

Dependence of the activity of enzymes and inorganic catalysts on temperature

Method principle

The conditions of action of the amylase enzyme and the inorganic catalyst HCl are compared. Amylase hydrolyzes starch to dextrins and maltose. Dextrins with iodine give a color from blue-violet to yellow-brown (depending on the depth of cleavage). Maltose with iodine does not stain. HCl, when boiled, hydrolyzes starch to maltose.

Progress

- 1 ml of 1% starch solution is poured into 3 test tubes, 1 ml of saliva sample is added to the first, 1 ml of 10% HCl is added to the second and third. The first and second are placed in a thermostat at 37 ° C for 10 minutes, the third in a well boiling bath. After 10 minutes, all tubes are removed and cooled with cold water. Add 2 drops of Lugol's solution to them, compare the color and draw conclusions.

RESULTS



No1



No2



No3

Dependence of amylase activity on temperature

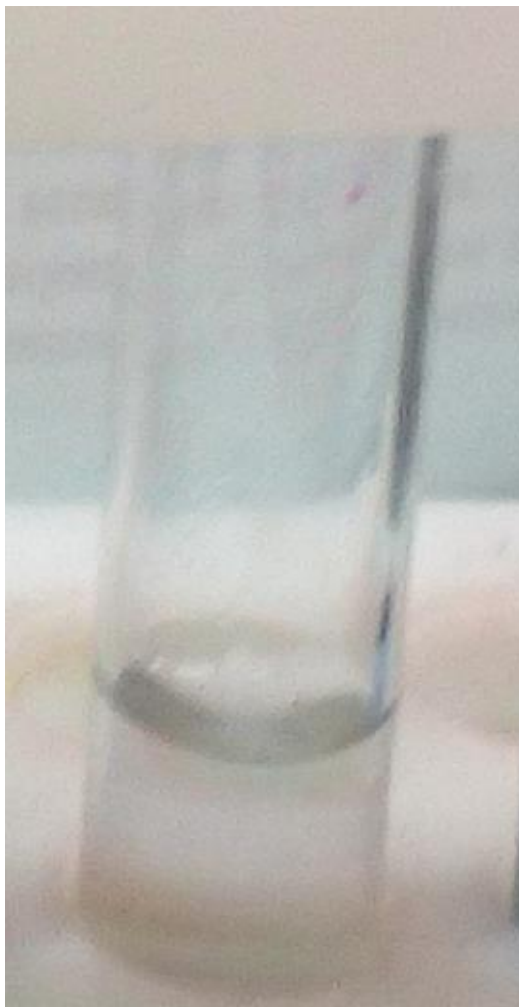
Progress

- In 4 numbered test tubes pour 0.5 ml of saliva sample.
- **Test tube No. 1** is placed in ice, **No. 2** - in a thermostat at 37 ° C, **No. 3** - left at room temperature, **No. 4** - in a boiling water bath.
- After 5 minutes, when the contents of the tubes reach the desired temperature, 1 ml of 1% starch solution cooled to the temperature of melting ice is added to test tube No. 1, 1 ml of starch at room temperature is added to the 2nd, 3rd and 4th tubes.
- 2 drops of Lugol's solution are immediately added to all tubes and placed under the same conditions. After the disappearance of the color in test tube No. 2, all of them are taken out and 1 ml of 0.1 N sulfuric acid is added to each one to stop the action of the enzyme.
- Amylase activity is assessed by the final color of the contents of the tubes. The higher the enzyme activity, the weaker the color. Based on the results obtained, construct a graph of the dependence of amylase activity on temperature.

RESULTS



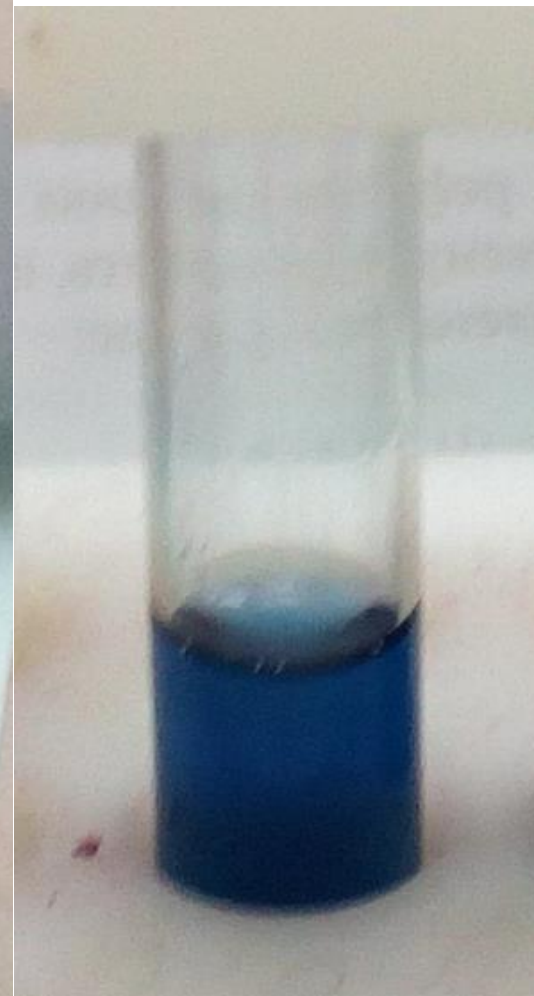
No1



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No4