Introduction

Watching my sisters do really cool science projects, I couldn't wait until I was old enough to do one of my own. I loved helping them with theirs, but getting to do my own? What a different story! We are always talking about water in our house. Got to pay the bill, got to clean the water, got to wash the dishes, got to take a bath! It seemed like water was involved in everything around here. Now my family is talking about how healthy and safe the water is or is not. Something called pH is really important in helping to decide if the water was healthy and beneficial for we humans. After seeing my sister had a science test for checking pH, I wanted to check my own water and find out the answer to my question.

The question was: which water sample: bottled, or tap, offers the most balanced pH water, making it the most ideal for human consumption? There are way too many different kinds of bottled water so the ones my family buys are the ones I chose to test. We also gathered samples from my friends and neighbors for the tap water. I figured I could always drink theirs if ours was not so good.

My hypothesis stated that Nestle Pure Life would be the most balanced because of the purifying process used, and therefore, the most beneficial for human consumption.

ZaNiya Currie
Grade Three

Methods/ Experiment Design

The purpose of this investigation was to determine which water sample offered the most balanced pH water, making it the most ideal for human consumption. The hypothesis tested states that Nestle Pure Life would be the most balanced because of the purifying process used, and therefore, the most beneficial for human consumption.

Ten tap water samples were collected from around the neighborhood to compare and test for pH levels. Ten samples of three different brands of bottled water were purchased and tested for pH levels. Data was recorded in logbook for later analysis. The Control trial used snow melt as it is the most naturally occurring water source. Three different methods for testing water pH were used. This assures a more accurate analysis. The data was collected using pH test papers, GO Direct Vernier pH probe, and a

LaMotte pH chemical field test kit. Protocols for properly administering each test were carefully followed and results written in log book.

All results were analyzed to see if they proved or disproved the hypothesis.

Materials Used

The materials used included:

- ✓ 5-gallon bucket of melted snow for control
- ✓ 10 samples of tap water collected from my neighborhood, case of Nestle Pure Life bottled water, and a case of Sam's Club brand, and a case of Ice Mountain bottled water.
- ✓ Ph strips, LaMotte chemical pH test kit, and Vernier Go Direct pH probe
- ✓ Logbook, camera, pencil, to document results, Internet to transmit information.

ZaNiya Currie
Grade Three

Results and Discussion

The results were not what was expected. Instead, the results showed the tap water already in my home to most closely match the control sample and be the closest to the neutral number of 7. They were also surprising. It was disturbing to see a difference between testing materials on the same samples. It was expected that Nestle Pure Life would produce the most balanced water, but instead, it was the city tap water. It put this research in a tight place though. Not part of this study due to cost of testing, my tap water was tested for lead and found to be positive. So even though the pH level was close to neutral, the water also contained lead, making it NOT the best choice for healthy nutrition.

Tap Water Test Results

Test Method	Type of Water	Result
pH test strips	Tap water	6.2
Go Direct pH probe	Tap water	6.99
LaMotte Chemical test	Tap water	7.0

Ten trials averaged for final result

Control Sample Test Results

Test Method	Type of Water	Result
pH test strips	Snow melt	6.5
Go Direct pH probe	Snow melt	6.95
LaMotte Chemical test	Snow melt	7.0

Ten trials averaged for final result

ZaNiya Currie
Grade Three

And the Winner Is …….

Nestle Pure Life Test Results

Test Method	Type of Water	Result
pH test strips	bottled	6.0
Go Direct pH probe	bottled	5.76
LaMotte Chemical test	bottled	5

Ten trials averaged for final result

Sam's Club Test Results

Test Method	Type of Water	Result
pH test strips	bottled	5.5
Go Direct pH probe	bottled	5.49
LaMotte Chemical test	bottled	5.0

Ten trials averaged for final result

Ice Mountain Test Results

Test Method	Type of Water	Result
pH test strips	bottled	6.6
Go Direct pH probe	bottled	8
LaMotte Chemical test	bottled	8

Ten trials averaged for final result

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Grade Three

It was expected that Nestle Pure Life would be that ‘perfect’ one but instead, the city tap water proved to be more beneficial than bottled water for human consumption.

In two out of three tests, it was either a 7 or barely off of 7 (6.99). The pH value for water is set at neutral and everything else gets their number based on if it is more acidic or more basic than water. Neutral water helps everything it comes into.

The data did not support the hypothesis.

Limitations / Real-World examples:

The samples used were very small and limited to what could be found in the home. Ten trials helped make the data more truthful but it would be better if more samples were tested. There was not enough time to make many different trials.

There are many people who would be interested in this investigation. Families would want to know if their tap water was better than their bottled water. It would save on their budget if they did not have to buy water twice.

People who run cities would want to know if their water was healthy for their community. Bottled water makers would want to know if their water was the best. Even when my tests would disagree with their test values, it would seem they might want to check things out to see why.

Conclusions:

In conclusion, it would seem that the data did not support my hypothesis. Each product stated it was the most beneficial for human consumption and it was purified to be neutral. The pH value for water is set at neutral and everything else gets their number based on if it is more acidic or more basic than water.

Neutral water helps everything it comes into. The ‘perfect’ number is 7. That is neutral. It was expected that Nestle Pure Life would be that ‘perfect’ one but instead, the city tap water proved to be more beneficial than bottled water for human consumption. In two out of three tests, it was either a 7 or barely off of 7 (6.99).

Evidence shows my hypothesis was not supported but the results point to a need for more study and research on this topic. Different tests could also be done, more samples could be tested, and many other ideas added.

ZaNiya Currie
Grade Three