



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joshua Batres</b>	<b>Project Number</b> <b>J0603</b>
<b>Project Title</b> <b>Coin Batteries: Which Is a Better Electrolyte Solution, Acid or Base, According to Their Voltages?</b>	
<b>Objectives/Goals</b> This project is about which electrolyte solution is better, acid or base. I used an example of acid which is vinegar and an example of base which is baking soda. Then I made a coin battery from an English penny and a piece of zinc.	
<b>Abstract</b>	
<b>Methods/Materials</b> Materials: an English coin, pieces of tissue paper, vinegar, baking soda, tap water, clothespin(paperclip), a PH meter, a multimeter Procedure: 1.Dissolve 2g of baking soda into 1/3 cup of water. Take 1/2 cup of vinegar into a cup. Cut two pieces of tissue paper and wet one of them with vinegar and another one with baking soda solution. 2:Measure the PH of the liquids. Place the papers between an English penny and a piece of zinc. Hold them with a clothespin or a paperclip. Connect wires to the metals and measure electricity of the battery. 3:Change the piece of tissue to another one. Before change it, wash the metals with water. 4:Repeat this procedure 3 times.	
<b>Results</b> average PH of the liquids: vinegar: 2.2 baking soda: 7.7 average voltages of the battery: vinegar batteries: 0.98v baking soda batteries: 0.83v	
<b>Conclusions/Discussion</b> Vinegar is an acid and baking soda is a base. Results show that an acidic electrolyte solution gives me a higher voltages than a basic electrolyte solution. Both of them worked as electrolyte solution of batteries. Because acidic electrolyte solution gave me a higher voltage than baking soda, I can say that an acidic electrolyte solution is better than a basic electrolyte solution.	
<b>Summary Statement</b> This project is about electrolyte solutions of batteries.	
<b>Help Received</b> My brother helped me to wash my batterie`s metals.	