

Malunggay in philippines and sajina essay sample

[Nutrition](#)



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1. 1 Introduction

Moringa oleifera is the most widely cultivated species in most tropical countries. It is also known as malunggay in Philippines and Sajina in Indian subcontinent and has been called as a miracle tree since moringa leaves, pods, flowers, fruits, bark and seeds can all be utilized. Mature moringa seeds yield thirty-eight to forty percent oil which is one of the most nutrient dense oils in the world and was believed to be the most stable oil due to its potent antioxidant profile.

The researcher has chosen this topic because many Filipino has a little knowledge about the moringa seed oil which can be an alternative for cooking oil along with its nutritional value. Though there are many commercial cooking oils present in the market nowadays many people are not concern about the nutritional facts present in it. Moringa seed oil is an outstanding source of vitamins and minerals for utilization of the developing countries where undernourishment is a major concern. This study may help lessen the number of malnutrition in the country by putting this oil into different uses with its nutritional benefits.

1. 2 Background of the Study

1. 2. 1 Origin

Moringa oleifera is believed to be native to sub-Himalayan tracts of northern India but is now found worldwide in the tropics and sub-tropics. It grows best in direct sunlight under 500 meters altitude. It tolerates a wide range of soil conditions, but prefers a neutral to slightly acidic, well-drained sandy or loamy soil. Trees can be easily grown from seed or from cuttings.

Temperature ranges are 25-35 degrees Celsius, but the tree will tolerate up

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to 48 degrees in the shade and it can survive a light frost. Moringa seeds have no dormancy period, so they can be planted as soon as they are mature and they will retain the ability to germinate for up to one year.

Older seeds will only have spotty germination. Moringa trees will flower and fruit annually and in some regions twice annually. During its first year, a Moringa tree will grow up to five meters in height and produce flowers and fruit. Left alone, the tree can eventually reach 12 meters in height with a trunk 30cm wide; however, the tree can be annually cut back to one meter from the ground. Copicing to the ground is also possible, and will produce a Moringa bush is no main new growth is selected, and the others eliminated.

1. 2. 2 Morphology

Moringa seeds are round with a brownish semi-permeable seed pods. The pods, each usually containing up to twenty-six seeds, are dark green during their development, and take approximately 3 months to mature after flowering. They turn brown on maturity and split open longitudinally releasing the dark brown, rigorous seeds. Seeds measure about one centimeter in diameter, with three whitish papery wings on the angles. Each tree can produce between 15, 000 and 25, 000 seeds/year. The average weight per seed is 0. 3 g and the kernel to hull ratio is 75: 25. 1. 2. 3

Phytochemicals

Phytochemicals are chemicals produced by plants. Commonly, though, the word refers to only those chemicals which may have an impact on health, or on flavor, texture, smell, or color of the plants, but are not required by humans as essential nutrients. An examination of the phytochemicals of

Moringa species affords the opportunity to examine a range of fairly unique compounds. In particular, this plant family is rich in compounds containing the simple sugar, rhamnose, and it is rich in a fairly unique group of compounds called glucosinolates and isothiocyanates 1. 2. 4 Protein

Moringa seeds contain between thirty to forty percent oil and the press cake obtained as a by-product of the oil extraction process contains a very high level of protein. Some of these proteins (approximately one percent) are active cationic polyelectrolytes having molecular weights between 7-17 K Dalton. The cationic polyelectrolytes neutralize the colloids in muddy or dirty water since the majority of these colloids have a negative electrical charge. This protein can therefore be used as a non-toxic natural polypeptide for sedimenting mineral particles and organics in the purification of drinking water, for cleaning vegetable oil, or for sedimenting fibers in the juice and beer industries. It thus works as a primary coagulant as natural bridges are continuously formed between the colloid particles. 1. 2. 5 Components

Moringa does not contain just one or two vitamins or one or two antioxidant. It contains more than 92 nutrients and 46 types of antioxidants. The next closest plant on earth have only 28 nutrients. Moringa have almost all the vitamins found in fruits and vegetables and most in a larger proportions. 36 anti-inflammatories, 18 amino acids, 9 essential amino acids. 1. 2. 6

Application

Traditionally moringa seed oil is used for cooking and in other food preparations. It has tremendous cosmetic value and is used in body and hair care as a moisturizer and skin conditioner. It can be used for perfume base

as a fuel and for oiling machinery. It can also be used to produce soap. 1. 3

Significance of the Study

Moringa is the world most powerful natural multi vitamins and antioxidant. In this study the researcher find an alternative for the cooking oil that was used by most of the people in a way that it can save more money without risking the health. Oil process weep on increasing and the economic problem is worsening every year. This may help to decrease the number of malnutrition in the country. Moringa seed oil contains a lot of essential amino acids, vitamins and minerals.

