

**A METHODOLOGY FOR DISCOVERING
NIGELLA SATIVA, INTERNATIONAL RECIPES, AND ITS BENEFITS:
COOKING WITH NIGELLA SATIVA**

**A CREATIVE PROJECT
SUBMITTED TO THE GRADUATION SCHOOL
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MASTER OF ARTS**

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CHAPTER 1

Introduction

A delicious spice that has both gastronomical satisfaction and health benefits is Nigella Sativa. It is possibly the most famous medical seed in history. Humans around the world have long recognized the tremendous healing properties of the legendary herb - Nigella Sativa, or Black Seed. It has a strong effect upon human systems. Unfortunately, few people in the United States know about Nigella Sativa, and do not add it in their food. Nigella Sativa has the potential opportunity of improving the health of all ages. The creative project is a cookbook that includes a variety of international and creative recipes, and Nigella Sativa is one of the major recipes for each dish.

Problem Statement

This creative project will provide a cookbook that contains Nigella Sativa in each dish. With consideration of potential benefits and recognizing that the seed is not well known in the U.S.A., the cookbook, which contains Nigella Sativa in each dish, is going to be useful for all ages. The dishes will broaden knowledge of international foods. The cookbook also will include a chapter about the benefits, the plant, and the history of

Nigella Sativa. Most the recipes that the cookbook contains are Asian cuisine. Other cuisines are also included.

Purpose/Significance of Current Project

Since ancient history, humans around the world have recognized the herb - Nigella Sativa, or Black Seed. It has a strong effect upon human systems. There are many people who do not know what Nigella Sativa is, and the benefit of it.

In the natural environment there are food sources that can prevent many diseases and improve people's health. Disease prevention such as Nigella Sativa has the potential of saving the \$1.2 trillion spent to treat disease (Kavilanz, 2009).

The aim of this creative project is to broaden people's knowledge of food culture, introduce Nigella Sativa and its benefits, and to help people explore international dishes. Nigella Sativa is a delicious seed that people can add to their food. The cookbook includes several sections such as soups, salads, appetizers, main dishes, and sweets recipes. These varieties give people opportunities to choose what they like and include vegetarian recipes.

Rationale

Many people enjoy cooking, and it may be one of their favorite hobbies. People also love to eat and try new foods. The black seed is something not common to eat in the United States. People purchase cookbooks that help address health issues. Many useful cookbooks emphasize use of antioxidants. The first example is: *The Miracle Foods*

Cookbook: Easy, Low-Cost Recipes and Menus with Antioxidant-Rich Vegetables and Fruits that Help You Lose Weight, Fight Disease, and Slow the Aging Process. Each recipe in this book is naturally high in antioxidants (vitamins A, C, and E, and beta carotene), which help slow the aging process, deter cancer, heart disease, stroke, and a long list of other diseases--as well as enhance the immune system and help with weight loss (Smith , 1995). *The Antioxidant Save-Your-Life Cookbook: 150 Nutritious, High-Fiber, Low-Fat Recipes to Protect you Against the Damaging Effects of Free Radicals* is another example (Kinderlehrer, & Kinderlehrer, 2007). The third example *Soy of Cooking: Easy-to-Make Vegetarian, Low-Fat, Fat-Free, and Antioxidant-Rich Gourmet Recipes* is a gourmet guide to preparing savory meatless dishes that incorporate nutrient-rich soy foods into one's diet – the recipes are high in antioxidants and phytochemicals, as well as fiber and vitamins (Oser, 1998).

There is no known cookbook that features Nigella Sativa in its recipes while including international recipes. The cookbook will also include some benefits and history of Nigella Sativa.

Assumptions of the Project

While this project is a cookbook that includes international and creative recipes, the first assumption will be that people will want to try dishes from this book. Secondly the assumption is that the food preparer will follow the recipe instructions, including the step of adding Nigella Sativa as one of the dish's ingredients. Since the author wanted to have the food taste tested, the assumption was made that she would be successful in

recruiting taste tasters, and third assumption during the project completion was that people who tasted the samples would fill out the questionnaires.

Limitations

Limitations include:

- Successful use of cookbook will be based on several things such as cooking from the book's dishes, follow the instructions, and add Nigella Sativa.
- Because of potential side effects, people with the following conditions were asked to not participate with taste tasting: pregnant women, individuals undergoing chemotherapy and radiation, and any one taking hypertensive medication.
- One limitation of the current study was that the sample of the study was not representative, as it included only students from the Family and Consumer Science (FCS) department.
- Another limitation of the current study is that all the participants who tasted the food samples were females.
- The participants ranged in age from 18 to 30 years old. This also makes the sample less representative.
- The current study used only ten dishes out of the 53 dishes in the cookbook.
- Another factor that makes the sample of the current study less representative is the fact that it consisted only of 16 participants.

- One of the limitations of the study was the scarcity of scholarly articles on *Nigella Sativa*. Most of the sources used about *Nigella Sativa* in the current study were drawn from the World Wide Web.
- Finally, another limitation of the study is the small number of the recipes in the cookbook. The cookbook includes 54 recipes.

Definition of Terms

For the purpose of this study the following definitions will be used:

Nigella Sativa

“*Nigella sativa* is an annual flowering plant, native to southwest Asia. It grows to 20–30 cm (7.9–12 in) tall, with finely divided, linear (but not thread-like) leaves. The flowers are delicate, and usually coloured pale blue and white, with 5–10 petals. The fruit is a large and inflated capsule composed of 3–7 united follicles, each containing numerous seeds. The seed is used as a spice” (“*nigella sativa*,” 2012).

“Black seed is an annual herbaceous plant, black cumin seed (botanical name is *Nigella Sativa* L.), or black seed for short, is believed to be indigenous to the Mediterranean region but has been cultivated in other parts of the world including the Arabian Peninsula, Northern Africa, and part of Asia”(“The Seed of,” n.d.)

Antioxidants

“Antioxidants are substances that may protect cells from the damage caused by unstable molecules known as free radicals. Free radical damage may lead to cancer.

Antioxidants interact with and stabilize free radicals and may prevent some of the damage free radicals might otherwise cause. Examples of antioxidants include beta-carotene, lycopene, vitamins C, E, and A, and other substances” (“Antioxidants and cancer," 2004).

Herb

Herbs used in cooking are called culinary herbs to distinguish them from medical herbs. But culinary herbs are also rich in phytochemicals. Some examples are beta – carotene in paprika, the antioxidants in rosemary, the mild antibiotic allicin in garlic, and the mild antiviral curcumin in turmeric (Linsel, Ross, McMahon & Bernstein, 2013).

“Herbs, which grow in temperate climates, are the fragrant leaves of plants. The same plant may supply both. For example, the seeds of coriander are used in curry powder, while the leaves of the same plant are called cilantro, a favorite seasoning in Mexican dishes” (Duyff, 2006)

Spice

“Many people confuse the terms “spice” and “herb”. Spices, which grow in tropical areas, come from the bark, buds, fruit, roots, seeds or stems of plants and trees. Usually they’re dried; garlic and gingerroot are two common exceptions” (Duyff, 2006)

Food Additive

“Food additives are substances that are added to food or animal feed during processing or storage. They include antioxidants, preservatives, colouring and

flavouring agents, and anti-infective agents. Most food additives have little or no nutritional value” (“Food additives,” 2012)

Cookbook

“Typically, a cookbook is a collection of recipes, or instructions, that explain how to do something and what you need to do it” (“Overview,” n.d.).

Ingredients

“An ingredient is a substance that forms part of a mixture (in a general sense). For example, in cooking, recipes specify which ingredients are used to prepare a specific dish” (“Definitions of ingredients,” n.d.).

Summary

Nigella Sativa is believed to be indigenous to the Mediterranean region but has been cultivated into other parts of the world including the Arabian Peninsula, Northern Africa, and part of Asia. The cookbook that contains Nigella Sativa as a major additive for each dish will help people know more about Nigella Sativa and its benefits, discover international dishes, and improve people’s health. Nigella Sativa can prevent many diseases and reduce illness. Moreover, the delicious seed is great for all ages to consume.

Chapter 2

Literature Review

The purpose of this study is to broaden people's knowledge of food culture, introduce Nigella Sativa and its benefits, and to help people explore different dishes around the world. This chapter will include several topics related to Nigella Sativa including history, the benefits, and the medical uses of Nigella Sativa. It has many benefits for human health whether to improve human health or/and prevent diseases. Food & Drug Administration considers Nigella Sativa safe to use as a spice. People around the world use Nigella Sativa for different reasons such as for beauty, healing wounds, and improving health. This chapter also includes information about cultivation of Nigella Sativa and its composition. Further the different names of Nigella Sativa around the world will be presented along with other cultural-related information.

Description of Nigella Sativa, Conditions, Harvesting, and History

The shape of Nigella Sativa seed is triangular, with four non regular dimensions. It is about 0.112 inch length and about 0.068 inch thick (See Figure 1). The seed is black in color, has a cracked pepper taste, and has a strong pungent smell. The flower that

produces the seeds contains capsule composed of about 5 follicles, with each follicle containing many seeds.



Figure 1: Appearance and size of Nigella Sativa

Nigella Sativa plant can grow in one life cycle per year. Nigella Sativa is a summer plant. The bushes grow to 20 inches high (See Figure 2). The bush produces flowers (See Figure 3). When the flowers start blossoming, they open to air. The seed converts from light to black in color; hence it is also known as black seed. It can be cultivated in-door with temperature 70°F (21°C). When it is blossoming, the seedpods start to open. The farmers collect the seeds (Nigella Sativa). They may find green seeds, but those are not ready to collect. The black seeds that they collect have to be exposed to the air until the black seeds become dry. Then, the farmers remove the poor seeds. The rest of black seeds are ready to save in clean dry containers. Nigella Sativa is similar to

milts, grapes seeds, and sesame ("Homepage: Black cumin," 2012).



