



The study of electric potential in the indigenous plants

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### **ABSTRACT**

The purpose of the research of electric potential in indigenous plants 1) to decrease the problem of the wasting without any benefit 2) to compare the amount of electric current in plant's leaves 3) to search for the renewable energy to apply in typical life by studying from the independent variable such as leech lime, Tamarind, Pak tew and Cowa, the dependent variable such as electric potential and bright small LED light bulb, and the last one control variable such as the concentration of plant's leaves per distilled water and volt's meter electric potential and the equipment for this research paper was recorded experimental results form.

To summarize up everything that has been stated so far which got from gathering experimental results information found that electric potential in the indigenous plants which blend with distilled water was enough for establishing the battery cell.

**KEYWORDS** : electric potential, indigenous plants and battery cell

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### Abstract

The purpose of the research of electric potential in indigenous plants 1) to decrease the problem of the wasting without any benefit 2) to compare the amount of electric current in plant's leaves 3) to search for the renewable energy to apply in typical life by studying from the independent variable such as leech lime, Tamarind, Pak tew and Cowa, the dependent variable such as electric potential and bright small LED light bulb, and the last one control variable such as the concentration of plant's leaves per distilled water and volt's meter electric potential and the equipment for this research paper was recorded experimental results form.

In this experimental study of electric potential in plant's leaves measure by electric from the plant's leaves blend with distilled water which separated experimental by 3 cases the first case found that concentration of plant's leaves per distilled water is 10 grams / 30 milliliter. Every single plant gave electricity the same as the others. The one which gave the most electricity is Tamarind's leaves the next one is Pak tew's leaves both of them gave a little different electricity and the second case found that the concentration which brought from experimental plant in case 1 was affected to the electric potential, and in case 3 we did experiment by connecting the experimental plant's leaves to the small LED light bulb. It appeared that the light was bright.

To summarize up everything that has been stated so far which got from gathering experimental results information found that electric potential in the indigenous plants which blend with distilled water was enough for establishing the battery cell.

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## Introduction

Owing to each Thai's region has identity plants which can be found at that only place. For this reason nowadays people are interested in indigenous plants. Everyone realizes that the plants have many values and benefits and even can depend on the plants by bringing it to use as food or medicine. The establishment accommodation in every community usually has a location close to the food source where it is abundant with natural herbs and indigenous plants. Mostly has been used for consumption. In other words the indigenous plants have a value in terms of properties naturally by themselves.

We are particularly interested in the indigenous plants due to the fact that around our accommodation have many indigenous plants and haven't been used to do useful things at all from the plants apart from consumption. Therefore we are particularly interested in solving agricultural products method that brings the products which are the problem to be the materials for generating electric current although the method isn't popular that much. The products which mostly has been brought to the materials are often be materials that are acidity and alkalinity which is sour or astringent that will have ability to cause chemical reaction to the polarity which can supply voltage which is basic principle of the establishing battery cell that lead to the cell which can be used to supply electric current and can be used the cell in daily life. Moreover, this method is the tool to increase the value of the agricultural products.

We can call this energy in other words as renewable energy. Many countries around the world try to study renewable energy in a lot of forms in order to use it instead of the old energy form. This is the reason why we decided to study and observe about how to establish a battery cell that can supply electric current to electric gadgets by using the plant's leaves which doesn't use in useful way as it should to be. As we mentioned before, that is why we use the plant's leaves for materials to establish a battery cell that can supply electric current.

## Objective

1. To decrease wasting indigenous plants without any benefit.
2. To study and to compare electric current in indigenous plants's leaves.
3. To study and to search for a source of renewable energy and to apply it in everyday life.

## Delimitation

The objectives of this research is to study about electric current in the indigenous plants with details as following

1. Leech lime's leaves
2. Tamarind's leaves
3. Pak tew's leaves
4. Cowa's leaves

The materials' list from the first one to the fourth one are indigenous plants in the area of researcher's group which are left by the people after consumption in Sisaket Province.

**Time period** : since 22 August 2020 - 11 November 2020

## Research hypothesis

1. Each of an experimental plant's leaves has a different electric potential.
2. Concentration of experimental plant's leaves per distilled water has an effect on electric potential.
3. After passing the experiment. The amount of electric current in plants' leaves are able to distribute the power to electric cell or to equipment electronics.

## Experimental's variables

case	independent variable	dependent variable	control variable
1	experimental plants	electric potential	30 grams experimental plants
2	concentration of experimental plants blend with distilled water	electric potential	100 milliliter distilled water
3	electric cells from experimental plants	bright small LED light bulb	small LED light bulb

## Benefit expectation

1. The indigenous plants are able to use in other benefit apart from consumption.
2. To get electric energy from the study.
3. To get renewable energy which can be used with electronic gadgets.

