

Development of a LED lamp using ginger extract for practical utilization

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Abstract

For finding , the voltages and current from Ginger extract It has been applied some process that had found and grown easily. It has been conducted observations very carefully. we have found that the Ginger extract of these samples have significant amount of voltage and current. The discharge characteristic of a LED lamp was more effective than the other types of lamp as the Open circuit voltage, Short circuit current and Maximum power are more stable and steady in comparison with others. Ginger contains vitamins, minerals, water, carbohydrate, protein and fiber etc. It has the presence of the water, sugars and acid within the Ginger that allows electrons to flow between the metals to form an electrical current. The copper and zinc react effectively forming electrodes, the zinc acts as the electron rich anode (positive) whilst the electron poor copper acts as the cathode (negative).

Keywords: *Ginger extract, LED lamp, electricity, Open circuit voltage, Short circuit current. Load Voltage and Load Current.*

I. Introduction

Electricity is essential of our daily life[1-5]. We cannot think any development without electricity[6-9]. There are many ways of generating electrical energy in the world today[10-14]. But these conventional ways of generating electrical energy have many disadvantages such as resource limitations, environmental pollution, etc. For this reason, Scientists are turning their attention to unconventional sources[15-19]. Renewable energy sources are non-conventional sources[20-23]. Here I have designed A LED lamp using Ginger Extract[24-29]. I have measured the voltage from Ginger Extract[30-35]. I have observed that the voltage was stable until the Ginger were fresh[36-40]. So I can come to a decision that fresh Ginger may be a source of electrical energy[41-42]. In future ,it can be play an important role for power generation.

II. Methods and Materials

II.A Materials

Ginger extract, 1 LED lamp, Alligator clips, Copper plate, Zinc plate, Copper wires, Rubber band, Falcon tube, PVC plate(separator), Cockshies.

II.B Methods

The methodology of this research work has been discussed by the following:



Fig.1 Experimental set-up for Ginger based LED lamp

Fig.1 shows an experimental setup of a LED lamp using ginger extract for practical utilization.



Fig.2 Experimental set-up of AgNPs using Ginger based LED lamp

Fig. 2 shows an experimental setup and preparation of AgNPs using Ginger based LED lamp.

