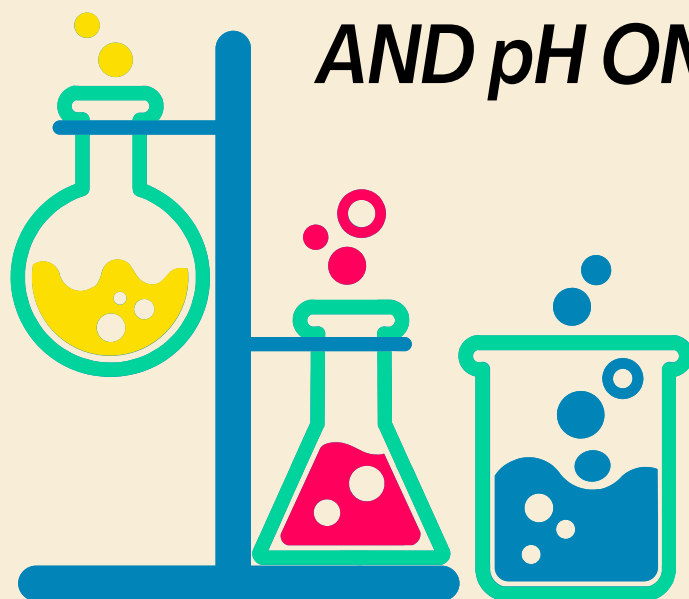


Chemistry Investigatory Project

***Topic : TO STUDY THE DIGESTION OF
STARCH BY SALIVARY AMYLASE
AND EFFECT OF TEMPERATURE
AND pH ON IT***



Name : Ambul Dubey

Class : 12 A

Year : 2020-21

Submitted To : Mrs. Nandani Gautam



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CERTIFICATE

**This is to certify that Ambul Dubey
of class XII science has prepared
the Chemistry investigatory
project entitled “To Study the
digestion of starch by salivary
amylase and effect of temperature
and pH on it” under the guidance of
Mrs. Nandani Gautam.**

Teacher's Sign :

Principal's Sign

External

Examiner's Sign :

ACKNOWLEDGEMENT

I have taken efforts in this project which has been completed under the guidance of our chemistry madam, Mrs. Nandani Gautam and help from my parents. My sincere thanks go to our principal sir for his coordination in extending every possible support for the completion of this project. I am duly thankful to them to help me arrange the required materials and provide me with the knowledge..



DECLARATION

**I hereby declare that the
project work entitled “To
Study the digestion of
starch by salivary amylase
and effect of temperature
and pH on it”**

**Submitted to Mrs. Nandani
Gautam
is prepared by me.**



INTRODUCTION

Saliva is the watery and usually somewhat frothy substance produced in the mouths of some animals, including humans. Produced in salivary glands, saliva is 98% water, but it contains many important substances, including electrolytes, mucus, antibacterial compounds and various enzymes. The digestive functions of saliva include moistening food, and helping to create a food bolus, so it can be swallowed easily. Saliva contains the enzyme amylase that breaks some starches down into maltose and dextrin. Thus, digestion of food occurs within the mouth, even before food reaches the stomach.

OBJECTIVE

- To study digestion of starch by saliva
 - To study the effect of temperature on digestion of starch by saliva
- To study the effect of pH on the salivary digestion of starch

MATERIAL REQUIRED

1. Test tubes
2. Test tube stand
3. One dropper
4. Beaker
5. Stop watch
6. Starch and Iodine solution
7. Thermometer
8. Dilute HCL and
Dilute NaOH solution

PROCEDURE FOR **CHEMISTRY EXPERIMENT**

1) Collection of Saliva - Rinse mouth thoroughly with cold water and ensure that it

does not contain any food particles. Now take about 20ml of luke warm water in the mouth and gargle for about three minutes so that saliva mixes up well with it.

