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Investigating the Work of Enzymes

1. Results

Table 1: Data of part 1

|  |  |
| --- | --- |
| Tube | Speed of Reaction |
| H2O2 + sand | 0 |
| H2O2 + manganese dioxide | 3 |
| H2O2 + liver | 3 |
| H2O2 + potato | 1 |
| H2O2 + liver + fresh liver | 0 |
| H2O2 + liver + fresh H2O2 | 1 |

Table 2: Data of part 2

|  |  |  |
| --- | --- | --- |
| Set-up | Replicate | Speed of Reaction |
| H2O2 + small liver | 1 | 3 |
| 2 | 3 |
| 3 | 3 |
| H2O2 + medium liver | 1 | 3 |
| 2 | 3 |
| 3 | 3 |
| H2O2 + large liver | 1 | 4 |
| 2 | 4 |
| 3 | 4 |

1. Analysis and Discussion

Enzymes are catalytic proteins that speed up a reaction by lowering the activation energy needed to start the reaction. All enzymes are catalysts but not all catalysts are enzymes. Both enzymes and catalysts are not consumed in a reaction and both affect the rate of reaction, but enzymes only increases the rate of the reaction while catalysts can either increase or decrease it. Enzymes are organic compounds and non-enzymatic catalysts are inorganic compounds. Enzymes are highly specific while catalysts are not.

When liver was added to hydrogen peroxide, the rate of decomposition of hydrogen peroxide into water and oxygen increases. Other catalysts other than catalase can also break down hydrogen peroxide. Any substance that can oxidize hydrogen peroxide can break it down; an example of this is Ferric chloride and Manganese oxide.

In the liver added to hydrogen peroxide, enzymes called catalase causes the increase of the rate in reaction. Catalase breaks down hydrogen peroxide into oxygen so the height of bubbles formed shows the rate of reaction. Since hydrogen peroxide is an oxidizing agent, it can damage molecules on the cell. Catalase breaks down hydrogen peroxide in the body before it can do harm to our body, thus it helps our body to function properly.

Comparing the experimental value to theoretical expectations, it can be said that the data is accurate. The larger liver means there are more enzymes thus the reaction should be faster. This is because more enzymes lead to more collisions with the substrate and a higher chance of having the substrate at the active site, which triggers the reaction.

1. Conclusion

Enzymes are catalysts that speed up the reaction of specific chemicals. A good example of an enzyme is liver. As the concentration or amount of enzyme added to a fixed amount of solution, the reaction becomes faster. This is because the more enzymes added to a solution, the higher its chance of the substrate’s active site getting in contact with an enzyme.

1. References

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