

# The Use of *Moringa* Oil for Cooking

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**Abstract:** *Moringa* oil comes from the seed of the *Moringa* plant which has been used in the preparation of varieties of product such as food, cosmetics, medicine and others. The main aim of the study was to use *Moringa* oil in the preparation of some dishes. The objective of the study was to create awareness on the usage of *Moringa* oil in cooking. Questionnaires were the main instrument used in collecting data from respondents. The research was experimental. Food products prepared from *Moringa* oil were displayed for 10 panellists to taste while answering the questionnaire. The findings of the study showed that the taste, flavour and colour were accepted by the tasting panellists. It was therefore recommended that *Moringa* oil should be introduced to the public because of its nutritional value.

**Keywords:** *Moringa*, *Moringa* oil, Food, Cooking.

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## I. INTRODUCTION

The *Moringa* tree commonly referred to as *Moringa oleifera* native to India, Africa, Arabia, Southeast Asia, South America, and the Pacific and Caribbean Islands (Iqbal & Bhanger 2006). Literature has revealed that the *Moringa* tree was introduced to Africa from India at the turn of the twentieth century where it was to be used as a health supplement (Muluvi *et al.*, 1999). The *Moringa* plant has been consumed by humans throughout the century in diverse culinary ways (Iqbal & Bhanger, 2006).

Almost every part of the *Moringa* tree (leaves, seeds, roots and flowers) are suitable for human and animal consumption. The leaves, which are rich in protein, minerals,  $\beta$ -carotene and antioxidant compounds, are used not only for human and animal nutrition but also in traditional medicine (Leone *et al.*, 2015; Leone, Spada, Battezzati, Schiraldi, Aristil & Bertoli, 2015).

The seeds of *Moringa oleifera* have attracted scientific interest due to the fact that it contains significant amount of oil (up to 40%) with a high-quality fatty acid composition (oleic acid > 70%) and, after refining, a notable resistance to oxidative degradation (Anwar, Ashraf & Bhanger, 2005). These properties makes it suitable for human consumption. It has been used in salads, for fine machine lubrication, and in the manufacture of perfume and hair care products (Tsaknis, Lalas, Gergis, Douroglou & Spiliotis, 1999).

The oil can be extracted almost entirely by solvent extraction, generally n-hexane, whereas fewer yield is obtained by cold press extraction. In fact, only 69% (on average) of the total oil contained in seeds can be extracted by cold press (Tsaknis, Lalas, Gergis & Spiliotis 1998; Ogunsina, Indira, Bhatnagar, Radha, Debnath; Gopala Krishna, 2014). Among rural dwellers, the edible oil is extracted by boiling de-husked seeds with water, and collecting the oil from the surface of the water (Somali, Bajneid, & Ai-Fhaimani, 1984; Lalas & Tsaknis, 2002).

The clear yellow oil has a pleasant taste which has been compared in terms of quality with olive oil. The oil has a high concentrated source of food energy and can be used as an edible vegetable oil for cooking. According to Abdulkarim, Long, Lai, Muhammad & Ghazali (2005), the seed oil contains all the main fatty acids found in olive oil, and therefore, it can be used as a possible substitute to the expensive olive oil after some modifications. Morton (1991) added that even though the seed oil contains all the fatty acids contained in olive oil, it does not linoleic and can therefore be used as its acceptable substitute.

In Haiti, the oil is used as a general culinary and salad oil. In Africa and some parts of Asia, particularly India, the oil has been reportedly used for cooking purposes (Abdulkarim, Long, Lai, Muhammad & Ghazali, 2007). The *Moringa* plant is a rich source of Vitamins A, B, C, D, E and K (Anwar and Bhangar, 2003). The vital minerals present in *Moringa* include Calcium, Copper, Iron, Potassium, Magnesium, Manganese and Zinc. It has more than 40 natural anti-oxidants. Despite the high nutritional value of *Moringa* and as such its extracted oil, it is less known and used for cooking in Ghana; although the *Moringa* oil is viable for uses as cooking. Its high demand and low level of production do not make it conducive for everyday uses as a dietary product.

