



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Michael D. Wu</b>	<b>Project Number</b> <b>J0618</b>
<b>Project Title</b> <b>The Effects of Different Antacids and PPIs on the pH Intensity of Gastric Acid</b>	
<b>Objectives/Goals</b> My objective was to help find the most effective medicine for lowering the pH of Gastric Acid and treating acid reflux, whether it be an antacid or a Proton-Pump Inhibitor. My goal was to help the 50 million Americans who suffer from severe heartburn, including my dad, in most effectively decreasing their heartburn.	
<b>Abstract</b> <b>Methods/Materials</b> I used three different antacids, Alka-Seltzer, Baking Soda, and Antacid Tablets, as well as two different PPIs, Omeprazole and Lansoprazole. Then, I put the medicines in a chemical solution similar to Gastric Acid, in the way that they would be ingested. For example, one would ingest 2.5g Baking Soda in 4 ounces of water. I then periodically tested the pH level with my pH meter after intervals of 30min, 1 hour, 6 hours, and 24 hours. I tested each medicine seven times to avoid experimental errors.	
<b>Results</b> The seven containers of the 2.5g of sodium bicarbonate had the most immediate results; the pH levels of all containers increased an average of 3.7pH after half an hour and the pH level continued to increase after the next 24 hours. Next best were the Alka-Seltzer results, increasing 2.22pH after 24 hours and Antacid Tablets followed in terms of immediate response. Both PPIs, Omeprazole and Lansoprazole had the exact same results: a small increase after six hours, and then a slow gradual downward sloping after 24 hours to increase the pH level to 3.9pH from 3.4pH.	
<b>Conclusions/Discussion</b> In conclusion, the most effective, cheapest, and available treatment in lowering the acidity of heartburn was 2.5g of sodium bicarbonate. Next best was the Alka-Seltzer, then the Antacid Tablets.	
<b>Summary Statement</b> My project is about the most effective medicine in immediately lowering the effects of acid reflux; the most effective medicine was 2.5g of sodium bicarbonate.	
<b>Help Received</b> Parents helped me obtain the materials needed; Parents and Mrs. Driscoll helped edit.	