Potatoes Are the Ultimate Solution to our Electricity Problems in Zimbabwe

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Most of the Zimbabwean population has no access to proper household lighting facilities. In a bid to solve this problem the researcher invented an environmentally friendly battery using locally available decaying potatoes from the market dumpsite. The electrolytic potato tubers provided the phosphoric acid electrolyte.150g of potato tubers was grated using a grating machine and 10g of NaCl, 30g water and a 10g mixture of powdered C and MnO2 in a plastic beaker. Four different pairs of electrodes were used and the Mg and C electrodes produced the highest voltage and current followed by the Zn and C pair. The Cu proved to produce a low voltage and hence the C rod was used for the final prototype. Zn lasted for a longer period than the Mg electrode which quickly got used up. The electrochemical reaction between the mechanically welded galvanized Zinc container (cathode) and C (anode) produced a high voltage of 1.12V and a current of 0.06mA. A thick piece of paper was coated with petroleum jelly with the aim of preventing the different electrodes from getting into contact. Potatoes produce high current and voltage and when connected in series can be used as a cheap and environmentally friendly battery. Potatoes are indeed the ultimate solution to household lighting problems.

Awards Won:

Second Award of $2,000

University of Arizona: Tuition Scholarship Award