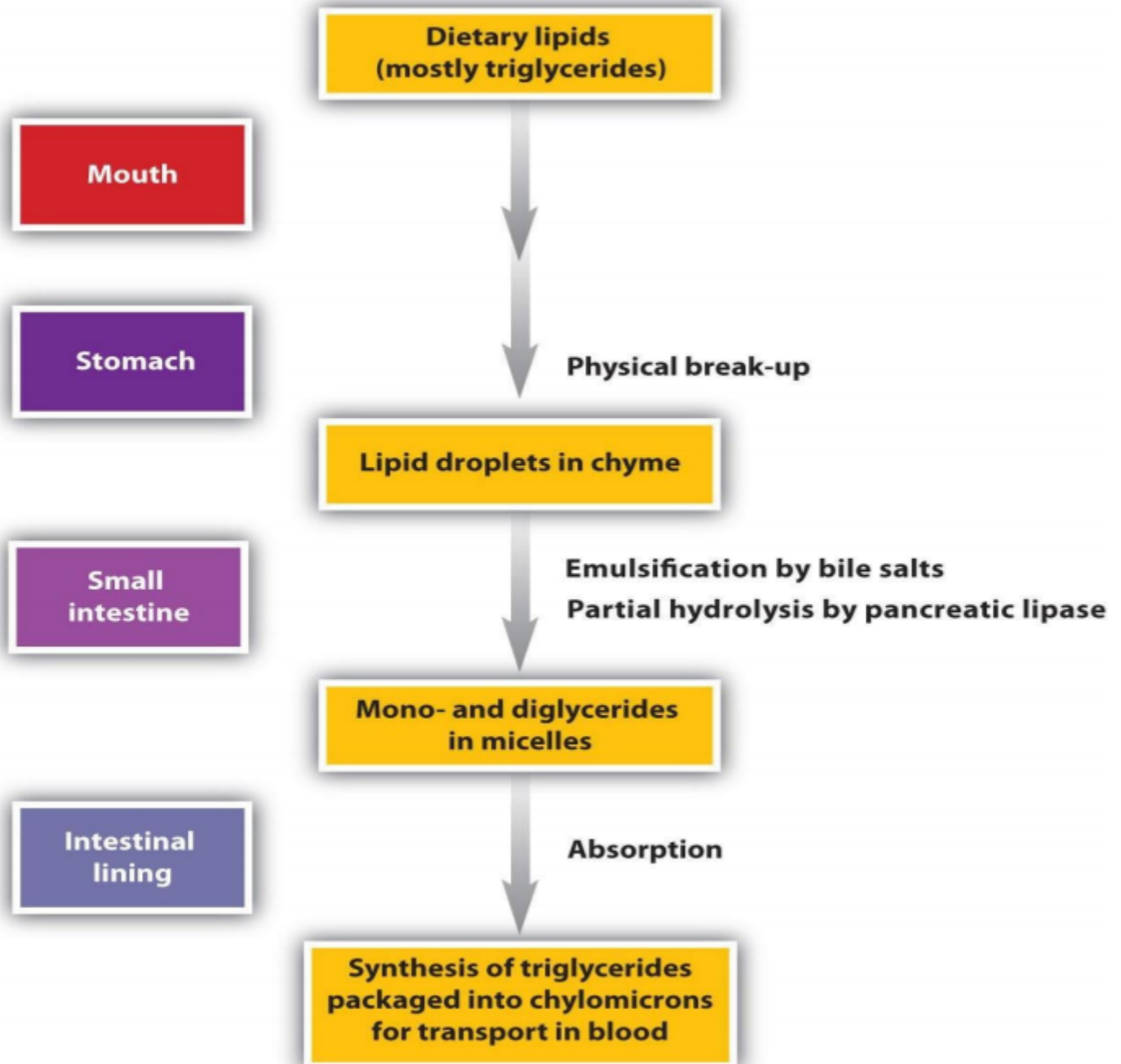
Spit this into a beaker. Filter, if there is any suspended impurity clear filtrate is saliva solution and contains enzyme ptyalin.