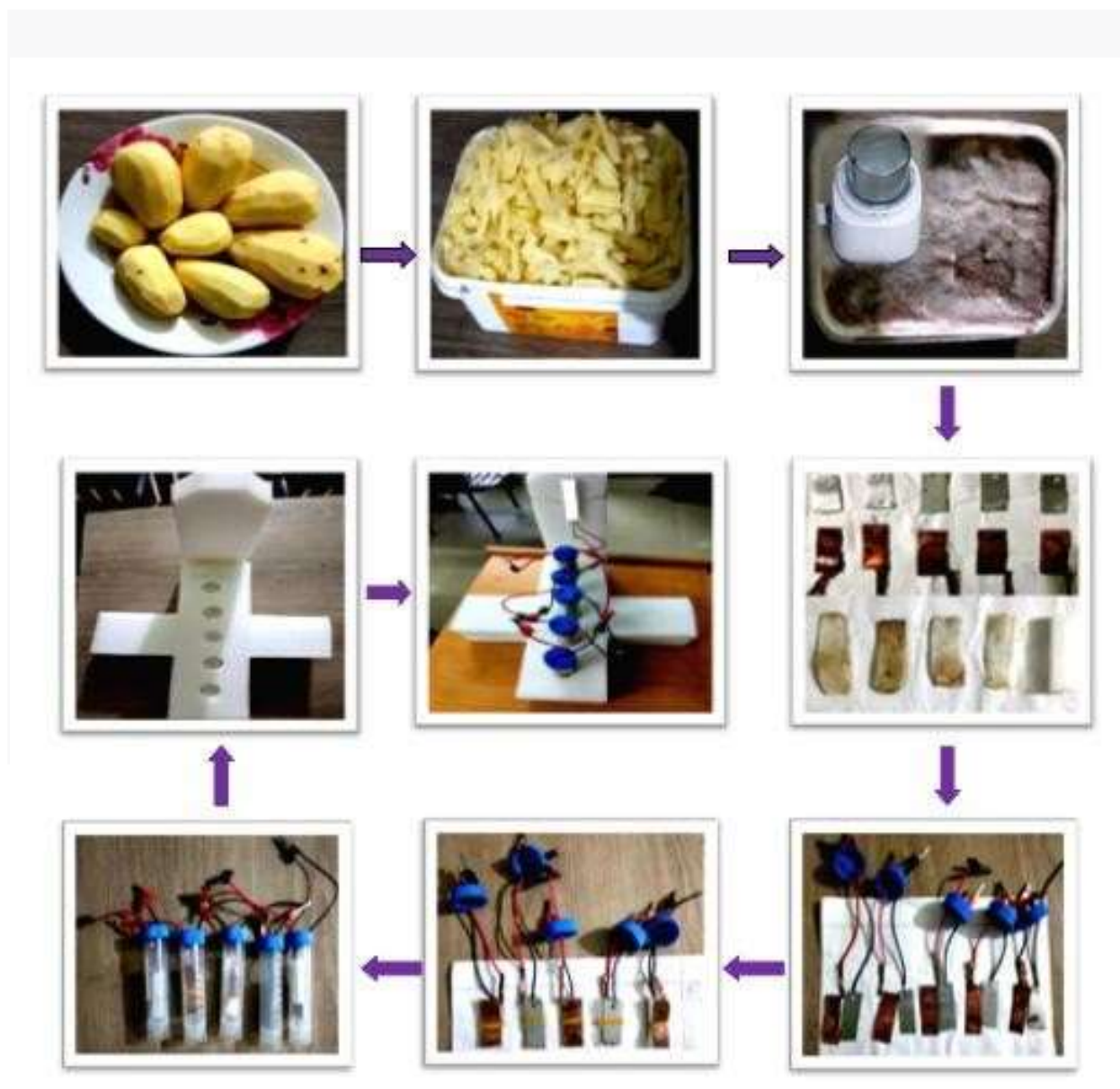


Fig.3: step by step setup of methodology for preparing of a LED lamp

Fig.3 shows an experimental set up of the finished product of a LED lamp using ginger extract. First of all we bought 500 grams of Ginger from the market. Then we wash & clean them well and freshen them. Then they are juiced by a blender. Now it was put some Ginger juice in falcon tube and measure the voltage and current by connecting zinc and a copper sheet as a anode and cathode with a pair of wires. After that connect all the tubes are connected together in series connection and then also connected with a LED Blub. Then after it is shown that the LED Blub was started to give light.