Figure 2: Nigella Sativa bush grows up to 20 inches high



Figure 3: Flower of Nigella Sativa

Despite the rarity of Nigella Sativa in the new world, this food product has been very well known in the old world for thousands of years. Recordings mention it as far back as 1400 years, and have been used for over 2000 years according to Natural Medicines Comprehensive Database ("Black seed," 2012). Black seed was found in the tomb of King Tutankhamen. Sample of this food was found in the Assyrian civilization that resided in Mesopotamian, which is today Iraq and also at the burial places of the old

pharaohs of Egypt. It is well known that the old civilizations considered this product as part of their medicinal remedies as well as being used as a spice and for condiments. The health benefits of Nigella Sativa were well known and the seeds were used to fight illness and also to boost health and wellbeing of sickly individuals in the old civilizations. With the advent of the modern technologies, many of the old beliefs about these seeds are more scientifically proven today.

Optional Names of Nigella Sativa

Nigella Sativa has many different names all over the world (Table 1).

Table 1: Nigella Sativa name associated with country

Country	Optional Name of Nigella Sativa
English	Nigella, love-in-a-mist, fennel flower, black cumin, black caraway, black coriander, black seed English
Finnish	Neidonkuka
French	Cheveux de venus, Nigelle or Faux cumin
German	Schwarzhuemmel, later protvurz or brotchrut
Greek and Ancient	Melánthion or melásperrmom
Hebrew	Ketzah

Hindi and Urdu	Kalonji
Indian	Nutmeg flower
Italian	Nigela
Persian	Schonaiz
Sri Lankan	Kaladuru
African	Kolonji
Arabic	Habbatussada (or habba sooda).
Armenian	Shouhma
Egyptian	Habat et Baraka

(Albert-Matesz, 2003).

Moreover, according to Natural Medicines Comprehensive Database there are more than 23 names of Black Seed: Ajenuz, Aranuel, Baraka, Black Cumin, Black Caraway, Charnuska, Cominho Negro, Comino Negro, Fennel Flower, Fitch, Kalajaji, Kalajira, Kalonji, La Grainer Noire, and Love in a Mist, Mugrela, Nigelle de Crete, Nutmeg Flower, Roman-Coriander, Schwarzkummel, Small Fennel, Toute Epice, Upakuncika. The scientific name is *Nigella Sativa* from the Ranunculaceae family (2012).

Nutritional Analysis of Nigella Sativa

Nutritional analysis according to Al-Mahasneh, Ababneh, & Rababah (2008) shows that Nigella Sativa contains 20.85% of protein, 38.20% of fat, 4.37% of ash, 7.94% of crude fiber and 31.94% of total carbohydrates. The seed contains significant amounts of important minerals such as potassium, phosphorus, sodium and iron and lesser amounts of zinc, calcium, magnesium, manganese and copper. The seeds are rich in important unsaturated fatty acids such as linoleic and oleic acids and they contain several essential amino acids such as glutamic acid, arginine and aspartic acid, cystine and methionine (Al-Jassir, 1992; Nergiz & O'tle, 1993; Atta, 2003).

Nigella Sativa nutritional composition and benefits

Nigella Sativa contains several ingredients with potential value (Table 2).

Table 2: The chemical analysis, separation, and composition of Nigella Sativa

Fatty Acids	Nigella Sativa
Myristic Acid (C14:0)	0.5%
Palmitic Acid (C16:0)	13.7%
Palmitoleic Acid (C16:1)	0.1%
Stearic Acid (C18:0)	2.6%
Oleic Acid (C18:1)	23.7%
Linoleic Acid (C18:2)(Omega-6)	57.9%
Linolenic Acid (18:3n-3) (Omega-3)	0.2%
Arachidonic Acid (C20:0)	1.3%

Saturated & Unsaturated Fatty Acids	Nigella Sativa
Saturated Acid	18.1%
Monounsaturated Acids	23.8%
Polyunsaturated Acids	58.1%
Nutritional Value	Nigella Sativa
Protein	208 ug/g
Thiamin	15ug/g
Riboflavin	1 ug/g
Pyridoxine	5ug/g
Niacin	57 ug/g
Folacin	610 IU/g
Calcium	1.859 mg/g
Iron	105 ug/g
Copper	18 ug/g
Zinc	60 ug/g
Phosphorus	5.265 mg/g
Nutritional Composition	Nigella Sativa
Protein	21%
Carbohydrates	35%
Fats	35-38%

Fundamental Oil Composition (1.4%)	Nigella Sativa
Carvone	21.1%
Alfa-Pinene	7.4%
Sabinene	5.5%
Beta-Pinene	7.7%
P-cymene	46.8%
Others	11.5%

<http://www.nigella-sativa-seeds.com/scientific-analysis.html> ("Scientific analysis of," 2009)

The essential oil of *Nigella Sativa* was tested for components known to have possible antioxidant activity (Buris, & Bucar, 2000). According to Bashir and Qureshi, it contains a volatile oil, a fixed oil, proteins, amino acids, reducing sugars, mucilage, alkaloids, organic acids, tannins, resins, saponins, fats, vitamins, and minerals (2010). Moreover, study by Lutterodt, Luther, Margaret, Yin, & Parry, showed that the cold pressed black seed oil may be rich in polyunsaturated fatty acids, contains significant antioxidant property, may enhance the oxidative stability of food products, and provides potential health benefits to consumers (2010).

Additional nutritional composition and benefits follow:

- **Essential Fatty Acids (EFAs):** *Nigella Sativa* seeds are a rich source of essential fatty acids (Linoleic Acid and Linolenic Acid). EFAs are omega-3 and omega-6 unsaturated fatty acids which cannot be synthesized in the body. They are

important constituents for the generation of immune cells and for the growth and maintenance of the nervous system.

.Nigellone: It is a potent anti-histamine, which is responsible for anti-allergic and anti-asthmatic responses.

- Sterols: The seed is rich in sterols especially beta-sitosterol, which has anti-inflammatory and anti-cancer properties.
- Thymoquinone and other volatile oils: Thymoquinone is the potent anti-cancer agent found in *Nigella Sativa*, which was demonstrated to significantly inhibit the growth of pancreatic cancer cells, one of the most invasive cancers of man. Other volatile oils include p-cymene, limonene and carvone. All these have potent anti-oxidant and anti-inflammatory properties.
- Immunomodulators: These are substances that rectify imbalances in the immune system, thereby preventing the occurrence of auto-immune diseases.
- Vitamins: Contains many water soluble and fat soluble vitamins, especially carotene, the precursor of vitamin A, which is a potent antioxidant.
- Minerals: *Nigella Sativa* is a rich source of minerals like sodium, potassium, iron and calcium, which play a number of roles in maintaining health and vitality.
- Monosaccharides: *Nigella Sativa* is a good source of monosaccharides like glucose, rhamnose, xylose and arabinose.

- Polysaccharides: Nigella contains non-starch polysaccharides, which are a good source of dietary fiber – a component with a proven role in the prevention of colonic cancer. (Gilani, Jabeen & Ullah Khan, 2004) ("Primary properties of," 2005)

The study by Al-Naqeeb, Ismail, Al-Zubairi & Esa (2009) was carried out to investigate the nutrient composition of Nigella Sativa seed and its mineral content cultivated in three different regions in Yemen, namely Marib, Sadah and Taiz. Mineral content analysis of Nigella Sativa seeds showed the seeds to be a rich source of calcium, magnesium, potassium, phosphorus and iron. Results revealed that Nigella Sativa seeds contain various nutrients with potential value. Results obtained in another study demonstrated that seeds of Nigella Sativa cultivated in Yemen are an important source of proteins and crude fiber (Al-Naqeeb, Ismail, Al-Zubairi & Esa, 2009).

Traditional Nigella Sativa remedies

Below are listed selected traditional Nigella Sativa remedies that are used around the world as stated in the website Muslim Health Network – The Black Seed ("The black seed, n.d."):

- Asthma & Bronchial Problems (Far East, Middle East & Malay Peninsula): Mix a teaspoon of Nigella Sativa Oil in coffee. Take twice daily. Also rub chest with Nigella Sativa Oil every night and inhale the vapour of Nigella Sativa Oil in hot water.

- Backache & other kinds of rheumatism (Middle East & Malay Peninsula): Mildly heat a small amount of Nigella Sativa Oil and then stroke the rheumatic area intensely. A teaspoon of the oil should also be drunk three times daily.
- Diabetes (India): Mix a cup of whole Nigella Sativa, a cup of watercress or mustard seeds, half a cup of pomegranate peel, and half a cup of fumitory. Grind the mixture to powder. Take half a teaspoon of the mixture together with a teaspoon of Nigella Sativa Oil daily before breakfast for one month.
- Diarrhoea (India & Middle East): Mix a teaspoon of Nigella Sativa Oil with a cup of yoghurt. Drink the mixture twice a day until symptoms disappear.
- Dry Cough (Middle East & North Africa): A teaspoon of Nigella Sativa Oil should be mixed in coffee and taken twice a day. Rub the chest and back with Nigella Sativa Oil.

In Pakistan Nigella Sativa is used to treat diarrhea, indigestion, dyspepsia, anorexia, vomiting, puerperal disorders, obesity, dyspnea, and skin disorders (Bashir, & Qureshi, 2010).

Uses of Nigella Sativa for Various Types of Treatments

A bottle of Nigella Sativa was discovered in the tomb of King Tutankhamun. Queen Nefertiti used the oil to keep her skin supple and to preserve her bronze complexion. Also to treat insect stings, the Romans applied a paste of crushed seeds mixed with vinegar and honey. Now, nigella is found in cough syrups, wound salves, and topical preparations

(Albert, 2006). According to Chen, Tang, Bao, & Wu, “Thymoquinone (TQ) is the main constituent of *Nigella Sativa* oil, which has been traditionally used against arthritis in the Middle East” (2010).