2) Preparation of starch solution - Take about 0.5g of starch in a 100ml beaker and add enough water to make a paste. Dilute the paste by adding 50ml water and boil for about 5 min.

3) Digestion of starch

- a) Take 5ml of the starch solution in a test tube. Add 2 ml of saliva solution into it. Mix the solutions well by shaking the tube carefully and start a step watch.**
- b) After one minute take out two drops of the mixture solution from the test tube with the help of a dropper and transfer it into another test tube containing about one ml of 1% iodine solution. Note the colour produced, if any.**
- c) Repeat this test after every one minute taking two drops of the mixture solution and fresh 1% iodine solution continue until the test shows no blue colour. Record the time and blue colour intensity.**

Salivary digestion of starch



OBSERVATION

Time Passed after mixing	1 Min.	2 Min.	3 Min.	4 Min.
Colour Intensity	Deep Blue	Blue	Light Blue	No Blue

CONCLUSION

Absence of blue colour on addition to iodine solution means absence of starch in the mixture solution. That is whole of the starch has got digested or hydrolysed.

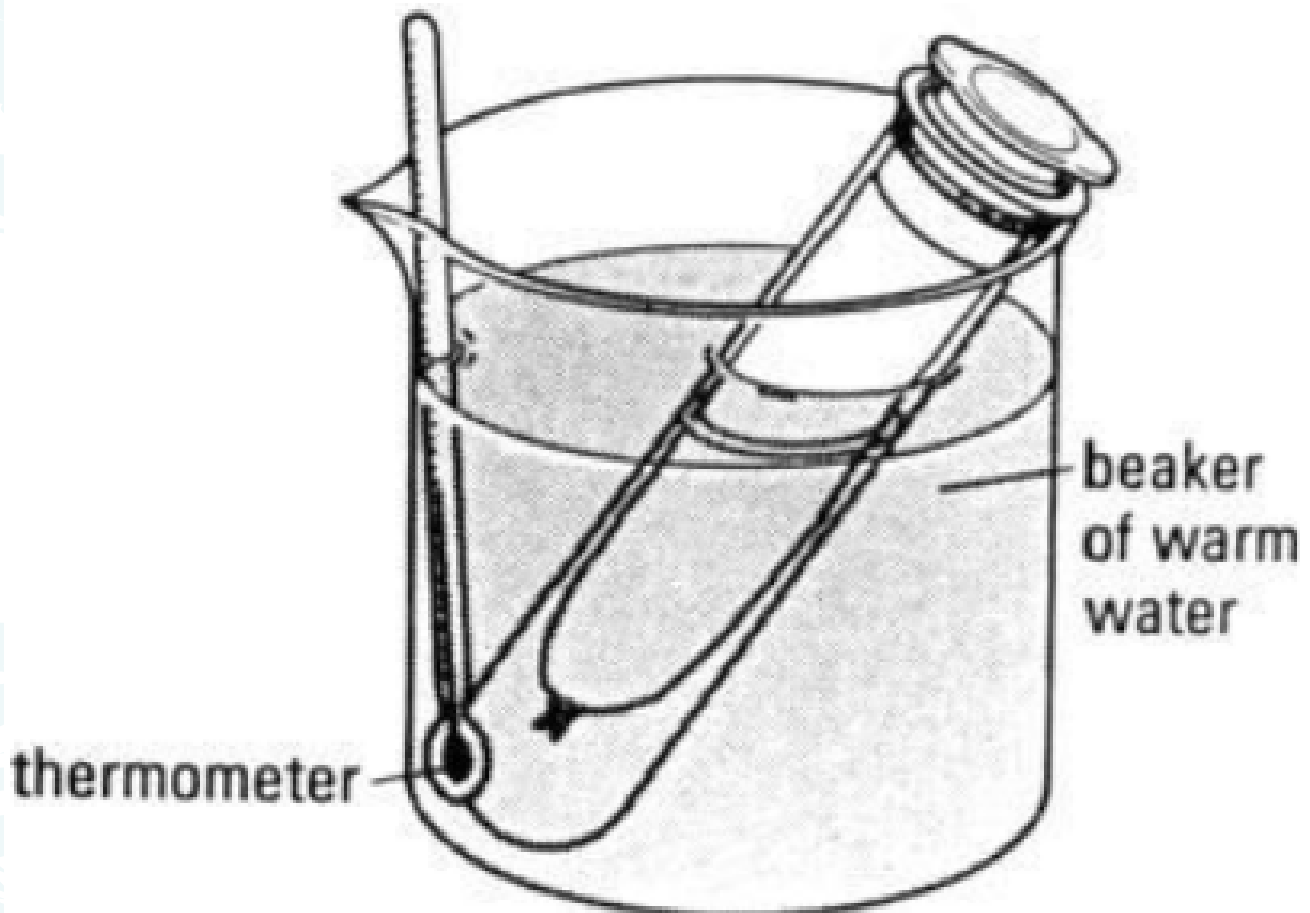
PROCEDURE

- Effect of temperature on the digestion of starch by saliva.

- 1) Take three test tubes and label these 1, 2, 3.**
- 2) Take 5ml of the starch solution, 2ml of the saliva solution and 5 ml of water in each test tube.**
