CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
36319

Project Title
Waste to Power

Abstract

Objectives/Goals
The purpose of my project was to determine what type of waste would generate the most energy. I used beef, apples, and dried grass clippings as my fuel source. I believed that the beef would generate the most energy.

Methods/Materials
I used a Microbial fuel cell(I made it), 1/2 pounds of beef, 1 medium apple, 3oz. of dry grass, multimeter, 18 kg of salt, 18 packages of 25g Telephone agar, about 24 L. of water, and 18 electrodes. Each material (meat, apples, grass) was replaced twice, for a total of 9 different experiments. Each experiment required 8 days of readings three times a day.

Results
The amount of energy generated was quite surprising. The dried grass actually generated significantly more energy than the beef or apples. It also remained high for longer period of time. 3oz of grass clippings generated 450 milli-watts for over a week. Whereas the apples and beef started around 100 milli-watts and dropped.

Conclusions/Discussion
The 3 tests of each type of waste showed that the dried grass was already decomposing. It could generate the most amount of energy. I believe I got the astonishing results because the dried grass is a home to electrogenic bacteria. The electrogenic bacteria is like tiny nano wires that are highly conductive. They decompose the waste while conducting power into the electrode.

Summary Statement
The results indicted that my hypothesis is to be rejected. The results show that the dried grass clippings was the type of waste that generated the most enegy.

Help Received
I designed the project myself after reading various articles online, the main one from Penn State .