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Lab 2 – Water Quality and Contamination

Experiment 1: Drinking Water Quality

Bottled water is a billion dollar industry in the United States. Still, few people know the health benefits, if any, that come from drinking bottled water as opposed to tap water. This experiment will look at the levels of a variety of different chemical compounds in both tap and bottled water to determine if there are health benefits in drinking bottled water.

POST-LAB QUESTIONS

1. **Develop a hypothesis regarding which water sources you believe will contain the most and least contaminants, and state why you believe this. Be sure to clearly rank all three sources from most to least contaminants.**

Hypothesis = I believe tap water will have the most contaminants because it is unfiltered coming from a general water treatment facility. I believe Dasani water will have some contaminants since it is treated (but not a natural source) and has artificial flavoring / sodium. I believe Fiji will contain the less amount of contaminants based on being filtered and being produced from a natural untreated source.

Table 1: Ammonia Test Results	
Water Sample	Test Results (mg/L)
Tap Water	0 mg/L
Dasani [®] Bottled Water	0 mg/L
Fiji [®] Bottled Water	0 mg/L

Table 2: Chloride Test Results	
Water Sample	Test Results (mg/L)



Tap Water	0 mg/L
Dasani[®] Bottled Water	0 mg/L
Fiji[®] Bottled Water	0 mg/L

Table 3: 4 in 1 Test Results			
Water Sample	Total Alkalinity (mg/L)	Total Chlorine (mg/L)	Total Hardness (mg/L)
Tap Water	120 mg/L	1.0 mg/L	0 mg/L
Dasani[®] Bottled Water	0 mg/L	1.0 mg/L	0 mg/L
Fiji[®] Bottled Water	0 mg/L	2.0 mg/L	20mg/L

Table 4: Phosphate Test Results	
Water Sample	Test Results (ppm)
Tap Water	20 ppm
Dasani[®] Bottled Water	10 ppm
Fiji[®] Bottled Water	80 ppm

Table 5: Iron Test Results	
Water Sample	Test Results (ppm)
Tap Water	0.5 ppm
Dasani[®] Bottled Water	0 ppm
Fiji[®] Bottled Water	0 ppm

Table 6: pH Results	
Water Sample	Test Results
Tap Water	7
Dasani[®] Bottled Water	2
Fiji[®] Bottled Water	8

2. Based on the results of your experiment, would you accept or reject the hypothesis you produced in question 1? Explain how you determined this.

Accept/reject = I reject my hypothesis. During my experiment, Fiji ended up having more contaminants than Tap and Dasani water. The initial hypothesis stated Fiji had the least amount and Tap had the most contaminants.



- 3. Based on the results of your experiment, what specific differences do you notice among the Dasani[®], Fiji[®], and Tap Water?**

Answer = The only differences between the three waters was that the tap and the Fiji both had the significant higher pH results although some had higher results than others but for the pH balance, they both were the same. Based on the results of the experiment the major difference that I see between these is that the Dasani[®] is the most impressive of the group. The Dasani[®] water is the least contaminated and the Fiji is the most contaminated, which is far from the original prediction through my hypothesis.

- 4. Based upon the fact sheets provided (links at the end of this document), do any of these samples pose a health concern? Use evidence from the lab to support your answer.**

Answer = The ammonia levels do not pose a health risk all three tested at 0, chloride also poses no health risks and the levels within the water samples are within the daily intake suggestions, Based on all the fact sheets the one that stood out the most with most health risk is phosphate. Phosphate poses a health concern to humans in high levels and the Fiji water tested at 80 while the others only tested at below 20 so Fiji water consumed frequently could pose a concern, iron does not pose a health threat and all three tested at 0, pH does not pose a health risk it just affects taste tap and Fiji tested at 8 while Dasani tested at a 2 in this so no health risk.

- 5. Based on your results, do you believe that bottled water is worth the price? Use evidence from the lab to support your opinion.**



Answer = To me I don't believe bottled water is worth the price. Based on the results not all bottle water is the same and depending on where you live, tap water will not be the same either. During my experiments tap water and Fiji bottled water had the most contaminants, while the other bottle water tested Dasani had the least contaminants. Which made me believe that if you are going to buy bottled water that is the brand you want to buy. But if unwanted to save money and drink tap water. I would just buy a special filter that can help filter all the contaminants and make it the safest water to drink.

****NOTE: Be sure to complete steps 1 - 32 of Lab 3, Experiment 1 (the next lab) before completing your work for this week. Lab 3 involves growing plants, and if the work is not started this week, your seeds will not have time to grow and the lab will not be finished on time.****

FACT SHEETS

Ammonia

https://www.wqa.org/Portals/0/Technical/Technical%20Fact%20Sheets/2014_Ammonia.pdf

Chloride

http://www.who.int/water_sanitation_health/dwq/chloride.pdf

Phosphate

http://osse.ssec.wisc.edu/curriculum/earth/Minifact2_Phosphorus.pdf

Iron

http://www.who.int/water_sanitation_health/dwq/chemicals/iron.pdf

pH

https://www.watersystemscouncil.org/download/wellcare_information_sheets/potential_groundwater_contaminant_information_sheets/9709284pH_Update_September_2007.pdf

Alkalinity

https://www.safewater.org/PDFS/communitywatertestkit/Water_Quality_Tests.pdf

Chlorine

<http://www.watertechonline.com/testing-for-chlorine-in-drinking-water/>



Hardness

<http://des.nh.gov/organization/commissioner/pip/factsheets/dwgb/documents/dwgb-3-6.pdf>

References

Any sources utilized should be listed here.



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