CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J2113

Project Title
The Investigation of Acetylsalicylic Acid, Sodium Bicarbonate, and Calcium Carbonate

Abstract

Objectives/Goals
Does the amount of acetylsalicylic acid in various brands of aspirin tablets depend on the price of the aspirin tablet?
Are CaCO3 (calcium carbonate) antacids or NaHCO3 (sodium bicarbonate) antacids more efficient in neutralizing stomach acidity?
Does the strength of the base within an antacid depend on the price of the antacid?

Methods/Materials
A: Titration of Ammonia and Vinegar to obtain basic understanding of titration.
B: Titration of aspirin and ammonia was performed to determine the normality (which is the concentration of H+ per 1 L of solution) of each aspirin brand.
C: Titration of antacid tablets and vinegar was performed to determine the normality (which is the concentration of OH- per 1L of solution) of each antacid brand.
D: Added antacid to 0.5M HCl 1g at a time and recorded pH after each gram was added in order to determine which antacid brand increased the pH of solution at a faster rate.

Results
A: Normality of Ammonia= 1.06
Normality of Vinegar = 0.83
B: St. Joseph#s was the most expensive aspirin and the Rite Aid brand was the least expensive; however, Ecotrin was the 3rd most expensive and it had the greatest H+ content. The Rite Aid brand had the least amount of H+ content.
C: Alka-seltzer was most expensive antacid and Equaline was the least expensive. The Alka-seltzer and Rite Aid brand of antacids had greatest amount of OH- content (both had NaHCO3)and the Equaline (contained CaCO3)had least amount of OH-. Maalox (contained CaCO3)was the 2nd most expensive brand but had low OH- content.
D: Alka-seltzer and Rite Aid brand acted the fastest when neutralizing acidity. The Equaline acted the slowest when neutralizing acidity.

Conclusions/Discussion
The amount of acetylsalicylic acid in various brands of aspirin does not depend on the price of the aspirin tablet. Although there was a general trend of more expensive brands containing more acetylsalicylic acid, Ecotrin was found to have the most acid even though it was not the most expensive.NaHCO3 antacids are better than CaCO3 antacids in neutralizing acid.The strength of the base within an antacid does not

Summary Statement
The purpose of this project is to determine if the amount of acetylsalicylic acid in aspirin tablets or the amount of sodium bicarbonate and calcium carbonate in antacid tablets depend on the price of the item.

Help Received
Sister explained the chemistry background