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10KM
Biology

Assessed Practical: Enzyme amylase action on starch

Aim: To find if the amount of starch present would affect the rate at which the amylase breaks it down.

Hypothesis: The more starch there is, the longer it will take the amylase to break it down; the lesser starch there is, the faster it will take the amylase to break it down.
Variables:
Independent variable: The amount of starch
Dependent variable: The time needed for amylase to breaks starch down.
Constants: Same amount of amylase, and same temperature.

Equipment:
Starch suspension
Amylase solution
Syringes
Iodine solution
White tile
Pipette
Stop Watch
Safety glasses

Method: Put twenty very small drops of iodine solution, spaced well apart, onto a white tile. Use a pipette to add one drop of starch suspension to one of the iodine drops. Record the color it goes. Take up exactly 10 cm^3 of the starch suspension into a syringe. Wash the outside of the syringe under a tap to prevent contamination with the amylase solution. Now take up exactly 5 cm^3 of amylase solution into the same syringe and draw in a little air after it. Rock the syringe backwards to mix the contents and then push out one drop of the mixture onto the second drop of iodine solution. Record the color that the drop goes. Start a stopwatch as soon as possible. Continue to test one drop of the starch/amylase mixture every 20 seconds, and record the color the drop goes each time. Go on doing this until the iodine drop does not change color when adding the starch/amylase mixture to it. Repeat the experiment with different amount of starch for 15cm^3 and 20$cm^{3.}$
Table of results:

	Amount of Amylase (cm^3)	Amount of Starch Suspension (cm^3)	Time for starch to break down (seconds)
Syringe 1	5	10	120
Syringe 2	5	15	180
Syringe 3	5	20	240

Modification:
A mixture of amylase/starch suspension is dropped every 20 seconds instead of 10 seconds because it might not be enough time to let the amylase to break down the starch in only 20 seconds. Also, I will repeat the same experiment 3 times by using different amount of starch, in order to compare them, which I forgot to mention in the original plan.

Data analysis: From the table, we can clearly see that the amount of starch is directly proportional to the time needed to break starch down. As the amount of starch increased, the time needed to break it down also increased from 120 seconds to 240 seconds. Therefore, the more starch there is, the longer time it needs for the amylase to break it down.

Conclusion: The results proved that my hypothesis was right. The more starch there is, the longer it will take the amylase to break it down; the lesser starch there is, the faster it will take the amylase to break it down.

Evaluation: There are only one thing went wrong during the experiment. I did not job down the color change during every 20 seconds when starch is breaking down. Luckily, this was not a big deal because it did not affect the results. Everything else went quite well, there were just one or two odd results made. What I did with the odd results is I compared the odd results to the normal results and found out what was wrong, and then changed it. I could improve accuracy by doing more trials; unfortunately, I did not have much time to do more trials.