Moreover, *Nigella Sativa* (black cumin) and *Syzygium Aromarticum* (clove) oil are used for the treatment of inflammatory diseases and have antioxidant properties. “Treatment with *Nigella Sativa* and *Syzygium Aromarticum* oil of rats fed an aflatoxin-contaminated diet resulted in significant protection against aflatoxicosis. However, *Nigella Sativa* oil was found to be more effective than *Syzygium Aromarticum* oil in restoring the parameters that were altered by aflatoxin in rats” (Abdelwahhab, & Aly, 2005).

In addition, Randhawa reported that “there is a great potential in the *Nigella Sativa* and its active principles for the development of new antimicrobial drugs. Although a lot of work has been done to demonstrate these effects, a lot more is needed to develop new anticancer drugs. *Nigella Sativa* as seed powder did not produce any toxic effects at very high doses (28g/kg orally) in rabbits; its oil was also very safe when given orally to rats (LD50 of 28.8ml/kg) and oral thymoquinone was also found to be quite safe (LD50 of 2.4g/kg)” (2008).

Nigella Sativa, which is rich nutritionally, has been used as a supplement for senior people to improve their immune system and provide energy. In addition it is used for babies because it is rich in carotene which is important for infant’s growth. Over all,

Nigella Sativa decreased childhood illness especially during winter time. ("Black seed uses," 2005)

Moreover, "in Pakistan analgesic and ant inflammatory drug abuse has become a major problem there. They cause gastritis, gastric ulcers, gastro-intestinal tract bleeding, and renal damage. So, they studied Nigella Sativa on mice as a pain reducer and anti-inflammatory agent and the study supported the use" (Bashir, & Qureshi, 2010). Other studies by Twrzi, et al & El-Beshbishy, et al showed that Nigella Sativa protects intestinal oxidative tissue damage and inhibits the generation of free radicals; these findings demonstrated for the first time that the antioxidant properties of Nigella Sativa seem to be effective in preserving intestinal tissue against ischemia reperfusion oxidative injury (2010).

In addition, another study shows that sepsis and septic shock are the most common causes of death in intensive care units. Nigella Sativa works as an antifungal that related to mortality, morbidity, and associated organ dysfunction (Alkharfy, Al-Daghri, Al-Attas, & Alokail, 2010).

Nigella Sativa can reduce and prevent many side effects of disease. For epilepsy in children Akhondian, Kianifar, Raoofziaee, Moayedpour, & Toosi, explained that the pharmacodynamic effects of thymoquinone improved the overall management of epilepsy in children. Nigella Sativa is known to have anticonvulsant effects which are mainly attributed to thymoquinone and there are no evidences of toxicity or side effects (2010).

Nigella Sativa has been associated with many other treatments for diseases. For example it has been used to provide protection against radiation-induced cellular damage (Rastodi, Feroz, Pandey, Jagtap, & Mishra, 2010). Also, Kanter (2008) observed the neuroprotective effects of Nigella Sativa and thymoquinone at certain doses. According to Butt, & Saltan, the use of Nigella Sativa may offer another food which may provide a way to help prevent various diseases such as cardiovascular disease and diabetes (2010). Moreover, Nigella Sativa has been used to enhance immune function (Butt, & Saltan, 2010 & Kanter et al 2004). In addition, the osteoarthritis in humans was treated by thymoquinone (Chen, Tang, Bao, & Wu mentioned, 2010). Chandra, Murthy, Mondal, & Agrawal (2009) showed that the Nigella Sativa oil supplementation decreased the elevated serum insulin and serum C-peptide levels and restricted the body weight and cholesterol level. Thymoquinone also tumor growth and blocked angiogenesis with almost no toxic side effects (Banerjee, Padhye, Azmi, Wang, & Philip, 2010) & (Salim, & Fukushima 2003). Nigella Sativa has been used also for the treatment of allergic asthma and other respiratory disorders (Chen, Tang, Bao, & Wu, 2010) & (Mansour, & Tornhamre, 2004).

According to Natural Medicines Comprehensive Database, people use Nigella Sativa orally for treating the following: gastrointestinal conditions including gas, colic, diarrhea, dysentery, constipation and hemorrhoids. Nigella Sativa can also treat respiratory conditions including cough, bronchitis, emphysema, flu, swine flu, and congestion. Moreover, Nigella Sativa treats hypertension, and vermifuge. It can also be used orally for birth control, stimulation of menstruation, and increasing milk flow.

Traditionally, *Nigella Sativa* has been used for a variety of conditions and treatments related to headache, toothache, nasal congestion, and intestinal worms. It has also been used for conjunctivitis, abscesses, parasites, respiratory health, stomach and intestinal complaints, kidney and liver function, circulatory and immune system support, and to improve general health. It can be topically used for eczema, psoriasis, arthritis, inflammation, and scalp massage. *Nigella Sativa* is an excellent herb with many benefits. *Nigella Sativa* is a safe and excellent herb that can be used by anyone. It has no known side effects and has had long history of use for several years (CalgaryIslam.com Editorial Staff, 2009).

Recipe development

The Food & Drug Administration considers *Nigella Sativa* to be generally recognized as safe and approved as a food additive ("FDA, C.F.R. 182" 2011) (Appendix-A). Also according to Natural Medicines Comprehensive Database, *Nigella Sativa* is safe when used orally in amounts found in foods. There is insufficient reliable information available about the safety of *Nigella Sativa* for its other uses ("Black seed," 2012).

Nigella Sativa has been used in baked items and other popular food recipes. Although there is no evidence showing that the high temperature affects the *Nigella Sativa* nutritional elements, black seed is usually added in the last step in some recipes such as rice. On other dishes, such as dessert, black seed is mixed with other ingredients and then baked. Therefore, there are different ways to add the black seed to recipes.

Nigella Sativa can be added to cheese, pastries, bread, and salad. The powder of Nigella Sativa can be mixed with honey or dates. Also, Nigella Sativa can be consumed along with some water. Although the experiments do not reveal any toxicity to the black cumin seeds, some experts advise consumption of a maximum 75 000 mg (75grams) per day ("Black seed preparations," 2011). Moreover, the Natural Medicines Comprehensive Database addressed that the dosage for hypertension people from Nigella Sativa extract orally was 100-200 mg (0.1-0.2 grams) twice daily ("Black seed," 2012).

Side effects of Nigella Sativa

Although Food & Drug Administration considers Nigella Sativa to be safe and approved to use as food additives ("FDA, C.F.R. 182" 2011), Nigella Sativa may cause side effects for some people. Uterus contraction can happen for pregnant women who consume Nigella Sativa. Further assessment is necessary to determine exactly how this can affect pregnancy, so it's best to avoid this substance when expecting a child. However, as studies have shown, black seed helps increase milk production during breastfeeding. Other information noted Nigella Sativa is not allowed for breastfeeding women ("Black seed," 2011 & Black seed," 2012).

Also, Nigella Sativa is known to adversely interact with both chemotherapy medications and radiation, according to the Memorial Sloan-Kettering Cancer Center. Since it may act like an antioxidant in the body, this herbal supplement can decrease the efficacy of standard cancer treatments (Butt, & Saltan, 2010).

Moreover, *Nigella Sativa* can affect skin by causing an allergic reaction. Simply touching black seed may cause a red rash along the skin. This rash is often accompanied by an itching sensation. It may also result in blistering, pain or tenderness isolated to the exposure site. Additional kinds of allergic reactions are caused by consuming *Nigella Sativa* such as swelling of the lips, tongue, throat or face as well as difficulty breathing, a tingling sensation in the mouth, hives, dizziness, nausea, vomiting, diarrhea and abdominal cramping ("Black seed," 2012)

There is a side effect of black seed for people who have hypertension especially if they are currently taking a diuretic or antihypertensive medication. The drop in blood pressure impedes the transport of oxygen to the brain, heart and other organs. This can result in fatigue, nausea, blurred vision, shallow breathing, dizziness, lightheadedness and loss of consciousness. If blood pressure dips too low, it may be life threatening ("Side effects of," 2011). However, Natural Medicines Comprehensive Database mentioned that consuming *Nigella Sativa* extract 100-200 mg (0.1-0.2 grams) twice daily for 8 weeks modestly reduces systolic and diastolic blood pressure by about 2 mmHg in men with mild hypertension. The clinical significance of this finding is not clear. More evidence is needed to rate the effectiveness of *Nigella Sativa* ("Black seed," 2012).

Summary

Nigella Sativa has a long history in more than one region including India or Middle East. Many articles and websites explain, study, and measure many different aspects of *Nigella Sativa*; it appears to be a healthy seed to consume. These studies

provide the history, the uses, and the benefits of black seed. The compositional analysis of *Nigella Sativa* is helpful to know. The safe use of *Nigella Sativa* is a critical piece of information. Adding *Nigella Sativa* with its antioxidant properties has the potential of preventing many diseases such as cancer, diabetic, hypertension, obesity, and more.

Chapter 3

Methods

The aim of this creative project is to broaden people's knowledge about food and culture through exploring international dishes. Additionally, the project aims at introducing Nigella Sativa and its benefits. Nigella Sativa is a delicious seed that people can add to their food. The creative project is a cookbook that comprises several sections such as soups, salads, appetizers, main dishes, and sweets recipes. These varieties give people opportunities to choose what they like, whether they are vegetarian or not.

