BOD Lab Report

IV: Temperature of water

DV:Time of oxygen depletion (By oxygen Indicator)

Intro:

Aquatic life requires dissolved oxygen in the water, therefore eutrophication and ocean acidification are becoming huge problems in today's ecosystem. To stop these things from negatively affected these ecosystems, we must first find what conditions the marine life thrive under most. To test what type of water held dissolved oxygen best, we tested three types of water: Hot, cold, and room temperature.

Pre Lab Questions

What are two sources of dissolved organic matter in runoff from urban areas?

Processing industries and sewage plants

What are two sources of dissolved organic matter in runoff from agricultural areas?

Decomposing plants and animals and dairy waste

List dissolved organic materials and possible sources that may decrease oxygen levels as a result of decomposition when present in water.

Dissolved CO2 and the respiration of oxygen in bacteria could decrease oxygen levels in water

List possible organisms that may act as decomposers of dissolved organic matter

Bacteria and Fungi

Experimental Question

In this experiment, we will try to find the temperature that organisms thrive best in on an organism dependent on oxygen and three types of water. The yeast will be the oxygen dependent organism and the milk as the nutrients. We will test three waters: Hot, cold, and room temperature. We will put an equal amount of water, yeast, and milk in each of the three test tubes. We will use an oxygen indicator and a timer to determine how long the water can hold the oxygen.

Hypothesis

If the dissolved oxygen is tested on the cold water, it will hold it the longest.

Protocol

Acquire two beakers with 30 ml of water. In one, put yeast while in the other, put milk. Fill three beakers with 10 ml of tap water. Leave one for the room temperature, add ice to one, and heat the last one for 3 minutes. In three test tubes, pour 5 ml of yeast, then 5 ml of milk. Add 5 drops of indicator and mix. Stop timer when all teammates conclude that the test tube is no longer blue.

Data

	Time
HOT	1:48
COLD	13:48
CONTROL	6:16

Conclusion

According to the data, I concluded that my hypothesis was correct, since the cold water did indeed hold the most dissolved oxygen. All of the times were dramatically different from each other, which proves that the temperature of the water does affect how much dissolved oxygen a body of water can hold. The higher the temperature, the less dissolved oxygen capacity is allowed.

Post Lab Questions

Which test tube contained the most food for the decay organisms (decomposers)? Which tube had the least food? Explain.

All the test tubes contained an equal amount of food for the decomposers

Your test tubes may have had a ring of blue color at the surface even after the remainder of the liquid had changed color. What might account for this?

It possibly could have been due to the indicator being drawn to the oxygen in the air

In which tube did the change occur most rapidly? Is this what you expected? Why?

The hot water test tube changed the quickest, which is what I had predicted since there was a lower dissolved oxygen level in higher temperatures.

What effect would an increase in temperature have on these mini-systems? How could you find out?

The increase in temperature could be problematic because with higher temperatures come loer capacity for dissolved oxygen.

How would your systems have been affected if more decomposers (yeast) had been present at the beginning of your experiment?

The system's oxygen levels would decrease more rapidly due to the increased levels of decomposers, which feed on oxygen.

Decay organisms often reproduce rapidly when conditions are favorable and nutrients are plentiful. What do you think would happen to the supply of dissolved oxygen in a river if the decay organisms began to multiply?

If decay organisms started to reproduce, the river would slowly be deoxidized to the point where it would be unable to sustain life.