1. 4 Statement of the Problem

Moringa oil is obtained by pressing the seeds of the Moringa tree. The moringa seeds yield 38-40% edible oil. More studies should be conducted to help people gain more knowledge about the nutritional value present in it and on how moringa seed oil be present in market abundantly with low cost.

1. 5 Objective of the Study

The study aims to achieve the following objectives:

1. To give more knowledge about the nutritional value present in moringa seed oil. 2. To commercialize the new use of moringa seed oil which is an alternative for cooking oil. 1. 6 Scope of the Study

In order to achieve the objectives of the study, extraction of moringa seed oil will be done and analyzed. Moringa seed produces almost half percent edible oil wherein it can be analyzed easily using certain techniques.

CHAPTER II

REVIEW OF RELATED LITERATURE AND STUDIES

Some studies are conducted to find the uses of moringa seed oil and also to find out the vitamins and minerals present on it. Moringa oleifera is popularly known as super-food across the globe for its numerous health benefits.

Moringa oil is rich in vitamin C. People can use this edible oil in regular cooking for a stronger immunity. It is packed with a whole lot of anti-oxidants. These help gain great energy and keep a person feeling fresh all day long. It is an excellent cure for people with insomnia. It induces a good night sleep and also helps lower and control blood pressure. Nourishment and protection of bones is another great benefit of moringa seed oil. It also soothes the nervous system and creates a lot of good cholesterol in the body. (Akruti, 2013).

Along with natural COX-2 inhibitors Moringa also provides the body additional documented pain-relieving nutrients that include: arginine, beta-sitosterol, calcium, chlorophyll, copper, cystine, omega 3, omega 6, omega 9, fiber, glutathione, histidine, indole acetic acid, isoleucine, leucine, magnesium, oleic-acid, phenylalanine, potassium, rutin, selenium, stigmasterol, sulfur, thiamin, tryptophan, tyrosine, vitamin A, vitamin C, vitamin E (alpha-tocopherol, delta-tocopherol, gamma-tocopherol), zeatin, and zinc. In addition, Moringa's abundantly bio-active compounds, such as carotenoids, flavonoids and polyphenols have been researched regarding their ability to naturally reduce inflammation, promote joint and bone health and they have been found to be both effective and fast-acting.

This proper nourishment provided by the Moringa plant contributes to a healthy and happy life, especially when complemented by weight management through exercise and diet that also significantly reduces pressure on weight-bearing joints (Paul Ridker 2011). Moringa oil is pressed from moringa seeds, and can be used in cooking, hair, and skin care. This special oil contains Vitamins A, B, C, E, among it numerous vitamin of 92. It is also stuffed with unsaturated fatty acids, palmitoleic, oleic and linoleic acids. It has high concentration of antiseptic and anti-inflammatory properties. Moringa seed oil contains more antioxidants than any known plant and is considered by experts to be one of the greatest cosmetic oils ever discovered. Moringa oil is a great alternative in recipes that needs a nutty flavor. It is also a healthier choice to put in stir fry dishes and marinades.

People can also use it as dressing for salads and vegetables. Moringa oil does not spoil so it can also be used as a preservative. It is a concentrated source of food energy. Small amounts of moringa oil added to the diet of young children can provide them with a more varied and nutritious diet (CocoMoringa 2012). As to phytochemicals inherently produced by Moringa species, Fahey (2005) cited that this plant family was found to be rich in compounds containing the simple sugar, rhamnose, and it is high in a fairly unique group of compounds called glucosinolates and isothiocyanates, including a number of vitamins and minerals, as well as carotenoids phytochemicals. In the study of Stavros Lalas and John Tsaknis they are able to compare the moringa oleifera seed oil's component with virgin olive oil. The extracted oils were liquid at room temperature.