Selection and Development of Recipes

The author's goal was to write a cookbook containing from 50 to 60 recipes from various regions. The author started with easy famous dishes from different countries to which she could add Nigella Sativa. Then she asked her family to help her find some dishes that originally included Nigella Sativa as one of the ingredients. Moreover, the author searched on the internet for dishes that included ingredients that American people would readily find in their markets. After realizing that there were more main dishes than other side dishes such as soups, appetizers, and desserts, the author proceeded to seek other recipe sources. The author referred to her early version of a cookbook that she had

compiled since her childhood. Most of the recipes in her cookbook came from older sisters and from her mother. The author selected recipes that she thought would be delicious with Nigella Sativa added to them such as pastry, soups, and salads. Next, the author started cooking the dishes. She added some ingredients, eliminated others, and generalized the measurements to ensure that others would find the recipes easy to cook. Attention was given to recipes with ingredients that are available in most of the American stores. The author photographed the dishes and for some of the dishes she took several pictures of the same dish at various stages of its preparation.

In the summer of 2011, the author went to Saudi Arabia, her home country, and together with her mother and sisters tested many of the dishes included in the cookbook. Between summer of 2011 and March of 2012 the author completed cooking and photographing all the recipes being considered in the cookbook. The goal of the author was to make it easier for people to find ways to consume Nigella Sativa in various kinds of foods such as soups, salads, appetizers, main dishes, or sweets. This variety gives people a chance to find what they like to cook. Also, there are some vegetable dishes that give vegetarian people a chance to benefit from Nigella Sativa. In compiling the recipes, the author followed the *Food: Handbook of Terminology, Purchasing, and Preparation*. (Food: A handbook, 2001). This handbook guided the author in various ways such as the standard form of the recipe and how to substitute unhealthy ingredients with healthy ones. Additionally, the author used the handbook for standard measurements.

A variety of dishes from many international cuisines were cooked. The selection of dishes seasoned with Nigella Sativa seed contains some North African and Asian recipes. There are also a few recipes from other regions. By making an insightful trip to her homeland, the author used the delicious recipes of her mother and siblings. The secret was to add the tasty and healthy seed to many dishes covering appetizers, pastries, soups and main course dishes. The next step for the author was to professionally document and photograph these recipes. The author herself has cooked and photographed every dish. All the documentations and the photographs of the seasoned Nigella Sativa recipes were sent to the author's homeland for graphical work.

Taste Testing Of Selected Recipes

Development of Taste Testing Questionnaire

The author developed a questionnaire (Appendix-B) to measure three domains: Appearance, taste, and texture. The author developed two sets of questions, the first one related to the dishes without the Nigella Sativa and the second set related to the dishes with the Nigella Sativa. To rate the appearance of the dish, the questionnaire included the following responses: Highly acceptable, acceptable, or unacceptable. Similarly, the taste of the dishes was rated by one of the following responses: Excellent- I love it, good-acceptable, or unacceptable- I don't like it. The food's texture was evaluated in two ways; first food texture was described as hard, soft, or crunchy; second acceptability of the texture was described with one of the responses: I like it or I don't like it. Following each question, the questionnaire also provided the opportunity for tasters to write their comments if they wished to do so.

As part of the questionnaire, information was provided to describe high risk people who were requested not to consume the recipes with *Nigella Sativa*. The author obtained permission from the Ball State University Institutional Review Board (IRB) (Appendix-C) for conducting her study.

The author also searched and documented the safety dosage for consuming *Nigella Sativa*. With the advisor's assistance two trusted resources were located; the Code of Federal Regulations ("FDA, C.F.R. 182" 2011) and Natural Medicines Comprehensive ("Black seed," 2012).

Following are some of the photos the author has taken of her dishes after she cooked them.

Figure 4: Minced Meat Soup



Figure 5: Potato Salad



Figure 6: All-purpose dough #1



Figure 7: Egg rolls



Figure 8: Stuffed green peppers



Figure 9: Saudi kabsa (red rice and chicken)



Figure 10: Mamool



Figure 11: Carrot cake



Recruiting Participants to Taste

The author contacted three professors from the Family and Consumer Science Department at Ball State University to present to their classes. With the purpose of recruiting taste tasters, the author presented in six different classes of both graduate and undergraduate students. The presentation (Appendix-D) included definition of Nigella Sativa, goal of the study, history, side effects, and benefits. Moreover, the presentation contained pictures of some dishes that the author cooked. Also, the author provided the

students with an introductory letter (Appendix-E) that included more information about Nigella Sativa and about the study. Potential participants were asked not to participate if they have the following conditions: 1) Pregnant women since consumption of Nigella Sativa may cause uterus contraction. 2) Individuals undergoing chemotherapy and radiation. According to the Memorial Sloan-Kettering Cancer Center this herbal supplement can decrease the efficacy of standard cancer treatments. 3) People who have hypertension, especially if they are currently taking a diuretic or antihypertensive medication. The drop in blood pressure impedes the transport of oxygen to the brain, heart and other organs. The letter indicated the date, time, and venue of the food tasting study in addition to the contact information (Appendix-F) of the principal investigator and her supervisor and of the Office for Research and Integrity. The author asked the students to email her if they were willing to participate in the study. She received emails from students who expressed their willingness to participate in her food tasting.

Taste Tasting Sessions

After giving the presentation in six different classes in the Department of Family and Consumer Science at Ball State University, the author recruited 16 female participants from these classes. Eight participants were recruited for each day of the study. Three of the participants joined in both sessions of the food tasting. Each of the eight participants tasted five different dishes which included soup, salad, appetizer, main dish, and dessert. Prior to starting the food tasting, the participants signed the consent form. Next, the author handed each participant a questionnaire for each one of the dishes. At the conclusion of the first day of food tasting, the author asked the participants if they were

willing to participate in the next food tasting the next day and those who agreed were signed up. The food tasting study was conducted in two parts over two days. In each part of the study the participants tasted two sets of five dishes. The two sets were identical except that one set included five dishes cooked with Nigella Sativa, and the other set included five dishes cooked without the Nigella Sativa. Therefore, the participants tasted each dish twice, once with the Nigella Sativa, and once without the Nigella Sativa.

The author cooked the following five dishes for the first day of the study: chicken corn soup, fattoush salad, boiled and fried potatoes, baked vegetables, and date fingers. On the second day of the food tasting study, the author cooked carrot soup, fava bean salad, egg rolls, vegetable pasta, and date and walnut dessert. The author chose these dishes because they represent various international cuisines. Since one of the participants on the first day of the study was vegetarian, the author included only vegetarian international dishes on the second day of the study. Each dish had a list of its ingredients displayed by the item, so if any of the participants had an allergy to any of the ingredients, they had the right to withdraw from the study or not to taste the dish with the ingredients to which they are allergic. Following the tasting, the participants filled out a questionnaire about each dish. At the completion of the food tasting, the participants' answers on the questionnaires were converted into graphs.

Final preparation and writing the cookbook

After extensive recipe searching, recipe modification, and food tasting, the recipes were assembled in the cookbook and in the categories of soups, salads, appetizers, bread,

main dishes, and dessert. Introduction was also written, and photos were added for the dishes (Appendix-G).

In selecting recipes for the cookbook, the author attempted to include recipes from all sections: soups, salads, appetizers, main dishes, and desserts. The author chose dishes that have good appearance, taste, and texture and that taste good with Nigella Sativa. In selecting soups, for example, the author chose thick soups rather than thin soups to ensure the Nigella Sativa would be visible and would not sink in the soup. Similarly, the author selected desserts that are good candidates to be decorated with Nigella Sativa. The author made sure to include both vegetarian and non-vegetarian dishes to benefit a larger population. Overall, the cookbook includes 54 recipes which consist of five soups, eight salads, six appetizers, ten pastries, thirteen main dishes, and twelve desserts (see the table of contents- Appendix-H)

In the final stage of the current project the author sent the photos of the dishes to her cousin in Saudi Arabia, who is an experienced photographer and who has extensive experience with Photoshop Adobe, to complete the graphic and design part of the cookbook.

Challenges and solutions

One of the challenges that the author faced was collecting some international recipes that contain Nigella Sativa. However, the author added Nigella Sativa to many dishes that originally did not include Nigella Sativa in their recipes.

The most challenging thing that the author faced was searching about the safety of eating Nigella Sativa, to establish that it was approved by Food and Drug Administration. It was hard to find that Nigella Sativa is safe to consume. The author called Food and Drug Administration more than one time to find this information and they were willing to help, but my advisor helped me find the inclusion of Nigella Sativa. On the Generally Recognized as Safe (GRAS); the safe dose was not mentioned in the Code of Federal Regulation ("FDA, C.F.R. 182" 2011).

Collecting the recipes was challenging. The author contacted her family members to provide her the dishes to which they usually add Nigella Sativa. Then she searched for those dishes on the internet. If the author did not find the dishes, she contacted family member about the recipes of those dishes, the sources of those dishes, and other details. Since not all of the author's family uses the internet often, it was challenging to remind them to send the recipes.

Another challenge was to cook two dishes with same recipe except adding Nigella Sativa to one of them. Every dish was cooked and divided to two parts, and Nigella Sativa was added to one of them and separated from non-Nigella Sativa. Also transporting the prepared dishes to the university where the participants tasted the foods was not easy because the author wanted them to have warm food.

Recruiting the participants to taste the dishes and answer the questionnaire was also a challenge. My advisor allowed the author to visit her three classes, and the author was also directed to other professors in the Department of Family and Consumer Science.

Chapter 4

Results

The cookbook includes dishes from different countries such as spring rolls and chicken corn soup from China, dishes from Egypt like eggplant salad, dishes from India like potato bread and samosas, dishes such as date bread, red rice, and rusk are from Saudi Arabia, and Lebanese dishes like mutabbal, tabouleh, and hummus with meat. Some of the recipes in the present cookbook came from the author's mother but the origin of these recipes is not known. Other dishes were fully created by the author, or were an adaptation of some recipes. Moreover, the author created many new dishes by increasing or omitting some ingredients and this, in turn, created new texture, taste, and appearance. All in all, the aim of this study was to expand people's knowledge about international foods and introducing Nigella Sativa and its benefits.

