:

- Test tubes
- Test tube rack
- Eye dropper
- Goggles
- Cornstarch solution
- Iodine solution
- Hot water bath
- Gloves
- Vinegar

Procedure:

1. Do not SPILL Chemicals on Skin or Clothing. It will stain!
2. All glassware MUST be cleaned BEFORE and AFTER to achieve accurate results!
3. Obtain 4 test tubes and label SA (Starch & amylase), S(Starch), V(Vinegar) and W(Water). Generate a lot of spit, and spit into test tubes SA, V and W. Not Starch!
4. Into test tube SA, add 10ml of water and add 10ml of starch solution
5. Into test tube S, add 10ml of water and 10ml of starch solution.
6. Into test tube V, add 10ml of vinegar (acid), 10 ml of starch
7. Into test tube W, add 10 ml of water
8. Create a hot water bath and allow the water to boil.
9. Place test tubes, SA, S and V into the hot water bath and allow them to boil for **5 minutes**.

10. Place 4-5 drops of the iodine solution into the W to use as a control. This is the test tube *without starch*.
11. Place 4-5 drops of iodine solution into other test tubes and observe for the presence of starch. Record the results into your table.

Your observation table should include:

Test tube SA
- Colour:
- Positive or negative test:
- What does this indicate:

Test tube S
- Colour:
- Positive or negative test:
- What does this indicate:

Test tube V
- Colour:
- Positive or negative test:
- What does this indicate:

Test tube W
- Colour:
- Positive or negative test:
- What does this indicate:

What you need to hand in:

1. Your own version of your observation table that is properly labeled.
2. An summary discussion of what the purpose of the lab is and what you have accomplished by completing the lab.
3. Questions below.

Questions:

1. What is the function of enzymes?
2. What macromolecule would enzymes be classified under?
3. Define what happens when proteins are denatured.