CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
Dana L. Starrh

Project Number
J0521

Project Title
Hydrogen Separator 2002

Abstract

Objectives/Goals
Which fluid/liquid will produce more hydrogen through electroysis; tap water, Sprite, Coca Cola, aspirin, baking soda, white vinegar, lemon juice, or Windex?

Methods/Materials
1 gal milk carton, two stainless steel welding rods(defluxed), test tube, 6 inch coated copper wire, bottom of a plastic cup, 12v. battery charger, asprin, Coca Cola, White Vinegar, Sprite, Windex, baking soda, tap water, lemon juice, ruler, timer.

Results
After letting the Seperator 2002 work for an hour I would measure the results. I did this three times and recorded how many inches of hydrogen each fluid produced. The replications showed that Baking soda produced the most hydrogen, followed by the vinegar, lemon juice, Coke, aspirin, Windex, Sprite and tap water. This was not what I had stated in my hypothesis which I had made based on the ph balance of each fluid.

Conclusions/Discussion
In looking at the results of the test, the baking soda produced H+ the fastest. According to the reasearch on PH, and baking soda having such a small amount of H+ in comparison to other liquids tested, it should have produced it the slowest.
Putting the baking soda aside, vinegar and lemon juice did produce H+ the fastest, which was my hypothesis. Coke and aspirin should have followed in order and they did however, the Sprite, water and Windex broke the pattern. Then the question became why? Maybe it is not the PH of a solution that governs the amount of H+ produced. So I did more research with my dad on electrolysis and conductivity. I discovered that electrolysis can not happen if the fluid can not conduct eletricity. The greater the conductivity of the fluid the greater the electrolysis process. Therefore I concluded that the Hydrogen Separator 2002 told me which fluid conducted electricity better. Therefore the reason baking soda was so fast in producing H+ is probably due to its ability to conduct electricity better.

Summary Statement
Finding which fluid will produce more hydrogen through electrolysis.

Help Received
Dad helped make the Hydrogen Seperator 2002 and helped me measure conductivity of the fluids using a multi-meter. Dad and Mom help do the experiments.