Importance of Knowing pH

# Background

pH is how we measure how acidic or basic something is. Some examples of acids is lemon juice( has ots of citric acid in it) or hydrochloric acid which we us in lots of experiments. An example of a base is

# Purpose

The purpose of this experiment is to examine the pH of common household ingredients and make a connection between the importance of knowing the pH and how we use the ingredients.

# Materials

* Red cabbage juice
* Variety of house hold ingredients
* Test tubes
* Test tube rack

# Procedure

1. Watch the teacher preform the experiment using bleach and record your observations
2. Collect a test tube rack and 6 test tubes
3. Label each test tube
4. Now collect a beaker of red cabbage juice
5. Fill each test tube half full of cabbage juice.
6. Now we will pass around as a class the test substances.
7. When you get a substance add about 1-2 ml of it to each test tube and record the color that is created
8. Now try mixing the some of the lemon juice test tube with the baking soda. Note the color (we will discuss this as a class later)
9. When complete wash out all you test tubes and beakers. You can just dump the liquids down the drain.

# Observations

|  |  |  |  |
| --- | --- | --- | --- |
|  | What we use it for | Color  | Corresponding pH |
| Bleach |  |  |  |
| Vinegar |  |  |  |
| Baking soda |  |  |  |
| Lemon juice |  |  |  |
| Milk |  |  |  |
| Antacid  |  |  |  |
| Lemon juice and baking soda |  |  |  |

Using the chart below fill in the corresponding pH column

|  |
| --- |
|  |
| **pH** | 2 | 4 | 6 | 8 | 10 | 12 |
| **Color** | Red | Purple | Violet | Blue | Blue-Green | Greenish Yellow |

# Discussion

1. What range of pH is the foods we eat/drink undiluted (nothing else added)?
2. The normal pH of stomach acid is 1.5 to 3.5, knowing this, what color would it be if you added red cabbage juice to it?
3. Do you think bleach having such a high pH is one of the reasons it is extremely harmful to us?
4. Do you think knowing the pH of something is an important property to know when designing something people may want to eat? (Note: just because something doesn’t have a very high or very low pH doesn’t mean it is okay to consume)
5. When you add an acid to a base they neutralize each other, causing the pH to become 7 or neutral. In which example did we show this?