III. Results and Discussion

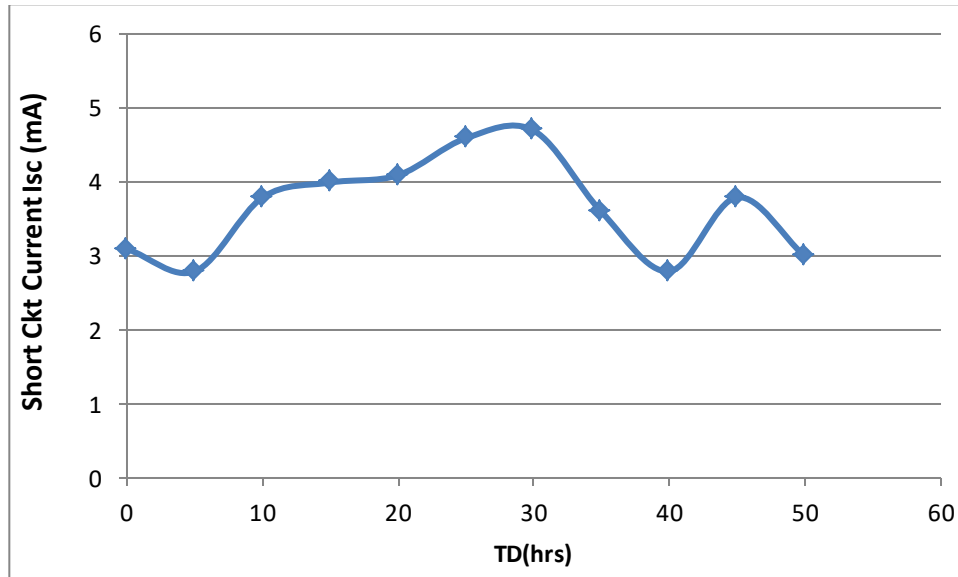


Fig.4 Short circuit Current(mA) versus Time duration(hrs)

Fig.4 shows the short circuit current versus time duration(hrs) curve. It is shown that the short circuit current decreases linearly up to 5 hrs and then increases almost exponentially up to 40 hrs and then finally increases exponentially up to 50 hrs.

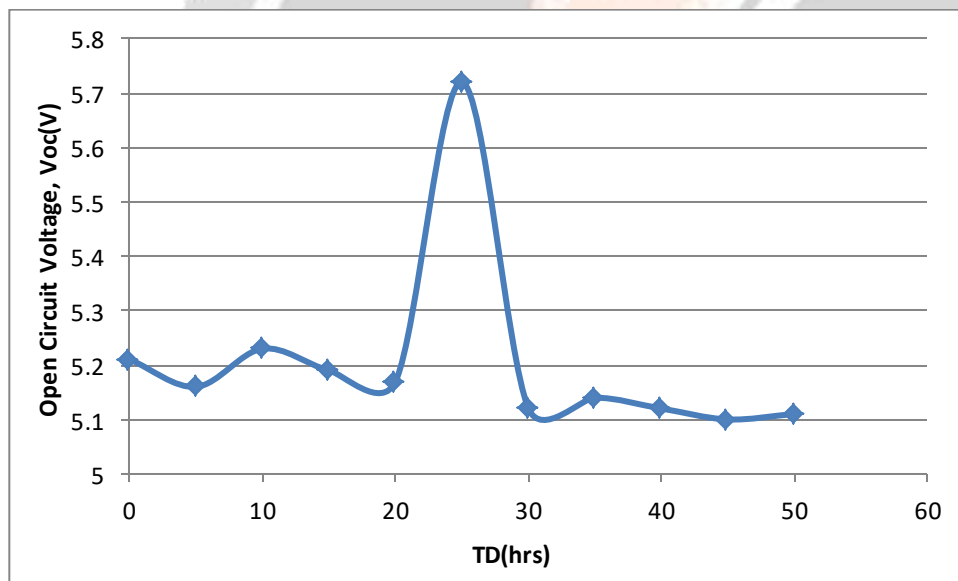


Fig.5 Open circuit Voltage (V) versus Time duration(hr)

Fig.5 shows the open circuit voltage versus time duration(hrs) curve. It is shown that the short circuit current decreases linearly up to 5 hrs and then increases almost exponentially up to 20 hrs and then increases exponentially up to 30 hrs and then after it was almost constant up to 50 hrs.