Taste tasting overall results

Data were collected using a questionnaire that related to three areas for each dish: Appearance, texture, and taste. The researcher analyzed the participants' answers by counting the responses and converting them into percentages. Over all, the appearance for dishes without Nigella Sativa was 80% highly acceptable, which was more than dishes

with Nigella Sativa, which were only 70% highly acceptable. None of the dishes' appearance was rated as unacceptable.

Seventy percent of the participants rated the taste of dishes with Nigella Sativa as "excellent," whereas 50% of the participants rated the taste of dishes without Nigella Sativa as "excellent." Fifty percent of the participants rated the taste of dishes with Nigella Sativa as "good," whereas 70% rated the taste of dishes without the Nigella Sativa as "good". Thirty percent of the participants rated the taste of dishes with Nigella Sativa as "unacceptable," whereas 20% rated the taste of dishes without Nigella Sativa as "unacceptable."

Appearance, Taste, and Texture of Specific Recipes

The results of the texture ratings were varied depending on the dish itself. For example, almost all participants rated the carrot soup's texture as soft and liked both dishes (with Nigella Sativa and without). Also, 100% of participants rated the vegetable pasta's texture as soft and liked it for the dish with Nigella Sativa and without Nigella Sativa. Moreover, the fava beans salad without Nigella Sativa was rated as soft and liked it while the same salad with Nigella Sativa was rated as crunchy and liked it. Other example was the boiled and fried potatoes. The highest rated 100% was for soft and liked it for the both dishes with and without Nigella Sativa, and 25% were some participants who rated the dish without Nigella Sativa as crunchy and liked it.

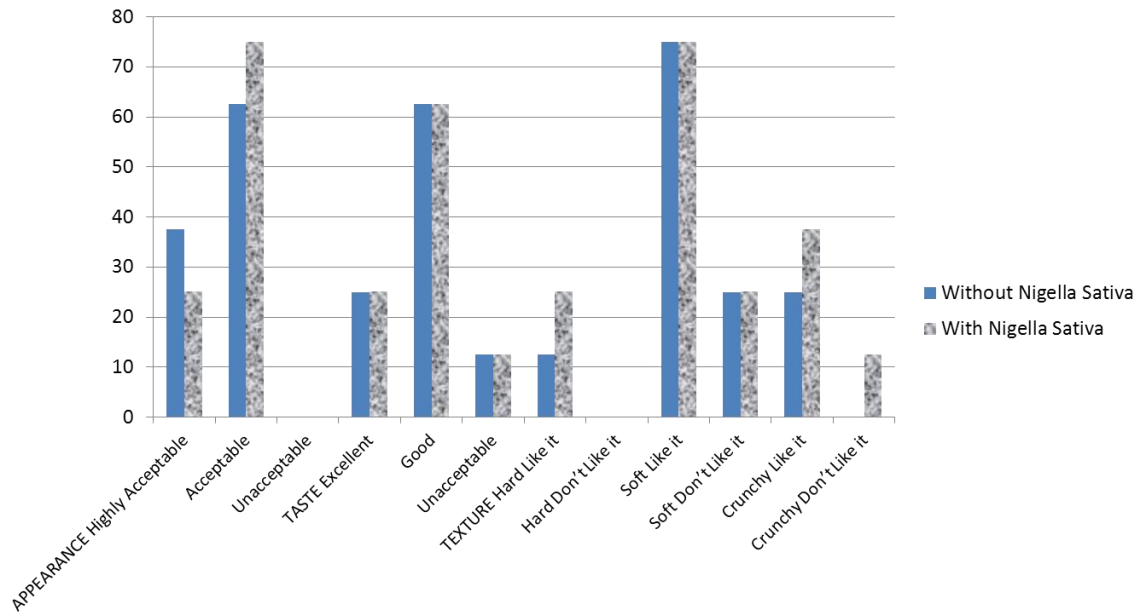
The boiled and fried potato recipe with Nigella Sativa had a more acceptable appearance than the recipe without Nigella Sativa. Six of ten recipes were rated at the

same level of appearance acceptability. Interestingly, the participants rated chicken corn soup both with and without Nigella Sativa as the least acceptable in appearance. However, none of the ten recipes, with or without Nigella Sativa, was unacceptable in appearance.

Participants' rating of taste acceptability identified five recipes containing Nigella Sativa higher than comparable recipes not containing Nigella Sativa; two recipes had the same rating of taste acceptability. Recipes having lighter Nigella Sativa taste acceptability were chicken corn soup, date fingers, date and walnuts. Moreover, all participants rated the vegetable egg roll highly acceptable in both taste and appearance. Results of texture ratings revealed greater variations in acceptability, most likely reflecting both the presence or lack of Nigella Sativa and the recipe itself. For example, a comment about the fava beans salad was "Nigella Sativa made lemon taste more subtle." Participants stated they had never tasted food like this before, and they were motivated to volunteer because of health benefits of Nigella Sativa.

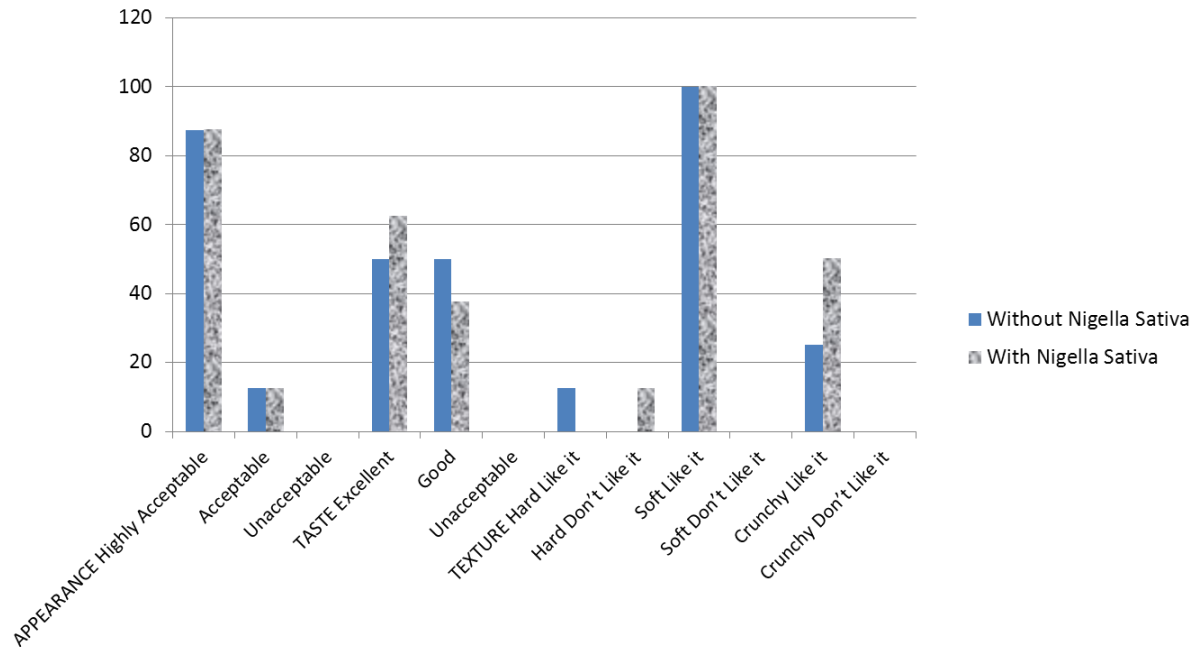
The taste results for each dish have been summarized graphically. The (y) axis represents the number of the participants and (x) axis are their tasting preferences. Following are the results of the food tasting of the ten dishes represented in graphs 1 through 10

Figure 12: Carrot Soup



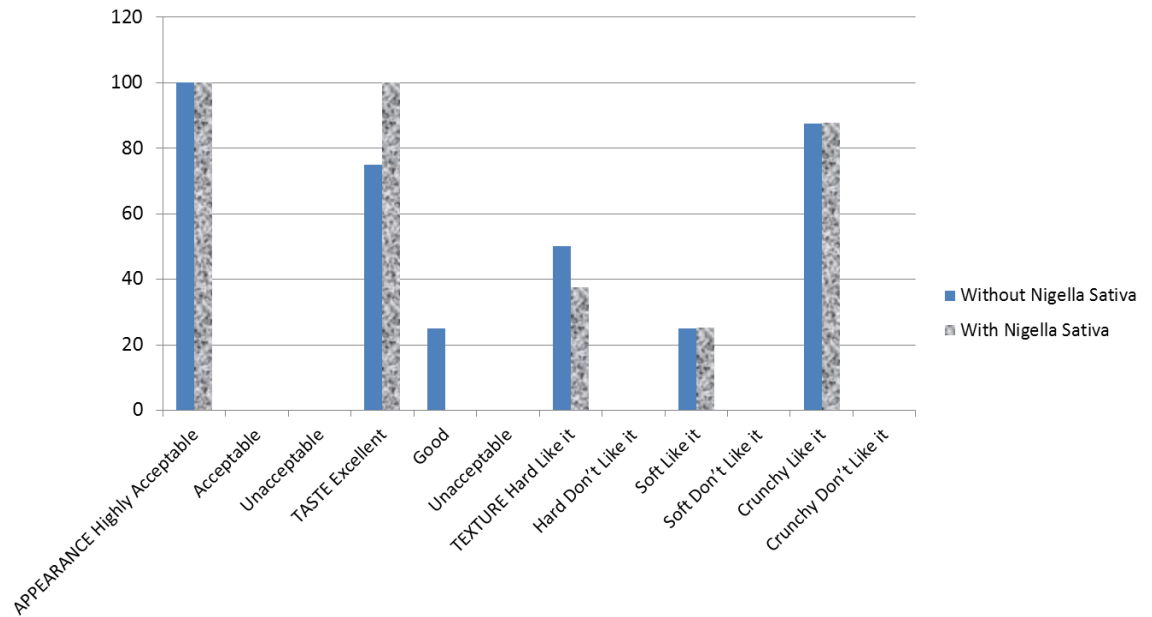
Carrot soup is thick and soft which is great for older people who have no teeth and for children as well. The author found the recipe for this soup on the internet and thought that it would be great with Nigella Sativa. The author added fried sliced onions to the ingredients because she thought it would make it more delicious and would enhance the soup appearance as well. Over all, the author chose thick soups for adding the Nigella Sativa on the top. Carrot soup is a nutritious and healthy soup because it contains vegetables and because it is rich with protein. The ingredients are carrots, onions, potatoes, lentils, garlic, Nigella Sativa, parsley leaves, salt, and pepper. Participants accepted Carrot Soup very well.

