Fast Relief: Which Antacid is the Real MVP?

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Abstract

Antacids are one of the most commonly used over-the-counter medicines in the United States, yet most people never stop to wonder how they actually work — or whether some work better than others. This project explores that question through a hands-on experiment comparing three different artificial antacids to determine which one neutralizes acid the fastest.

To understand the experiment, it helps to know the difference between the two main categories of antacids. Natural antacids are substances found in nature that have acid-neutralizing properties, such as baking soda or calcium carbonate in its raw form. Artificial antacids, on the other hand, are commercially manufactured products — like Alka-Seltzer, Rolaid, TUMS, Gaviscon, or Mylanta— that combine multiple chemical compounds, often including natural neutralizing agents, to treat conditions like heartburn, acid indigestion, and upset stomach. These products are widely available and used by millions of people daily, which makes understanding their effectiveness both practical and important.

For this experiment, white vinegar was used to simulate stomach acid because it has a similar acidic pH and is safe to handle in a school setting. Each of the three artificial antacids(TUMS, Gaviscon, and Alka-Seltzer) was tested under the same conditions to keep the results fair and consistent.

The goal was to answer a specific question: Does on brand of Antacid neutralize an acid faster than another. The findings of this experiment could help consumers make more informed choices about which antacid to use.

Research Question

Does one Brand of Antacid neutralize Acids faster than another?

Hypothesis

If we test which antacid is fastest at neutralizing acid between Alka-Seltzer, Gaviscon, and Tums, Alka-Seltzer will be the fastest because it contains Sodium Bicarbonate which is a natural antacid used in Baking Soda.

Materials

1. Alka-Seltzer Tablets
2. Gaviscon Tablets
3. TUMS Tablets
4. Distilled White vinegar
5. pH strips
6. Beakers
7. Graduated Cylinder
8. Scale
9. iPad Timer

*Note: pH stand for Potential of Hydrogen

Procedure

Run 1 - Control

1. **Measure 30 mL of White Vinegar in a Graduated Cylinder, then pour it into a beaker**
2. **Swirl pH strip in beaker to take reading**

Run 2 - TUMS

1. **Measure 30 mL of white vinegar into graduated cylinder and then pour it into a beaker**
2. **Add 9 grams of the specific Antacid(Alka-Seltzer, Gaviscon, or TUMS) and start stopwatch**
3. **Take readings at 3 minutes, 6 minutes, and 9 minutes using pH strips**

