



**CALIFORNIA STATE SCIENCE FAIR  
2006 PROJECT SUMMARY**

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<b>Project Title</b> <b>Which Antacid Will Neutralize Gastric Acid the Best?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The purpose of my experiment is to find out which antacid neutralizes gastric acid the best. Hydrochloric acid has similar properties to gastric acid and it was used in neutralization. <b>Methods/Materials</b> I tested the following products: Milk of Magnesia, Mylanta, Maalox and Alterna Gel. I selected these products because they all had different active ingredients and almost the same amount of active ingredient per 5 mL. Methyl Orange was used as indicator. To arrive at hypothesis, I tested the strengths of antacids using pH papers. Based on results of pH readings, I placed Milk of Magnesia as the best antacid, followed by Mylanta, Maalox and Alterna Gel. Experiment: 1) I added 2 drops of the indicator to 10 drops of HCl. I observed color. 2) I added 2 drops of the indicator to 10 drops of each product. I observed colors. 3) I added 10 drops of HCl to another glass, 2 drops of indicator and started adding drops of antacid until solution was neutralized (trace of orange color was detected). This step was repeated for four antacids. 4) Volume and normality of products was calculated. <b>Results</b> Based on calculations to neutralize 200 mL of HCl, it took on average, 400 mL of Milk of Magnesia, 820 mL of Mylanta and 1573 mL of Maalox. The results for Alterna Gel were not conclusive but it took about 1413 mL for the color to become pinkish melon. The volume was inversely proportional to the pH of the base. Normality was highest for Milk of Magnesia (6), followed by Mylanta (2.93) and Maalox (1.53). The results for Alterna Gel were inconclusive but if, my assumptions were correct, the Normality was 1.7 <b>Conclusions/Discussion</b> The results, for the most part, were as expected. It took the least amount of Milk of Magnesia to neutralize hydrochloric acid, followed by Mylanta and Maalox. Results for Alterna Gel were inconclusive.	
<b>Summary Statement</b> My project calculates volume of antacid needed to neutralize gastric acid and it calculates Normality of each antacid.	
<b>Help Received</b> Mother bought HCl, Methyl Orange, pipets, goggles; she helped with subject research and with some typing.	