Figure 13: Vegetable Pasta



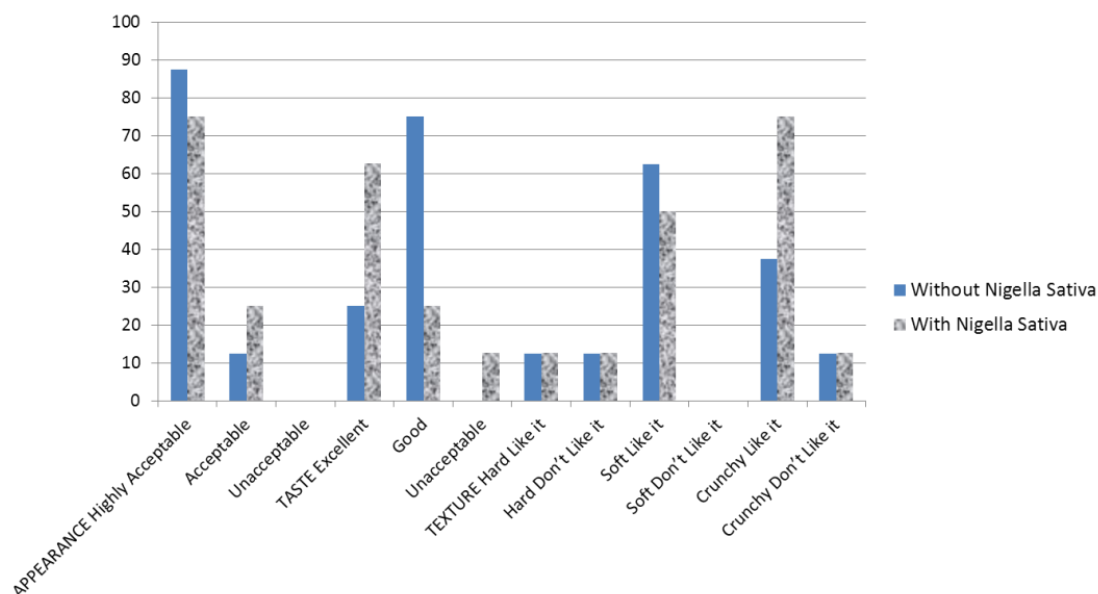
Vegetable pasta is a great main dish for vegetarian people. It includes pasta, onions, green peppers, carrots, zucchini, mushrooms, table cream, milk, garlic, Nigella Sativa, flax seeds, mozzarella, oregano, cornstarch, salt, and black pepper. The texture in general is soft because it contains white sauce. The author chose this dish from the internet because she wanted to include more vegetarian dishes. This dish also includes a high portion of calcium since it is mixed with milk, cream, and cheese, which makes it a great choice for senior people, pregnant women, and children as well. The participants liked this dish so much.

Figure 14: Vegetable Egg Rolls



Egg rolls are a famous Chinese appetizer. The author decided to stuff the egg rolls with vegetables because one of the participants was vegetarian. The author found this recipe on the internet. In general, egg rolls can be stuffed with chicken, shrimp, or with vegetables. The ingredients of the egg rolls for the present food tasting were garlic, cabbage, carrots, ginger, mushrooms, soy sauce, Nigella Sativa, salt, and black pepper. Even though this dish is usually served with sauce, which gives it more flavors and makes it softer, it was served without sauce in order not to make the sauce flavor supersede that of the Nigella Sativa. All participants rated the vegetable egg rolls as highly acceptable in taste and appearance.

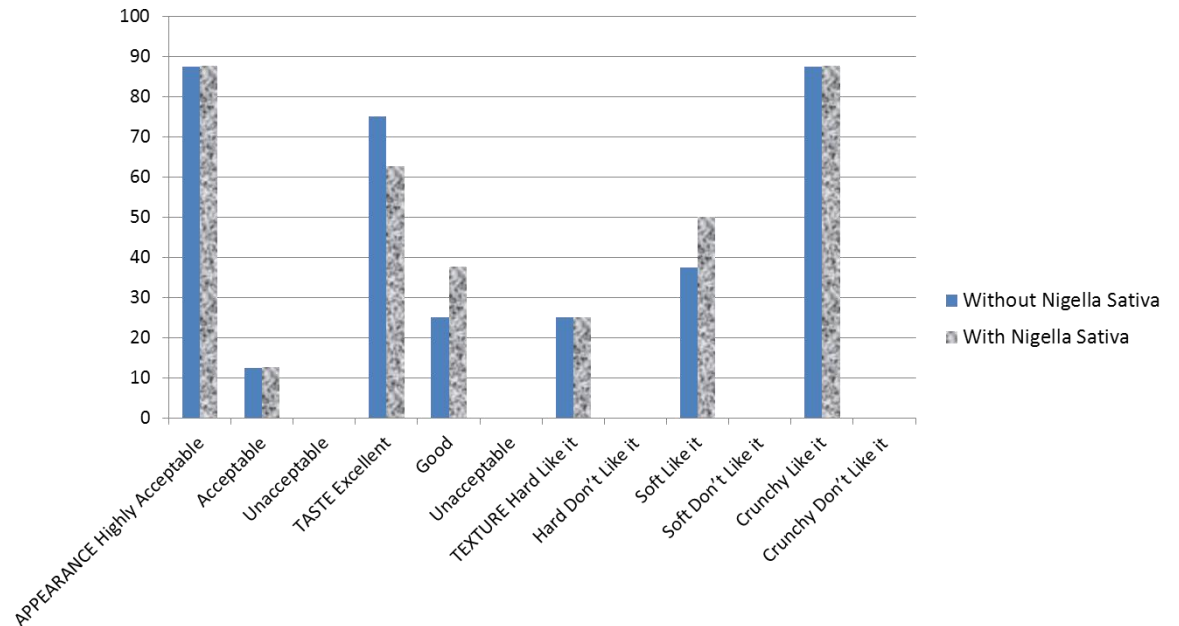
Figure 15: Fava Beans Salad



Fava beans salad is easy and fast to prepare. This dish is an excellent choice to serve to one's family if busy or in a hurry. Fava beans salad includes several kinds of fava beans. One of the advantages of this salad is that one can use any combination of beans. The author found the ingredients on the internet, and there were more than five different types of fava bean salads, so she developed her own recipe of a fava bean salad. The ingredients were parsley, onions, chick peas, green beans, red beans, salt, lemon, olive oil, and Nigella Sativa. As a dressing, lemon juice is very common in the Middle East and it is often used as the main dressing for salads. On the other hand, lemon juice as a dressing is a new idea for American people, and this may explain why some participants did not find the taste of this salad acceptable. For example, one of the comments about

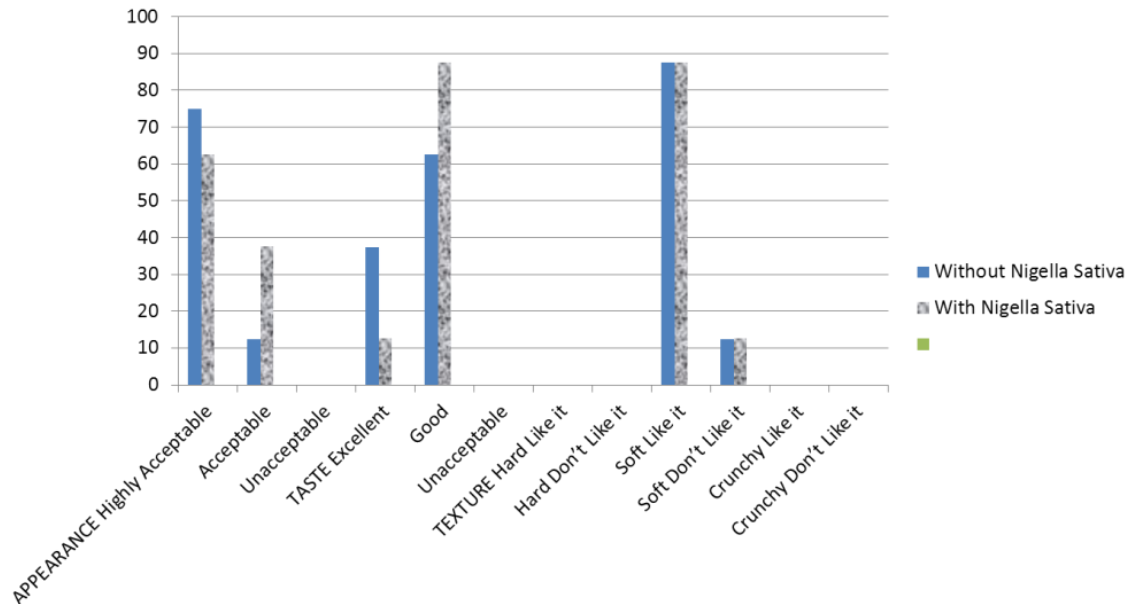
the fava beans salad by one of the participants was “Nigella Sativa made lemon taste more subtle.”