- 3) Place test tube No. 1 in water at room temperature, test tube No.2 in a beaker containing water at 500 Degree C and test tube No.3 in boiling water.**
- 4) After 5 minutes, observe the colour change on mixing two drops of the mixture of every tube with one ml of 1% iodine solution. Note the intensity of blue coloured form.**

CONCLUSION

**Starch get hydrolysed
by saliva amylase**



PROCEDURE

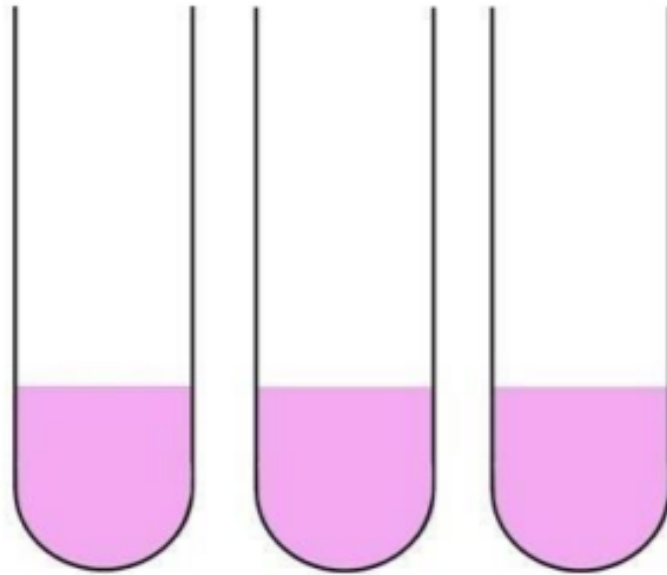
: To study the effect of pH on the salivary digestion of starch

- 1) Take three test tubes and label these 1, 2, 3.**
- 2) Add 5ml of the starch solution, 2ml of the saliva solution in each test tube.**
- 3) Now add 2 ml of water in test tube No. 1, 2 ml of dil HCl in test tube No. 2 and 2ml of dil NaOH solution in test tube No. 3 and shake carefully.**
- 4) Keep the three test tubes in water at room temperature for about 10 minutes.**
- 5) Add two drops of the solution of each test tube with 1% iodine solution and observe the colour change.**

Amylase
+ pH 4

Amylase
+ pH 7

Amylase
+ pH 9



Put 2 ml amylase solution and 5 ml buffer (4, 7, 9) into three other tubes.

CONCLUSION

Temperature effects the digestion of starch by saliva with increase in temp salivary analyse get inactivated and process of digestion do not take place.

BIBLIOGRAPHY

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<https://www.scribd.com/document/353279383/Study-of-digestionof-starch-by-salivary-amylase-and-effect-of-ph-and-temperatureon-it>

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