

Coffee from ampalaya seeds

[Science](#), [Biology](#)



Introduction

Background Of The Study

Coffee alternatives have been famous since the last two decades due to economic crisis and experimentations for health and medical benefits. Any seeds that are edible when powdered can be used as an alternative source for coffee. The difference of the generic coffee from the seeds of the coffee plant from those of the alternatives is that it has a good amount of caffeine content.

The similarity you can find in the alternatives and those of the original is that seeds contain carbohydrates which cause the aroma in roasted coffee [4, 5, and 6]. Ampalaya, on the other hand, is a crawling vine that grows mostly on tropical countries like the Philippines. It is said to be rich in iron, potassium, beta-carotene and other nutrients. It is also famous in treating diabetes because of its properties like polypeptide-P; a plant insulin that can lower blood sugar levels. Many researches on agricultural food chemistry convey that it provides nutritionally significant amounts of nutrients, minerals and amino acids that are needed for life [1, 2, and 3]. Ampalaya seeds when used as an alternative coffee will act as a stimulant, an herbal drink and at the same time can increase its additional properties like source for insulin and other nutrients found on *Momordica charantia*. Ampalaya seeds when used as dry powders have clearly demonstrated hypoglycemic activity [3].

The researchers decided to process Ampalaya seeds the same routine on how the coffee bean is processed into a drinking beverage and test its sensory qualities using sampling techniques.

Statement Of The Problem And Objectives Of The Study Main Problem

- Can Ampalaya Seeds (*Momordica charantia*) be made into coffee? Sub-Problems
- Does the coffee out of Ampalaya (*Momordica Charantia*) Seeds have a good quality in terms of taste? color? odor? texture?
- What are the sensory qualities of the different treatments in terms of taste? color? odor? texture?
- Which of the groups/set-ups are acceptable in terms of its overall acceptability? A. Control (Pure Ampalaya Coffee) B. Control (Pure Commercial Coffee) C. Treatment A (75% Ampalaya Coffee, 25% Commercial Coffee) D. Treatment B (50% Ampalaya Coffee, 50% Commercial Coffee) E. Treatment C (25% Ampalaya Coffee, 75% Commercial Coffee)

General Objectives

- This study primarily aims to determine if Ampalaya Seeds (*Momordica charantia*) can be made into coffee.

Specific Objectives

- To determine the quality of coffee out of Ampalaya (*Momordica charantia*) Seeds in terms of taste, color, odor and texture.
- To identify the sensory qualities of the different treatments in terms of taste, color, odor and texture. To determine which of the groups/set-

ups are acceptable in terms of its overall acceptability. A. Control (Pure Ampalaya Coffee) B. Control (Pure Commercial Coffee) C. Treatment A (75% Ampalaya Coffee, 25% Commercial Coffee) D. Treatment B (50% Ampalaya Coffee, 50% Commercial Coffee) E. Treatment C (25% Ampalaya Coffee, 75% Commercial Coffee)

Significance Of The Study

This research can play a significant role in replacing the generic coffee's market cost for affordability and its medical benefits for various types of diseases/sickness like diabetes and anemia. It can also conserve unused or to-be-thrown away seeds of Ampalaya and use it for a better cause. According to the study of Yumiko Yasui, its seeds have linoleic acid that can prevent colon cancer. It also contains polypeptide-P; a plant insulin that helps diabetic patients.

Scope And Limitations

This research will be conducted on July–August 2012 at Paraiso Cmpd. Baybay City, Leyte. This study focuses on how to make Ampalaya (*Momordica charantia*) seeds into coffee. The whole fruit is not included in making the product, only the seeds are used to make coffee. The researchers are not focusing on the nutrient values that they can get in the Ampalaya (*Momordica charantia*) seeds nor will they include it in their research. Instead, the researchers are focusing in making coffee out of Ampalaya (*Momordica charantia*) seeds and in the sensory qualities (taste, color, and odor) of Ampalaya (*Momordica charantia*) coffee in comparison to the commercial coffee.