Figure 16: Dates & Walnuts



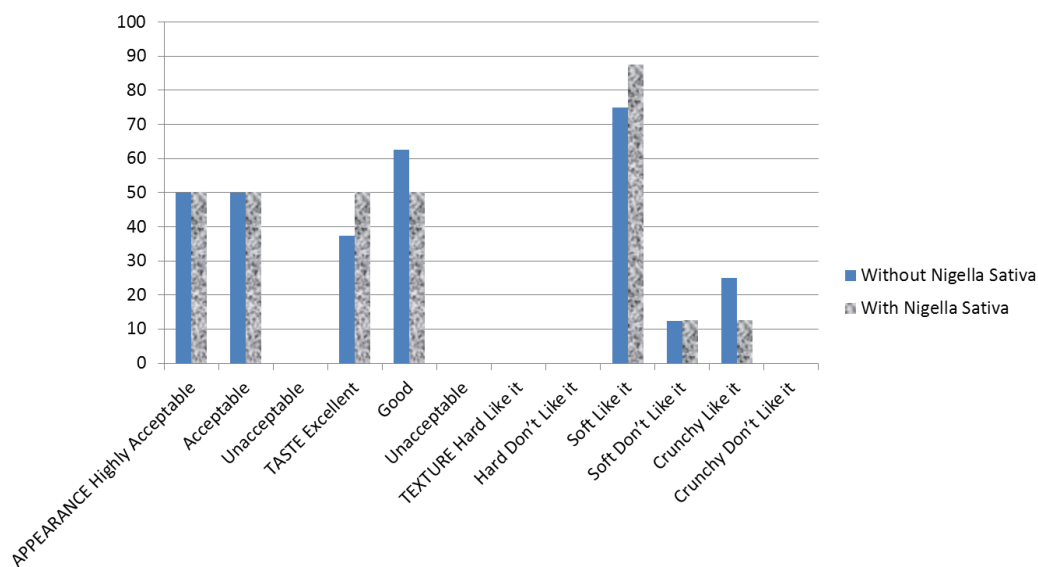
It is so easy and relatively fast to make this dessert. Dates and walnuts include dates, walnuts, coconut, Nigella Sativa, condensed milk, and ready-made pie crust. The author's sister created this dessert. It was one of the recipes with Nigella Sativa that had lower taste acceptability.

Figure 17: Date fingers



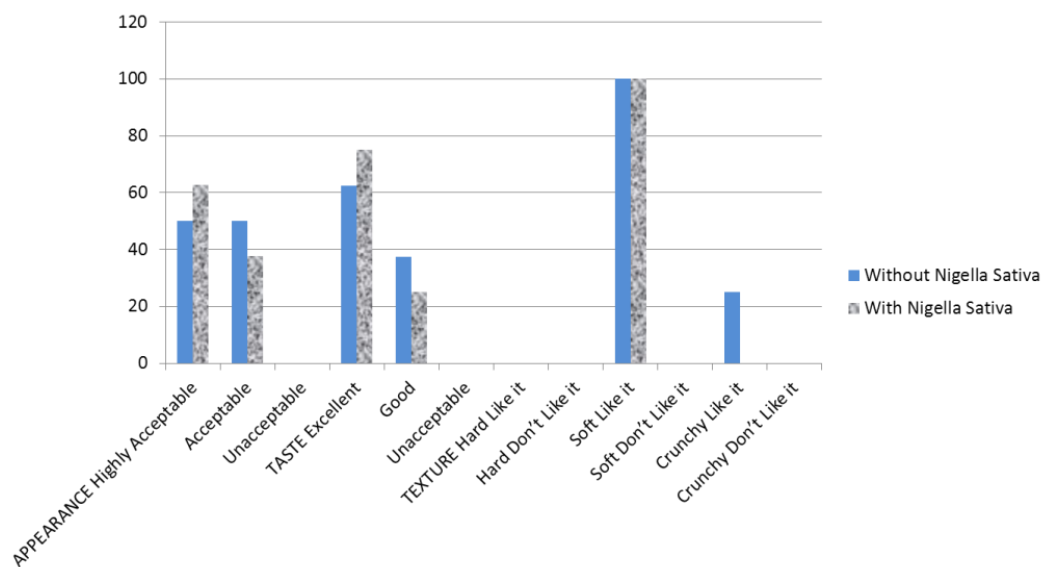
Saudi Arabia is famous for date dishes. It is not an easy dish to make, but date lovers would make it anyway. The author garnished this dessert with Nigella Sativa. This dessert consists of dough and stuffing; the dough ingredients are flour, oil, water, yeast, baking powder, sugar, and salt. The stuffing consists of dates, butter, and cardamom. It is superior to other kinds of sweets because it does not include a high amount of sugar. Additionally, the author made this dessert with whole wheat, which makes it even healthier. However, it was one of the recipes with Nigella Sativa that yielded lower taste acceptability.

Figure 18: Baked Vegetables



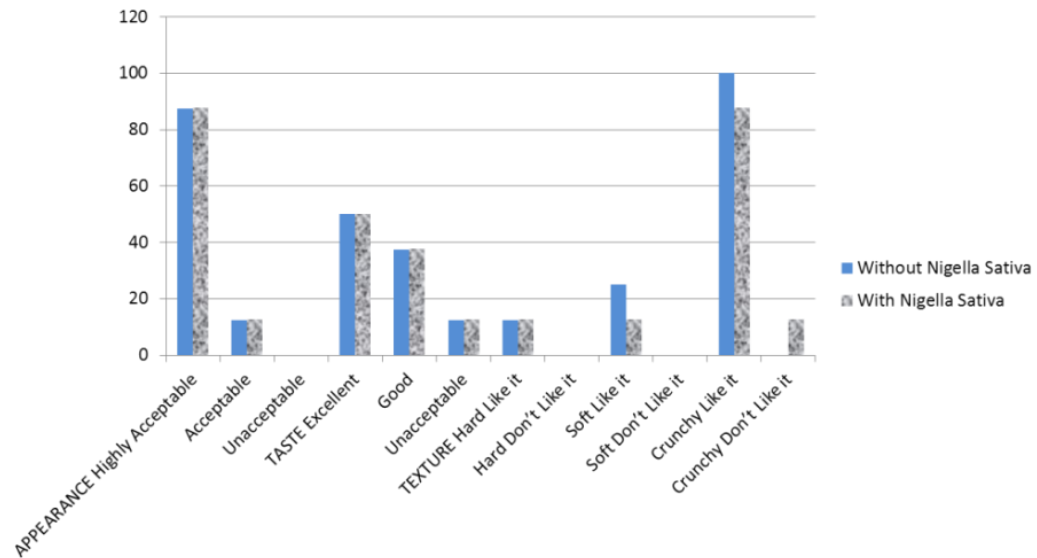
Baked vegetables is a good choice as a healthy and light main dish. It includes several kinds of vegetables. It is soft in general and suitable for older people and children as well. Baked vegetables contains zucchini, onions, cabbage, carrots, garlic, potatoes, cheddar cheese, parsley, cream, vegetable broth, oregano, spices, Nigella Sativa, salt, and black pepper. These vegetables can be substituted by other vegetables or other vegetables can be added to them. The author obtained this dish from her sister, and she tried to find the source, but could not find it.

Figure 19: Boiled & Fried Potatoes



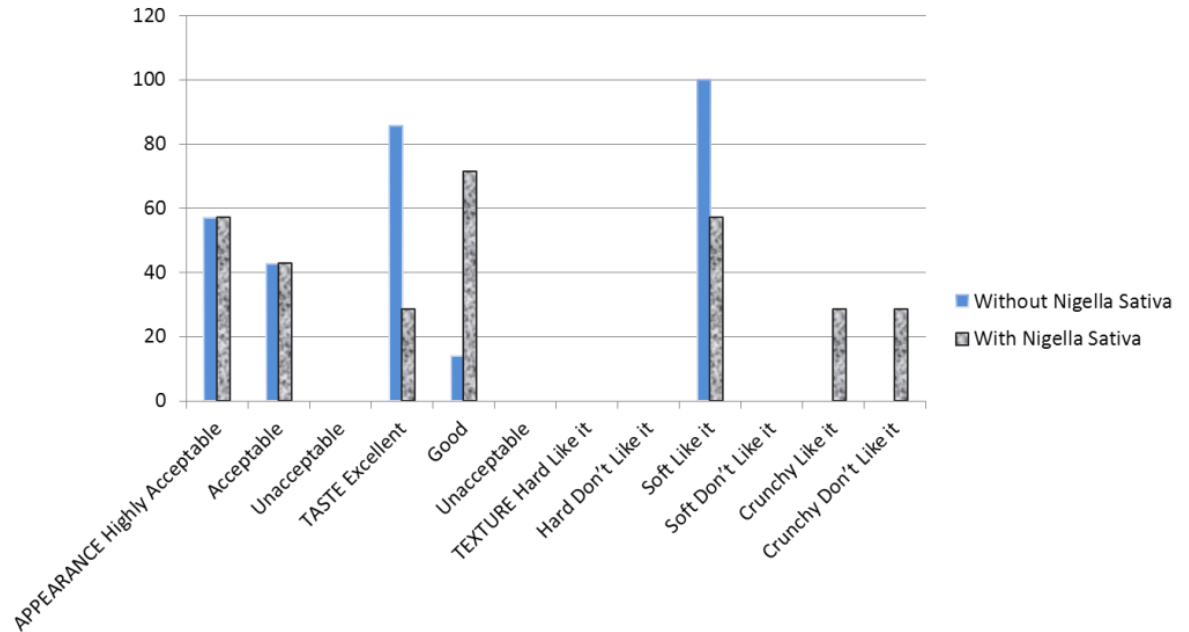
This finger food is all age favorite. This dish may take a long time to prepare, but its taste is so delicious. It is soft on the inside, as it is stuffed with feta cheese, and crispy from the outside. The ingredients of this appetizer are potatoes, feta cheese, Nigella Sativa, eggs, butter, bread-crumbs, salt, and black pepper. The original stuffing for this dish is minced meat and onions, but the author substituted this with feta cheese in order to have more vegetarian appetizers. The boiled and fried potatoes with Nigella Sativa had a more acceptable appearance than the recipe without Nigella Sativa.

