The effect of the temperature on enzyme

Purpose: to determine how the temperature effect the rate of an enzyme

Material: 5 test tubes

: 5 beakers

: Milk

: Graduated cylinder

: Lactase (drop)

: 5 glucose test paper

: ice bath: fridge

: Heat insulated container (keep warm water)

: Heat insulated container

: thermometer

Procedure

: Measured 10 ml of milk by using the cylinder and pour it into test tubes.

: heated ice bath until the milk until the temperature. (5,10, 20,40, 60)

: add drop of lactase (1) into each test tube

: check the temperature of the solution to make sure that it is the same temperature of a milk

: After 5 mins check a time

Data and Observation

|  |  |
| --- | --- |
| Tem | Concentration of glucose |
| 5 | 0 |
| 10 | 10 |
| 37 | 11 |
| 45 | 55 |
| 60 | 6 |



: the concentration of glucose increases from 0 to 55 with an average rate of 5-25 mmol/ L/C when the temperature that reach from 5 to 55mmol/L/C when the temperature reaches from 5 to 45 Celsius

: the concentration of glucose decreases from 55 to 5 with an average rated of 4.6 1 mmol/I/C when the temperature goes from 55 to 60 Celsius

: The concentration of glucose is highest at 55 Celsius with over 55 mmol/ L

: The rate of decrease in the concentration of glucose is greater than rate of increase in the concentration of glucose

Analysis & conclusion

: After conduction of the experience: the first question, according to the experiment, at first 5 degree there have no glucose, However glucose start produced around 10 minutes. There is a possibility that glucose will produce if the solution is left for long period

Analyze: when temperature rises, the temperature is have more kinetic energy in the molecules. Therefore, the molecules move faster and bond to enzyme more frequently result in an increase in reaction of rate. However, the temperature above 50 degrees would case the enzyme to denature, because of the apoenzyme is a protein. Therefore, enzyme can’t participate in the reaction rate resulting in a decrease in the reaction rate. There is glucose at 60 degree because of the high temperature also causes the protein in milk to denature, forming galactose and glucose

Conclusion: As the temperature increasing from 0 the reaction is getting faster (55 degrees). When the temperature is increasing it is reaches into 55 degrees or over, the reaction rate is drop immediately.

Errors/Improvement

The temperature should have been a specific during the process. The thermometer can’t inform correctly. The improve is we have to use a machine that keep the temperature stable.