Operational Definition Of Terms

Momordica charantia

- scientific name of the Ampalaya or Bitter Melon
- polypeptide-P
- a plant insulin found only in the Ampalaya
- potentiate insulin is an alternative cancer treatment using insulin to administer low-dose chemotherapy or mandelonitrite

Caffeine

- is a bitter, white crystalline xanthine alkaloid that acts as a stimulant drug and a reversible acetylcholinesterase inhibitor
- is found in varying quantities in the seeds, leaves, and fruits of some plants, where it acts as a natural pesticide that paralyzes and kills certain insects feeding on the plants

Coffea Arabica

- is a species of coffea originally indigenous to the mountains of Yemen in the Arabian
- Coffea canephora is a variety of coffea which has its origin in central and western sub-Saharan Africa
- Hemileia vastatrix * severe symptoms of leaf rust
- is a fungus of the order uredinales that causes coffee rust, a disease that is devastating to coffee plantations

Review Of Related Literature

Coffee alternatives can be a solution to the serious need for a very economical, nutritious and medicinal coffee. It is very economical in the

<https://assignbuster.com/coffee-from-ampalaya-seeds/>

sense that its cost would be near to costless. It is nutritious that it has additional properties, vitamins and minerals that is very essential in the body's growth and development. It is medicinal in a way that the coffee can cure several diseases more than ordinary commercial coffees can [7].

Ampalaya seeds are a good alternative for making coffee because it has more similar properties to coffee beans like carbohydrate and its bitterness. It is also good for dysmenorrhea and amenorrhea, provides daily need of iron in the body, and is good for people with diabetes.

Ampalaya powdered seeds contain iron and folic acid which helps in the production of red blood cells and formation of myoglobin and hemoglobin. It is also rich in antioxidants that helps flushing out harmful toxins in the body and regulates the blood flow well. It also has been found out that this alternative may discourage people to use commercial coffee that has no nutritional value compared to coffee made from Ampalaya seeds [3, 7, and 8]. In the study conducted by Ma. Liza Lamanilao and Venus Sejalbo, entitled " Make/Making Ampalaya Seed Coffee and Polvoron", in which their main objective is to make coffee and polvoron from unused ampalaya seeds that are being thrown away. They also specifically aims to develop this research to answer the serious need for a very economical, nutritious and a medicinal coffee. During the experiment in making coffee, they collected ampalaya seeds, remove the shells, toasted the seeds until the seeds will turn brown and finally, pound them to produce fine powdered coffee and a caffeine free coffee.

They also make nutritious polvoron by toasting again the granules together with milk and sugar. After the experiment, they have found out the nutritional value we could get in Ampalaya Seeds. It contains iron and folic acid or Vitamin B12 which helped the production of red blood cells and formation of myoglobin and hemoglobin. They also found out that Ampalaya Seeds is good for dysmenorrhea and amenorrhea and it provides the daily need of iron in the body and good for diabetics. It has been found out that the discovery may discourage the people to use the commercial coffee that has no nutritive value compared to coffee made from ampalaya seeds. Ampalaya Seeds is also a good substitute in making coffee based on nutritive value present in seeds. ([http://www. foodrecap. net/recipe/ampaya-coffee-pulvoron/](http://www.foodrecap.net/recipe/ampaya-coffee-pulvoron/))

In the research entitled “ Coffee, Decaffeinated Coffee and Tea Consumption in Relation to Incident Type 2 Diabetes Mellitus” which was conducted by Rachel Huxley, Dphil, et al. The study primarily aims to identify the relation between the Coffee, Decaffeinated Coffee, and Tea Consumption and the Incident of Type 2 Diabetes Mellitus. The data from 18 studies with information on 457 922 participants reported on the association between coffee consumption and diabetes. Six (N= 225, 516) and 7 studies (N= 286, 701) also reported estimates of the association between decaffeinated coffee and tea with diabetes respectively.

The putative protective effects of these beverages warrant further investigation in randomized trials. There was inverse log-linear relationship between coffee consumption and subsequent risk of diabetes such that

every additional cup of coffee consumed in a day was associated with a 7% reduction in the excess risk of diabetes relative risk, 0.93 (95% confidence interval, 0.91-0.95) after adjustment for potential confounders. Based on the results, the researchers owe to the presence of small study bias represented an overestimate of the true magnitude of the association. The researchers concluded that high intakes of coffee, decaffeinated coffee and tea consumption can reduce risk of diabetes.