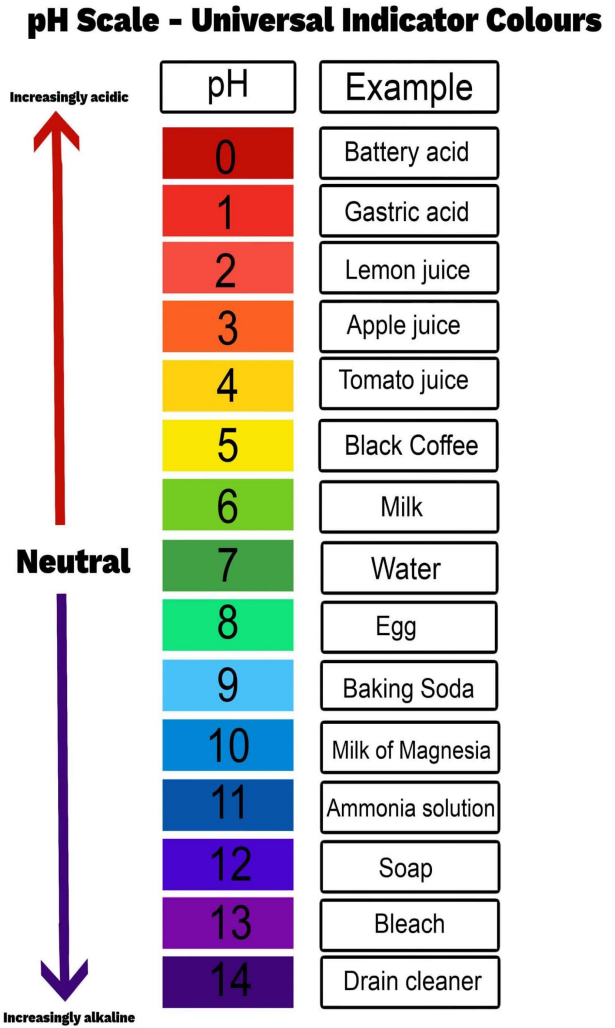
Data

The average of Alka-Seltzer, Gaviscon, and TUMS

Alka-Seltzer: 6.97 pH

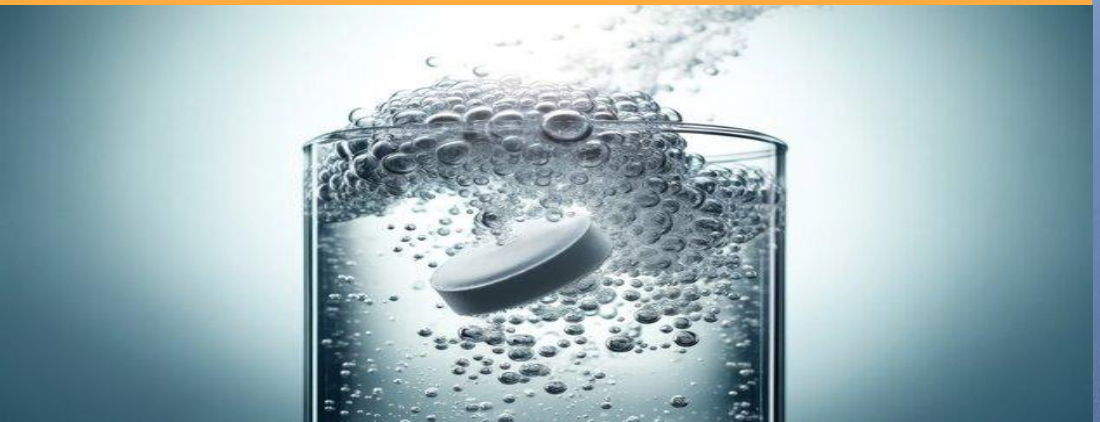
Gaviscon: 3.77 pH

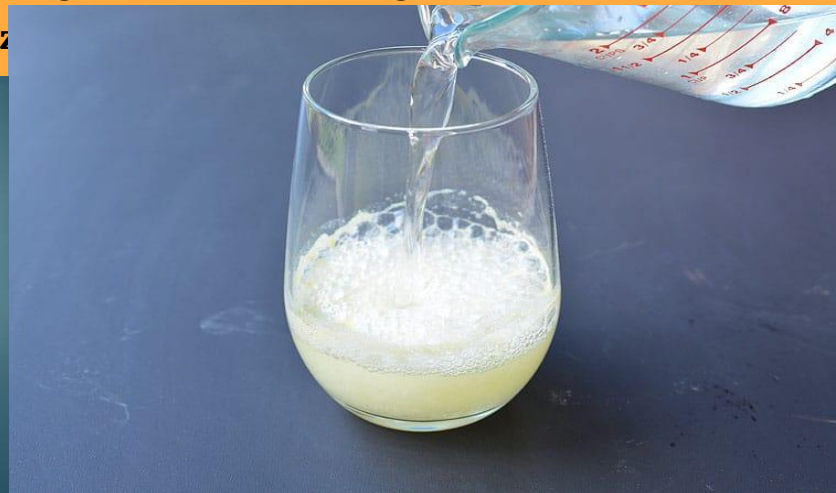
TUMS: 5.10 pH



Result

The experiment was to test the hypothesis that antacid Alka-Seltzer would neutralize the acid (white vinegar) faster than any other antacid, like TUMS or Gaviscon. Our results, pH readings, and qualitative observations supported our hypothesis that Alka-Seltzer is the faster at neutralizing than other antacids. The test was conducted in 3 trials with 9 grams of each antacid and 30 mL of White Vinegar. Readings for pH values were recorded at 3 minutes, 6 minutes and 9 minutes(recorded by timer). The pH value readings proved that Alka-Seltzers had the highest pH value among the three. Also visual observations showed Alka-Seltzer had produced more fiz





Conclusion

In conclusion, our hypothesis was proven and Alka-Seltzer neutralized the acid(White Vinegar) fastest. Looking at our qualitative data, Alka-Seltzer had more fizz from the beginning and it looked very promising. If we ever wanted to redo the experiment we would change a few major things. We would add more acids and antacids into the experiment to get a more diversified result. We would add more trials to get a more accurate result, and we would also place the recommended intake rather than 9 grams for each of the Antacids. We concluded from our research that Alka-Seltzer is the fastest at neutralizing acids, but Gaviscon and Tums may be better at consistency.

Image Sources

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