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Importance of Carbon & Carbon Cycling for the Living Systems

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Abstract

The goal of our research was to investigate the importance of carbon and carbon cycling for living systems.

The following experiments have been executed:

The first experiment included adding water at 37°C (ideal temperature for yeast cells) and different amounts of saccharose (table sugar) to each 7 grams of yeast (*Saccharomyces cerevisiae*). We concluded that the rate of fermentation increases the more saccharose is combined with the mixture of water and yeast.

The second experiment incorporated observing the rate of fermentation by adding water, yeast (*Saccharomyces cerevisiae*), and different amounts of saccharose to each bottle and sealing those with balloons. The diameter of each balloon states that the more saccharose is combined with the mixture of water and yeast, the more CO₂ is being produced by fermentation.

The third experiment stated that, various types of sugars (fructose, lactose, saccharose) effect the rate of fermentation differently. Fermentation is bound to happen with saccharose and fructose, however not with lactose as yeast does not contain the enzyme lactase. Due to the absence of lactase the glycosidic bond between glucose and galactose cannot be broken down.

The fourth experiment proved that by adding the water plant (*Egeria densa*) to soft carbonized water (slightly acidic with a pH value of 5.5) the amount of carbon dioxide decreases, due to the water plant (*Egeria densa*) performing photosynthesis. However, photosynthesis cannot take place in the absence of a light source. In the span of 50 minutes the pH value of the water changed to 6.

The fifth experiment showed the cytoplasmic streaming of chloroplasts in the water plant *Egeria densa*.