According to Rachel Huxley, DPhil and colleagues in the Archives of Internal Medicine during December 14, 2009 they conducted a study about “Every Cup of Coffee per Day Lowers Risk of Type 2 Diabetes by 7%”. This study was conducted at the George Institute for International Health, University of Sydney, Australia. The researchers stated that there are several studies to prove that drinking coffee may lower the risk of developing type 2 Diabetes. During the study, the researchers resolved information from 18 studies on coffee and diabetes.

They also analyzed another 13 studies that includes data on decaffeinated coffee, tea drinking and diabetes. When all the information, from each study was combined, they found that each additional cup of coffee drunk per day was accompanied with a 7% lower risk of diabetes. People who drank three to four cups of coffee per day had about a 25% lower risk than those who didn't drink two or fewer cups per day while people who drank decaffeinated coffee more than three to four cups per day had about a one-third lower risk of having type 2 diabetes. The study shows that if tea drinkers drank more than three to four cups of tea per day had about one-fifth lower risk of diabetes. In

a nutshell, the results shows that people who drank more cups of coffee, whether it's decaffeinated or regular or tea will have a lower risk of developing type 2 diabetes. Therefore, the researchers conclude that they will advise the patients who are most at risk for diabetes mellitus should increase to consume a coffee and tea in addition to increase their levels of weight loss and physical activity.

Methodology

Research Design

The researchers will gather unused Ampalaya seeds from clean market sites and homes. They will wash and dry it up under the heat of the sun for 2-3 sunny days. Then, they will peel off its seed coat, roast it for 25 minutes and grind it to powder form. After it is powdered, it will be brewed and distributed to different controls and treatments. Then it will be ready for sensory evaluations for different sampling techniques and rate its acceptability.

Problem Can Ampalaya seeds (*Momordica charantia*) be made into coffee?

Hypothesis Ho: There is no difference between the commercial coffee and the Ampalaya seeds made into coffee.

HA: There is a significant difference between the commercial coffee and the Ampalaya seeds made into coffee.

Type Of Study

This research study is quasi-experimental which focuses in making coffee from Ampalaya seeds.

Independent And Dependent Variable

The independent variable in this study is the Ampalaya seeds (*Momordica charantia*) coffee and the dependent variable is the sensory qualities of coffee (taste, color, odor, and texture). D.

Treatments Of The Study

This study has 2 treatments for control set-up (positive control – 100% Ampalaya coffee, negative control – 100% commercial coffee) and 3 treatments for the quasi-experimental set-up (TA – 75% Ampalaya coffee, 25% commercial coffee; TB – 50% Ampalaya coffee, 50% commercial coffee; TC – 25% Ampalaya coffee, 75% commercial coffee).

Subjects / Samples

This research study involves ESEP curriculum students from Grade 7 to 4th year. The researchers take only 30 respondents / samples from the whole population of ESEP curriculum.

Replications Per Treatment

There were 5 treatments in this study (positive and negative control, treatment A, B, and C) and in every treatment, there were 30 replicates.

Methodology Proper

Heat the frying pan in preparation for the roasting of seeds. Then, prepare the bowl and the mortar and pestle. Wash the seeds until it is free from dirt and other physical elements aside from the seeds. Lastly, prepare the heater for the boiling of hot water and the 5 plastic cups.

Then, roast the washed, dried seeds in the pan for 25 minutes. Then cool it off. Drying of Ampalaya Seeds and Removing of Seed Coat The researchers

will prepare the seeds which were gathered on the cleaner side of the market and will not be used by the vendors. The researchers wash the seeds, put it in a plate and placed it under the heat of the sun for 2 to 3 sunny days. Then, peel of the seed coat of the seeds with bare hands. Grinding of Seeds After the seeds were cooled off, place the roasted seeds in the mortar then grind it using the pestle until all of the seeds are powdered.

Sensory Evaluation

The researchers conducted the evaluation through sensory qualities (taste, color, odor, and texture) and its acceptability.

Statistical Treatment For Data Analysis

The researchers used Chi-square Test in order to find the significant differences between treatments. They also used the mean in order to compute the average rating of sensory qualities (taste, color, odor, and texture) in every treatment.

