



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

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Project Title Healthy Options for Treating Heartburn (Acid Reflux): Natural vs. Synthetic Antacids	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of our science fair project was to understand the effectiveness of natural antacids in bringing relief to acid reflux compared to synthetic antacids. Our hypothesis for this project was that if we add antacids to an acid(vinegar), then it will neutralize the vinegar(acid) and that the natural antacids will be healthier way to reduce acid reflux compared to synthetic antacids.</p> <p>Methods/Materials Different types of natural and synthetic antacids, vinegar, pH Meter, digital balance, measuring cups, graduated cylinders. Preparation of antacid solution: For antacids in solid form, 1 gm of powdered antacid was mixed with 25 ml of distilled water. For liquid antacids, 1 ml of antacid was mixed into 24 ml of distilled water. The pH value of each of the solutions were measured with pH meter and recorded into appropriate tables. Neutralization reaction: Each of the antacid mixtures was added to 50 ml of vinegar, and the pH of the antacid-vinegar mixture was measured and recorded into the result tables. The above steps were repeated three times for each antacid to get three sets of readings.</p> <p>Results All synthetic antacids neutralized the vinegar and reduced the pH of vinegar to a value between 4 and 5, except for Mylanta. The pH of the Mylanta solution mixed with vinegar was 3.35. Of the number of natural antacids tested, banana, evaporated milk, reduced-fat milk, buttermilk, Manuka Honey and Aloe Vera juice reduced the pH of vinegar to a value between 3 and 4. All the synthetic antacids that we tested lowered the acidity of the solution to acceptable levels. The natural antacids listed above reduced the pH to a range between 3 and 4, which is considered a healthy range of pH for stomach.</p> <p>Conclusions/Discussion The results of our experiment support our hypothesis. The results show that natural antacids can be used to relieve acid reflux caused by a spicy, oily, or fatty meal. The natural antacids neutralize the stomach acid and bring its pH to a healthy level of acidity. Note that a natural antacid acts slow and may not bring relief as fast as a synthetic antacid. Since the natural antacids work as good as the synthetic antacids and they do not have harmful side effects, we believe that the natural antacids are the healthier choice for reducing acid reflux.</p>	
Summary Statement We compared the effectiveness of natural and synthetic antacids for reducing heartburn and found that natural antacids are the healthier choice.	
Help Received Our Mom helped us with acquiring materials for the experiment and setting up the experiment. Our Dad helped us with taking photographs.	