In Ghana few projects and studies was being done with the *Moringa* tree, but today, there are many organizations, churches and individuals promoting or using *Moringa* virtually in every region. The question is, “Is *Moringa* oil also encouraged in the preparation of food?” This is the main reason why this research is embarked to encourage the usage of *Moringa* oil as one of the major benefits of *Moringa* plant because of its nutritional content. *Moringa* oil should therefore be promoted for greater consumption to improve nutrition and strengthen immune functions for fighting diseases. Considering other uses of *Moringa* oil it must be encouraged in the preparation of food for healthy living.

## II. METHOD AND PREPARATION

### Extraction of Oil from *Moringa* Seed:

The seed is fairly soft so the oil can be extracted manually. The *Moringa* seed used in this research was bought from a farm at Accra, Ghana. It was carefully selected to ensure best quality and particularly to heed to hygienic requirement. The oil was extracted by removing the seed coat from the seed. The de-husked seeds were crushed and then boiled with water. Oil formed on the surface of the water was collected, filtered and bottled.



Figure 1. Extracted *Moringa* oil

### Dishes Prepared with *Moringa* Oil:

The basic recipe for the dishes prepared was used as a standard in the preparation of the dishes.

#### Kelewele (Spicy Riped Plantain)

Ingredients	Quantity
ripe plantain	4
<i>Moringa</i> oil	500ml
grounded pepper	10g ( ½ teaspoon)
ginger	10g (1 root)
water	2 tablespoons
salt	1 teaspoon
mixed spice	1 teaspoon

**Method of Preparation**

- Wash and peel the plantain
- Cut into 2cm cubes
- Grind ginger and mix with salt, pepper mixed spice and water
- Toss plantain in the mixture and deep fry till golden brown
- Drain well and serve hot



Figure 2: Kelewele

**Fried Fillet of Fish with Potato Chips**

Ingredients	Quantity
fish	200g
Salt	pinch to taste
<i>Moringa</i> oil	1 litre
Potato	100 g

Coating batter was first prepared to be used for the fish fillet

Ingredients	Quantity
Flour	2 tablespoon
Moringa oil	1 desert spoon
Salt	Pinch
Tepid water	4 table spoonful
Water	1 table spoon
Egg (Whisked)	1

**Method of Preparation (Coating batter)**

- Mix flour and salt thoroughly
- Add the moringa oil and stir in the tepid water to make a smooth paste
- Cover and allow to stand ½ hour
- Whisk the white of egg stiffly, fold it lightly into the butter

**Method of Preparation (Fried Fillet Fish)**

- Cut Fish into four pieces
- Season flour
- Pass fish through seasoned flour
- Pass fish through batter
- Put oil on fire in a frying pan
- Deep fry fish till golden brown
- Remove from oil
- Place it on a kitchen paper
- Garnish and serve hot

**Method of Preparation (Potato Chips)**

- Wash, peel and rewash the potatoes
- Cut in thin slices on the mandolin
- Deep fry in moringa oil until golden brown and crisp
- Drain well and season lightly with salt



**Figure 5: Fried Fillet Fish with Potato Chips**

**III. RESULTS AND DISCUSSION**

Sensory evaluation using the ranking method was employed to determine acceptability of the dishes prepared with *Moringa* oil. All the prepared dishes were put together to be tasted and tasters decided which to taste first. After the tasting session, the tasters were asked to assess the overall appeal of the dishes using a five point hedonic scale ranging from 1 – dislike very much to 5 – like very much. The panellists (tasters) consisted of 10 lecturers of Hospitality Management Department in Takoradi Polytechnic. The panellists were told to rinse their mouths with water after consuming the sample in order to reduce residual effect (Grosso & Resurreccion, 2002). The panellists were to evaluate the prepared dishes based on the attributes: taste, flavour and colour. In terms of taste, all panellists stated that they preferred the dishes prepared with *Moringa* oil. Colour and flavour were also accepted by the panellists.

#### IV. CONCLUSION

The results of this work indicated that the use of *Moringa* oil for cooking was accepted by the panellists. The awareness of *Moringa* oil to people is low, and the existence of it on the market is very low. The oil commonly used by the general public was sunflower oil, soya oil and corn oil. Since *Moringa* oil contains more nutritional value, *Moringa* oil should be promoted for greater consumption to improve nutritional and strengthen immune functions for fighting infection diseases. Considering other uses of *Moringa* oil, it must be encourage in the preparation of food for healthy living.

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