

Antioxidative property of soursop leaf extract essay sample

[Health & Medicine](#), [Cancer](#)



Soursop or Guyabano, scientifically known as *Annona Muricata* Linn, is nutritionally rich in carbohydrates, notably fructose. Guyabano fruit grows from 7 up to 20 centimeters long, they are heart-shaped with pointed tip and form a cone-shaped mass of many carpels that conforms the body of the fruit. It contains indicative amount of rich vitamins such as Vitamin C, Vitamin B1, Vitamin B2, Potassium, and dietary fiber but are deficient in Vitamins A, calcium, and phosphorus(Fauzi, 2011).

Soursop is a broad spectrum of for anti-microbial agent, it profounds high blood pressure and is used for depression, stress, and nervous disorders(Reams, 2011).

The researchers decided to conduct an experiment about the antioxidant activity of Soursop. Various researches show that the Soursop is rich in antioxidants that are beneficial to your health. Antioxidants play a very large role in humans to prevent disease. Antioxidants do all that by suppressing the cellular damage caused by free oxidation process(Alibi, 2011).

Significance of the Study

The aim of this study is to determine the antioxidant activity of Soursop (*Annona muricata*) by getting the leaf extract from Soursop leaves. Thus, to determine if Soursop leaf has other uses aside from removing head lice or bedbugs. The purpose of this study is to identify the level of antioxidants in the Soursop leaf. Thus, if to be proved, will be used as a tea, alternative medicine, ointment and etc. Not only does our study has a potential use in helping the community but particularly by the chemical, pharmaceutical, and food industries can benefit from this study.

Various in-vitro methods have been developed to measure the efficiency of natural antioxidants of the potential fruit either as pure compounds or as a plant extracts; the ability to scavenge free radicals is a significant antioxidant property to sequentially deduct oxidative cellular damage.

Soursop leaf has more properties and benefits than scientists and researchers study right now. The researchers want to study one of the benefits of Soursop leaf or leaves and prove that Soursop leaves really do have antioxidant properties.

Review of Related Literature

One of the first scientific references to the Soursop fruit in the United States was by the National Cancer Institute. The Soursop was part of a plant-screening program in 1976 that showed its leaves and stems were effective in attacking and destroying malignant cells. These results however, were part of an internal NCI report and were, for some reasons, never released to the public. The company which had done through research on this cure came upon one stumbling block on its finishing phase. The cure was too natural and under federal law in America, governed by FDA, therefore it wasn't patentable. The company then made the decision not to release its findings leaving the rest of the world ignorant to the discovery they had made, simply because profits could not be earned. However, one scientist from that very same research team decided to go against company's decision, risking his career, he contacted another company dedicated to harvesting medical plants from the Amazon Rainforest and announced the discovery. (Gregory, 1987)

Soursop is rich in phytonutrients and phytochemicals. Soursop contains Vitamin C which is considered as an antioxidant. The content of Vitamin C in each 100 g of Soursop juice contains 20 mg. Therefore, Soursop is one of the important sources of Vitamin C. Mechanism of action of Vitamin C as an antioxidant is by capturing and reducing harmful substances that can harm and damage cells (Frank, 1985).

Besides Vitamin C, Soursop is also rich in other antioxidants in the form of phytochemical compounds including aceltahid, amyloid, anonain, anomurisin, ananol, atherosperminin, betasitosterol, kampesterol, sitrulin, galaktomanan, prosianidian, and tannins. These compounds are useful for treating various diseases especially cancer so that reinforces the Soursop as a useful medicinal plant (Alibi, 2011).

Many regions in the Philippines use Soursop decoction as tea to remove toxins in the body. The leaves of Soursop tree are from small to large type, color green, thick, and hard. The leaf of the Soursop tree is the part commonly used as an antioxidant (Yul, 2011). Since then, there have been several promising cancer studies on Soursop. However, there are no records of the Soursop extract being tested on cancer patients. No clinical trials exist which is why many people are unaware of its ability. Even though clinical trial is typically the benchmark mainstream doctors and journals use to judge a treatment's value, Soursop has been shown to kill cancer cells in vitro in at least 20 laboratory tests (Mochulsky, 1967).

A study conducted at Catholic University of South Korea revealed that two chemicals extracted from Soursop seeds showed “selective cytotoxicity comparable with Adriamycin” for breast and colon cancer. The chemicals targeted and killed malignant breast cancer cells in a test tube comparable to the commonly used chemotherapy drug Adriamycin (Bronte, 1981).

Another study, published in the Journal of Natural Products, showed that Soursop outperforms Adriamycin in laboratory tests. Results revealed a chemical found in Soursop selectively kills cancer cells at “10,000 times the potency of Adriamycin.” (Graff, 1992).

Purdue University researchers recently found that leaves from the Soursop tree killed cancer cells “among six human-cell lines” and were especially effective against various cancer cells. In a separate study, Purdue researchers showed that extracts from the Soursop leaves are extremely effective in the destruction of cancer cells but it isolates them and causes no harm to other normal cells, quite unlike chemotherapy (Gilbert, 1979). U.S. researchers Lana Dvorkin-Camiel and Julia S. Whelan reviewed research on the use of extracts from tropical American plants in the treatment of infectious diseases. In their assessment of Soursop, published in the December 2008 issue of the “Journal of Dietary Supplements,” the two cited multiple in-vitro studies that demonstrate Soursop’s effectiveness against various microbial agents. Specifically, Soursop appears to be effective against such parasites as *Leishmania braziliensis*, *Leishmania panamensis*, *Nippostrongylus braziliensis*, *Artemia salina*, and *Trichomonas*, as well as against Herpes simplex virus. (Knights, 1997).