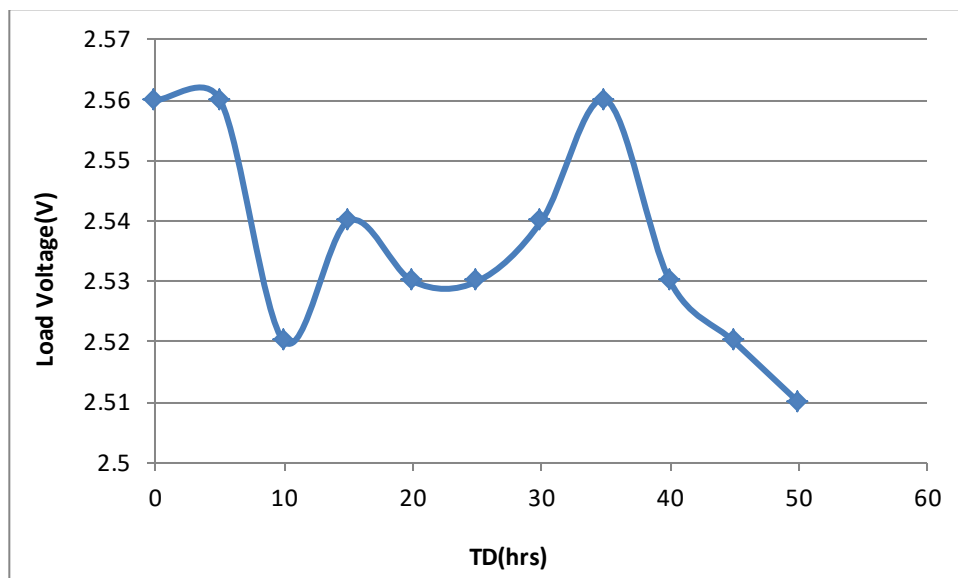


Fig.6 Load Voltage (V) versus Time duration(hr)

Fig.6 shows the load voltage versus time duration curve. It is shown that the load voltage was constant up to 5 hours and then it decreases exponentially up to 10 hours and then after it decreases and then increases exponentially up to 50 hours.

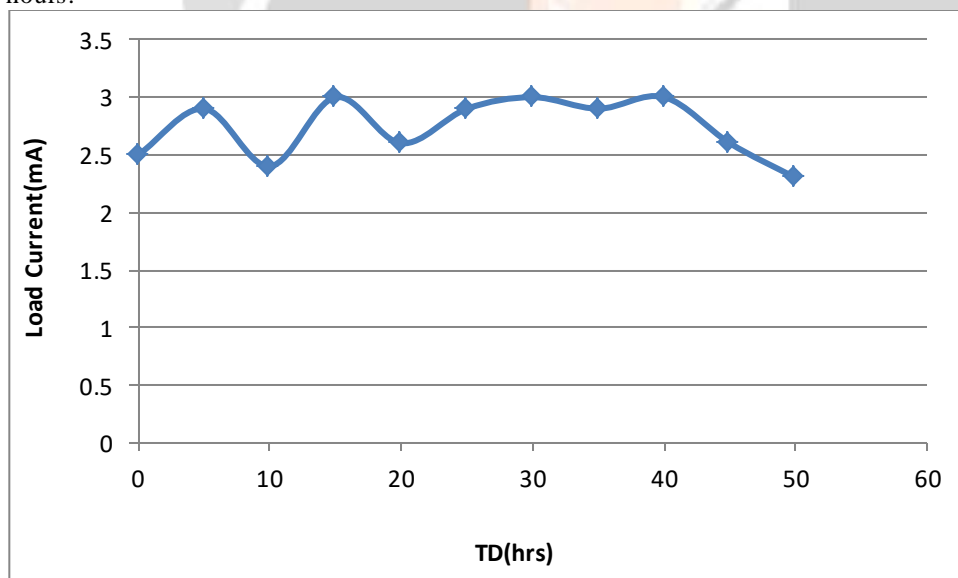


Fig.7 Load Current (mA) versus Time duration(hr)

Fig.7 shows the load current versus time duration curve. It is shown that the load current increases exponentially up to 10 hours and then it increases exponentially up to 20 hours and then after it was almost constant up to 40 hours and then finally it decreases linearly up to 50 minutes.

IV. Conclusions

It is shown that Ginger extract was good for making in the electrolytic cell as an electrolyte. The short circuit current, open circuit voltage, load current and load voltage have been studied. In this research work, there are two kinds of cost. One is variable cost and another is fixed cost. The Zinc and Copper plate were used as an anode and cathode. The zinc cost was variable cost and the copper cost was fixed cost. The electrolyte cost was also variable cost.

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