## Research methodology

Researchers gather together to counsel, to plan and to begin to set the goal to get the topic to study by surveying the problems that have been found in school, community and province where we live which found that there is a problem along the lines of the environment which is agricultural products' waste and then chose the topic to study, the topic chosen by the most members of the group is the environmental problem about agricultural products' waste. The particular reason for circumstance to motivate the members the next step was start drafting outline research paper and began searching for information and gathering information, after that all the members met the teacher and advisor, then composed information that has been gathered and began writing how important the problem was, research hypothesis, delimitation and benefit expectation, after this step researchers started experiments to find solving to solve the problem and recorded results on record experimental result form, then try the solving and improving to be used practically, then gather information from the experimental and analyze information from the gathered data and the last one was summarize information from the analysis.

## Literature Review

The electric current in plants (fruit battery-Energy Policy and Planning Office, Ministry of Energy, Thailand : online) plants have acidity and alkalinity which is different to each other and have capability to lead ionic conductivity differently. Basically the plants which have a high acidity such as lemon mostly will have high capability to lead ionic conductivity.

Electrochemical cell theory (Napapat Pimdee, 2017 : The institute for the promotion of Teaching Science and Technology) electrochemical cell is the equipment or materials chemistry form which is born with the modification of chemical energy to the electrochemical cell.

Electric different potential (Georg Simon Ohm, 1822 : online) is the differentiation of electric energy between two areas which make electric current show up. The electric current will start flow with the most electric current to the lower electric current and will stop flow when the both electric potential areas are the same.



The indigenous plants (Thaicityfarm, 2018 : online) is botany science or knowledge how to use the benefit from the indigenous plants in everyday life which the plants are able to divided as food plants, colorful plants, dye color plants, poisonous plants, plants using as a local handicrafts and herb.

## Conclusion

In this research of electric current in indigenous plants by reference from experimental results found that

Case 1 from the schedule of concentration experimental plants's leaves per distilled water found that Tamarind's leaves gave the highest electrical difference potential of the same level of concentration followed by Pak tew's leaves, Cowa's leaves and Leech lime's leaves in the last place.

Case 2 from the schedule of concentration experimental plants's leaves per electric potential found that the experimental plant's leaves in case 2 which gave the highest electrical potential from the first experiment and change the concentration found that the concentration was maximum affected to the electrical potential was 80 grams/100 milliliter followed by 50 grams/100 milliliter and 30 grams/100 milliliter ,so on the whole experiment we are able to summarize that the concentration play or important role to the electric potential.

Case 3 from the schedule showing the results of the connection of cell in series form found that when having connect the electric wires from the 80 grams / 100 milliliter by serial form to small LED light bulb we found that the amount of cell since 8 cells can turn on the light.

In overall summarize experimental results from this experimental study of electric potential in plant's leaves based on the experimental all of 3 cases found that electric potential in the experimental plant's leaves which blend with distilled water which divided the experimental in to 3 cases found that The first case the one which gave the most electric potential is Tamarind's leaves followed by Pak tew's leaves, Cowa's leaves and Leech lime's leaves ,consequently. The second case performs the experiment using the plant's leaves from the first case which gave the highest electric potential and changed the concentration of the experimental plant's leaves and found that the concentration of plant's leaves in the distilled water was affected to the amount the electric potential. The electric potential is depend

on the concentration of the plant's leaves in the distilled water. When the concentration is high the electric potential is also going to be high as well. The third case performs the experiment with the same plant's leaves as the second case in order to connect electric cells in series form for establishing the battery cell we found that it had to have at least electric cell amount 8 cell and the cell had to have a electric potential about at least 3 volts to be able to turn a small LED light bulb on.

## Discussion

From observing from the experimental results of the indigenous plants which are useless and wasting without any benefit except only consumption. We could study and know how to solve the problem, finally we found a method that can be proved the indigenous plants had benefit by establishing a battery cell for supplying electric current to electronic gadgets. It could make a power supply electricity to devices. You can also continue this experiment in the future for new research that you can see from the conclusion of the experiment which found that this research is consistent with the research from 'Gomen maiman' that the owner of research is fruit acid electricity testing in lead batteries.

## Suggestions

1. From the experiment we found that we can generate electricity from indigenous plants that are studied by blending with distilled water and then connect the electric wires in series form to small LED light bulbs. We found the light can attached in the same way by connecting with other electronic gadgets.
2. We had measures electricity and used it and found that maybe it can be used for bio-fertilizer we should continue to this topic.
3. We should try to use other leaf from other plant to see whether it can generate the electricity or not apart from what we had done.

## Public services

1. Bring batteries from experimental indigenous plants to community's members to use during the power outage.
2. Develop for more benefit by establishing more capacity in the form of indigenous plants batteries more than we studied for supplies who don't have an electric current in their everyday life.

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## APPENDICES