Summary

Coffee alternatives have been famous last two decades due to economic crisis and experimentations for health and medical benefits. Ampalaya is a crawling vine that grows mostly on tropical countries like Philippines. It is said to be rich in iron, potassium, beta-carotene and other nutrients. Any seeds that are edible when powdered can be used as an alternative source for coffee. The general objective of the study is to determine if Ampalaya (*Momordica Charantia*) seeds can be made into coffee. This research can play a significant role in replacing the generic coffee's market cost to

affordability and medical benefits. It can also conserve unused or to-be-thrown away seeds of Ampalaya.

The researchers focus in making coffee out of Ampalaya (*Momordica Charantia*) seeds and in the sensory qualities (taste, color, odor and texture) of Ampalaya coffee in comparison to commercial coffee. First, the researchers gathered unused Ampalaya seeds from clean market sites and homes. They will wash and dry it up under the heat of the sun for 2-3 sunny days. Then, they will peel off its seed coat, roast it for 25 minutes and grind it to powder form. After it is powdered, it will be brewed and distributed to different controls and treatments. Then it will be ready for sensory evaluation for different sampling technique and rate its acceptability.

Conclusion

Therefore the researchers conclude that: * The overall acceptability of Ampalaya coffee is slightly acceptable.

* There are significant difference in every treatment in terms of taste, color, odor and texture. In taste, the positive control (Ampalaya Coffee) got the highest mean rating among the 5 treatments while in color, odor and texture the negative control (Commercial Coffee) got the highest mean rating. * In overall acceptability of groups or set-ups, the negative control is the highest among the 5 treatments.

Recommendation

If the researchers were given a chance to remake this research, the researchers should gather the Ampalaya seeds at the same plantation, same

stem and at the same age. After the researchers have gathered the seed, it should be simultaneously placed it in a plate and dried under the heat of the sun for 2-3 days. The Ampalaya seeds should also be roasted together for 25 minutes. And the researchers hoped that they have a machine in grinding the Ampalaya seeds so that the Ampalaya coffee will have a tiny particle.

Bibliography

1. Lamanilao, Ma. Liza and Sejalbo, Venus. “ Make/Making Ampalaya Seed Coffee and Polvoron”, < [http://www. foodrecap. net/recipe/ampaya-coffee-pulvoron/](http://www.foodrecap.net/recipe/ampaya-coffee-pulvoron/)>.
2. Huxley, Rachel and Dphil, et al. “ Coffee, Decaffeinated Coffee and Tea Consumption in Relation to Incident Type 2 Diabetes Mellitus” < [http://archinte. jamanetwork. com/article. aspx? articleid= 773949#](http://archinte.jamanetwork.com/article.aspx?articleid=773949#)>.
3. Huxley, Rachel, DPhil. “ Every Cup of Coffee per Day Lowers Risk of Type 2 Diabetes by 7%” < [http://diabetes. webmd. om/news/20091214/coffee-tea-may-stall-diabetes](http://diabetes.webmd.com/news/20091214/coffee-tea-may-stall-diabetes)>.

References

1. [http://www. charantia. com/about-ampalaya/](http://www.charantia.com/about-ampalaya/)
2. [http://www. livestrong. com/article/292220-properties-of-ampalaya-sticky-extract/#ixzz1zWJX6zfP](http://www.livestrong.com/article/292220-properties-of-ampalaya-sticky-extract/#ixzz1zWJX6zfP)
3. [http://www. agribusinessweek. com/ampalaya-bitter-gourd-natural-weapon-against-disease/](http://www.agribusinessweek.com/ampalaya-bitter-gourd-natural-weapon-against-disease/)
4. [http://en. wikipedia. org/wiki/Coffee](http://en.wikipedia.org/wiki/Coffee)
5. [http://en. wikipedia. org/wiki/Health_effects_of_coffee](http://en.wikipedia.org/wiki/Health_effects_of_coffee)
6. [http://www. blurtit. com/q709932. html](http://www.blurtit.com/q709932.html)

7. [http://www. foodrecap. net/recipe/ampaya-coffee-pulvoron/](http://www.foodrecap.net/recipe/ampaya-coffee-pulvoron/)
8. <http://diabetes. webmd. com/news/20091214/coffee-tea-may-stall-diabetes>