The oil content of moringa oleifera PKM 1 seeds and the level at which the differences are significant. The oil extraction with CM had the highest yield, due to the increased ability of the polar solvent to overcome forces that bind lipids within the sample matrix (Lumley and Colwell, 1991). CP showed the lowest yield due to losses during the separation of the oil from the water. The yield of oil extracted with cold pressure from the seeds of the variety PKM 1 was lower compared to the variety olive oil, while the yield of oil extracted with n-hexane and chloroform : methanol was significantly higher. The density of moringa seed oil depends on the method of extraction and was higher compared to olive oil. There was no significant difference in the refractive index of moringa seed oils among the three methods of extraction and was lower compared to that of virgin olive oil.

The viscosity of the oil obtained was highest possibly because of the water that was absorbed by the gums during extraction. The viscosity of the oils extracted by the other two methods was lowered compared to that of virgin olive oil. The free fatty acid content of all moringa seed oil was significantly higher than that of virgin olive oil. The oil obtained by cold pressure had the highest free fatty acid content. Moringa seed oil is characterized by a high content of oleic acid and belongs to the oleic acid oil category (Sonntag, 1982). The characterization of the oil from the seeds of moringa oleifera variety PKM 1 showed that this oil could be utilized as a source of edible oil for human consumption. It contains high monounsaturated fatty acids ratio and might be an acceptable substitute for highly monounsaturated oils such as olive oil in diets.

Moringa oleifera is a tree growing rapidly even in a poor soil and is little affected by drought (Sengupta and Guta, 1970; Morton, 1991) and can be easily grown in third world countries (Lalas and Tsaknis, 2001). The moringa seed oil was also evaluated by S. M. Abdulkarim, K. Long and H. M. Ghazil by comparing its frying stability with other conventional frying oils. The oils were used as a frying media to fry potato chips for 6 hour a day up to a maximum of 5 days. The results of the study showed that moringa seed oil is more stable in the frying application compared to other oils. It showed improved frying performance over regular canola, soybean and palm olein. Apart from being stable in high temperature frying application than the regular oils, it also has an added advantage of containing high-oleic acid content that has been linked to reduce risk of high cholesterol and heart disease.

CHAPTER III

RESEARCH METHODOLOGY

3. 1 Research Methodology Used

The researcher used descriptive method since the study is designed to gather information about the present and existing conditions of the chosen topic.

The researcher aims to provide enough knowledge about the moringa seed oil nutritional value and commercialize it as an alternative cooking oil.

3. 2 Data Gathering Procedure

3. 2. 1 Moringa Seed Oil Extraction

Ten kilograms of moringa seeds will be harvested from mature fruits of moringa tree and will be air-dried for three days. The coat of the dried

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moringa seed will be removed and will be crushed and flaked in an oven at 100 degree Celcius for one hour. After flaking the seeds it will be then fed into an extractor fitted with a 500mL round-bottom flask and a condenser. The extraction will be executed in a water bath for eight to nine hours with 300mL of n-hexane. After extraction, the solvent will be distilled off under vacuum in an evaporator of the recovered oil from moringa seeds and will be further degummed.

3. 2. 2 Degumming of Oil

To be degummed moringa seed oil will be heated to 70°C in a water bath and hot water and will be added to reach a final volume of eighteen percent. The mixture will be mixed for ten minutes with the use of a glass rod. The wet gum that agglomerated will be removed from the lighter oil by centrifugation at 9820g for 20 minutes at ambient temperature. The degummed oil will be then heated to 50°C and phosphoric acid will be added at a ratio of 500: 1 w/v and will be mixed for five minutes after ten percent w/w of bleaching earth will be added. The temperature will be raised to 95°C under vacuum and forty-five minutes will be allowed for the bleaching to occur. The moringa seed oil will be cooled down and will be filtered to separate the oil from the bleaching earth. Further refining will be carried out in a deionizer at 260°C under vacuum to remove the fatty acids and volatile odoriferous components.

3. 3 Statistical Treatment of Data

This term paper is only a preliminary study so the researcher does not attempt to gather data in a more complex statistics. The researcher only use books, journals and internet for data references.

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