In a study conducted by Taiwanese researchers, new and known acetogenins extracted from the seeds and leaves of Soursop were tested in the laboratory against two human hepatoma, or liver cancer, cell lines. The three new acetogenins extracted from seeds were designated muricin H, muricin I, and cis-annomontacin, while the two extracted from leaves were named cis-corossolone and annocatalin. In an article published in the April 2002 issue of the “ Journal of Natural Products,” the researchers reported that all five of the new Soursop acetogenins exhibited strong activity against the cancer cells in in-vitro testing (Eliot, 1989).

Paradigm of the Study

Outcome

Extracts from soursop leaf are tested using DPPH assay. The absorption test conducted using Unicam UV 500 Spectrophotometer. The results are used for data gathering.

INPUT

1. Selection of middle aged Soursop leaves, should be taken from the 4th or 5th leaf from the tip (50 meters above sea level)
2. Soursop leaves + 10% – 15% water (soaked for 3-5) minutes
3. Soursop leaves to be drained in a perforated container
4. Soursop leaves to be dried in the shade at room temperature and stored at 4 – 5°C (3 to 5 days soaking)
5. Ground Soursop leaves in a mortar

PROCESS

1. Extraction of essential oil (Hydrodistillation)
2. Test for antioxidant activity (DPPH [1, 1-diphenyl-2-picrylhydrazyl] radical scavenging activity)
3. Absorption test for data gathering (using Unicam UV 500 Spectrophotometer)

Theoretical / Conceptual Framework

In the Philippines, Herbal medicine is commonly used considering the economic level of the people and the rising cause of medical treatment and medicines. Some plants were used as medicines and are valuable but it is still being proven due to poor preparation of the samples.

This study ventured on testing the Antioxidant level present in the Soursop leaf in different methods and determining its efficiency of natural antioxidant as pure compounds or as plant extracts in scavenging free radicals.

Guyabano is an exotic fruit and is a safe cure for almost anything, every single bit of Guyabano can cure sickness such as inflammation, rheumatism, haematuria, liver ailments, coughs, diarrhea, etc. More simply put, Guyabano extract is potentially beneficial to the human body.

Soursop extracts are believed to be responsible for antileishmanial activity demonstrated in an in-vitro experiment, with this, Soursop could lessen the significant morbidity and mortality worldwide, with this study, about 2 million people would have hope of being cured for AIDS as well.

Statement of the Problem and Hypothesis

The study is aimed to identify the antioxidant agents found in soursop

leaves. The study is also aimed to determine the effectivity of the extracts. It is sought to answer the following questions: 1. What antioxidant reagents will be lost in the leaves on the procedures of extraction of leaves?

Hypothesis 1:

There will be almost no loss of antioxidant reagents in the procedure. 2. Is there a significant difference between the different leaf extraction techniques? Hypothesis 2:

There is no significant difference between the leaf extraction techniques. 3. Is the process of antioxidant activity enough for the extraction of the essential oils? Hypothesis 3:

The process of antioxidant activity is enough for the essential oils.

4. Does the process of draining Soursop leaves in a perforated container adequate for the extraction of the essential oils? Hypothesis 4:

The process of draining Soursop leaves is adequate for the extraction of the essential oils that is expected.

Scope and Delimitation

This study was delimited to the determination of antioxidant activity of Soursop Leaf extract using distilled water and methanol as solvent. In addition, the researchers used DPPH [1, 1-diphenyl-2-picrylhydrazyl] radical scavenging activity to test the antioxidant activity of the leaves using 0. 1 ml sample and 3. 9 ml DPPH methanolic solution (25 mg/L).

The extracts were taken from the plant through the process of hydro distillation. Hydro distillation is a variant of steam distillation in which

material is soaked for some time in water after which the mixture is heated and volatile materials are carried away in the steam, condensed and separated.

CHAPTER II

DESIGN AND METHODOLOGY

Research Design

The research method used was the pretest-posttest experimental design. This is a method or procedure involving the control or manipulation of conditions for the purpose of identifying or detecting the antioxidative properties of Soursop Leaf extract. The study was conducted at the Saint Louis University Natural Science Research Unit (SLU-NSRU). Data Gathering Tool

A. Materials

- * Mortar and Pestle
- * Soursop Leaves
- * Apparatus (Clevenger)
- * Anhydrous sodium sulphate
- * DPPH methanolic solution
- * Methanol
- * Centrifuge
- * Unicam UV 500 Spectrophotometer
- * 1 cm disposable cuvettes

Data Gathering Procedure

A. Soursop leaf extract preparation:

- a. Dry soursop leaves in a room temperature 4-5°C
- b. Ground leaves in mortar and pestle
- c. 100 g of dried leaves are hydrodistilled in an apparatus (Clevenger)
- d. The oil was collected and dried with sodium sulphate (anhydrous)
- e. The samples were stored in the dark at room temperature
- f. Put ground Soursop leaves (0.2 g) into a test tube
- g. Add 1 ml of distilled water
- h. Add 9 ml of methanol
- i. Mix sample
- j. Leave the sample on a water bath at 0°C for 15 min
- k. Centrifuge sample at 12,500 x g for 2 min at 4°C

B. Antioxidant Activity Detection

* Trolox (6-hydroxy-2,5,7,8-tetramethyl chroman-2-carboxylic acid) is the control group
* DPPH [1,1-diphenyl-2-picrylhydrazyl] radical scavenging activity is used to detect antioxidant activity

- a. Get 0.1 ml of sample
- b. Add 3.9 ml DPPH methanolic solution (25 mg/l)
- c. The reaction mixture is covered and left in the dark at room temperature
- d. Wait for 2 hours to measure absorption
- e. Put the solution in disposable cuvettes
- f. Measure the absorption using the Unicam UV 500 Spectrophotometer
- g. The data gathered will be recorded and analyzed using chi square method.

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