Figure 20: Fattoush Salad



Fattoush salad is one of the most famous Lebanese salads. It is so colorful and slightly sour. The dressing ingredients were vinegar, lemon juice, cumin, olive oil, salt, and black pepper. The salad itself includes Nigella Sativa, lettuce, cucumbers, tomatoes, carrots, parsley, mint, and baked pita bread.

Figure 21: Chicken Corn Soup



Most children love this soup because of the sweet taste of the corn. It is a thick and creamy soup. Chicken corn soup is a famous Chinese soup. Its ingredients are chicken, onions, creamed corn, garlic, cardamom, lemon juice, corn-starch, egg whites, soy sauce, Nigella Sativa, salt, and pepper corns. Nigella Sativa is sprinkled on top of the serving bowl right before serving. This dish had a better taste acceptability without the Nigella Sativa.

Final Creative Product

The final creative project is a cookbook titled “Healthy International Recipes with Nigella Sativa (Black Seed) - 54 Recipes from Different Countries.”; and includes categories by soups, salads, appetizers, bread, main dishes, and dessert. In general, the

recipes included in the current cookbook do not contain high proportions of fat, which makes the dishes healthy. Additionally, the dishes use whole grain products. Also, the dishes are diverse, as they are taken from various regions around the world. Moreover, the dishes chosen for the current cookbook are easy to prepare and their ingredients are available in most grocery stores.

The current creative project is to give people an idea about Nigella Sativa, by including some information about it and about its benefits in the cookbook and by providing ideas on how, when, and where people can use Nigella Sativa. The author has collected international recipes in this cookbook, which distinguishes it from other cookbooks in addition to presenting the benefits people can gain from using Nigella Sativa. Another characteristic of the current cookbook is that it contains recipes that are easy to make and that consist of ingredients that are easy to find in grocery stores and markets. The current project aims at globalizing the world by raising people's awareness of others' recipes and foods.

Chapter 5

Discussion

Nigella Sativa can fight many illnesses and at the same time improve health in general. Nigella Sativa contains high rates of antioxidants, which can prevent many diseases such as cancer, heart diseases, and others. In the present creative project, the author attempted to broaden people's knowledge about food culture by introducing the herb Nigella Sativa and its benefits and helping people discover international dishes. There are many cookbooks that include healthy foods, healthy ways to cook, and healthy tips, but none of the cookbooks consist of recipes where every single dish contains Nigella Sativa.

Because of many studies explaining the benefits, the nutrition facts, and the history of Nigella Sativa, the author was motivated to further search and information about Nigella Sativa and to explore ways to incorporate Nigella Sativa into food. Moreover, the author realized that the general U.S. public knew almost nothing about Nigella Sativa and, thus, she decided to develop a cookbook to help people take advantage of the benefits of Nigella Sativa.

Since the author is unaware of other cookbooks that include Nigella Sativa in each dish, the author attempted to collect information about Nigella Sativa and use it in creating the current cookbook. Besides broadening the public knowledge about the benefits of Nigella Sativa, the current cookbook introduces international recipes with this herb, which makes it easier for people to utilize it and to benefit from it. It is worth mentioning that according to the Food and Drug Administration ("FDA, C.F.R. 182" 2011), Nigella Sativa is safe to consume. It was a great experience to interact with the participants who tasted international dishes seasoned with the herb seed since they had never had it before. The taste of Nigella Sativa, as evidenced by the ratings of the student participants, was highly acceptable.

Moreover, the comments that they wrote were quite positive (Appendix-I) about the dishes and Nigella Sativa. Nigella Sativa taste and appearance over all was acceptable, which can encourage other people in the future to try Nigella Sativa with various dishes.

The benefits of Nigella Sativa have been documented in many research studies. However, these research studies mention that some people might be at risk consuming Nigella Sativa such as pregnant women and individuals with cancer who are undergoing chemotherapy and radiation. Consumption of Nigella Sativa by pregnant women may cause uterus contraction. According to the Memorial Sloan-Kettering Cancer Center, this herbal supplement can decrease the efficacy of standard cancer treatments (Herndon, 2011). Another group of people who are discouraged from consuming Nigella Sativa

people who have hypertension, especially if they are currently taking a diuretic or antihypertensive medication, as the drop in blood pressure impedes the transport of oxygen to the brain, heart, and other organs ("Side effects of," 2011). In order to avoid any risks or side effects, the author explained this information clearly to the participants during her presentation, on the handouts, and in the consent form that they needed to sign prior to participating in the food tasting.

Reviewing previous studies have expanded the author's knowledge about Nigella Sativa to a great extent. The author utilized this knowledge in completing this creative project, in drawing people's attention, and in letting people know about the potential benefits of Nigella Sativa. The author contributed to expanding this information through introducing international recipes, so that people can have an idea about the uses of Nigella Sativa, and that they eventually can add it to these dishes.

Importance of the Current Project

This cookbook includes recipes of international foods from India, China, Egypt, Lebanon, Saudi Arabia, and Iraq. Additionally, it includes some recipes that are the product of the author and her family's creativity. The cookbook will broaden people's knowledge of different kinds of food tastes and herbs as well. Not only will people know international dishes, but also they will know a new herb which is Nigella Sativa. The idea for international food is based on the author observation that people here in the United States are always eager to know about international foods and how they taste. When the

author realized that American people had no idea about Nigella Sativa, the author decided to provide the opportunity for people to know more about Nigella Sativa and taste it.

Even when people acquire expansive knowledge about Nigella Sativa, they still have no clue about how to use it or where they can add it. Many people in my home country add Nigella Sativa to dates or honey and eat it. It is a great idea, but how about people who have never eaten honey or dates?

Summary

In general, the cookbook introduces Nigella Sativa as a new herb, mentions its benefits, tells its history, presents its risks, and includes international dishes. Altogether, this makes the current cookbook unique. It enhances people's knowledge about the benefits of Nigella Sativa and provides them with a chance to utilize it through international recipes.

Chapter 6

Conclusions, Limitations, and Recommendations

Nigella Sativa has been used for hundreds of years in many regions such as India, Europe, and the Middle East. People from these regions used Nigella Sativa in many ways, but in the current creative project the focus is more on the use of Nigella Sativa in foods. Nigella Sativa is a delicious herb that people can add to their foods. Unfortunately, not many people in the United States know about Nigella Sativa, and thus they are deprived of its benefits.

Nigella Sativa makes the food taste more delicious and makes it look more attractive in most dishes. In some dishes, however, the taste study participants reported that the black color of Nigella Sativa makes these dishes look less acceptable. On the other hand, participants rated dishes made with Nigella Sativa as more delicious than those made without it. The texture of the dishes with Nigella Sativa varied according to the dish itself. To summarize, Nigella Sativa enhanced the taste and appearance acceptability of many dishes while texture acceptability seemed to be influenced by both the presence of Nigella Sativa and the international recipe itself.

The current cookbook contains international recipes that are easy to make and that consist of ingredients that are easy to find in grocery stores and markets.

Limitations of the Study

In spite of the advantages of the current study, it has some limitations. These limitations are listed hereafter.

- One limitation of the current study was that the sample of the taste test study was not representative, as it included only students from the Family and Consumer Science (FCS) department.
- Another limitation of the current study is that all the participants who tasted the food samples were females.
- The participants ranged in age from 18 to 30 years old. This also makes the sample less representative.
- The taste test study used only ten dishes out of the 53 dishes in the cookbook.
- Another factor that makes the sample of the taste test study less representative is the fact that it consisted of 16 participants.
- One of the limitations of the study was the scarcity of scholarly articles on Nigella Sativa. Most of the sources used about Nigella Sativa in the current study were drawn from the World Wide Web.

- Finally, another limitation of the study is the small number of recipes in the cookbook. The cookbook includes 54 recipes.

Recommendations for Other Studies and Implications

Future studies need to utilize more representative samples of taste tasters.

Therefore, future studies need to include participants from various social educational status (SES) backgrounds rather than only students. The selection should be from various departments and not only from the Family and Consumer Science Department.

Furthermore, future studies should include participants from a wider range of ages.

Similarly, in order to have a more representative sample, future study need to include participants from both genders rather than only females. Future studies need to be documented by more scholarly articles and research studies on *Nigella Sativa* in addition to the information found on World Wide Web. Additionally, future studies need to increase the sample size of the study by recruiting more participants in order to ensure more external validity of the study. In addition, future studies need to utilize more dishes in the food tasting. Finally, future studies should include more recipes in the cookbook in order to give the public more choices of healthy recipes.

Conclusion

After collecting, cooking, and photographing the 56 recipes, the author needed feedback as to acceptability of the recipes. The author was so excited to read the questionnaire comments after the participants completed tasting. Converting the questionnaires to graphs provided further information about acceptability. There were many steps to reach the results, but they are all were so enjoyable.

Overall, the participants enjoyed trying new international dishes; they rated the appearance, taste, and texture positively. The recruiting presentations that the author conducted about the study was of great value, as it introduced the benefits of Nigella Sativa in addition to the information about the study. The study has raised the awareness of the audience about the importance of eating healthy foods such as those containing Nigella Sativa. The project itself reinforces the importance of healthy foods and introduces easy recipes, which makes it easy to adopt a healthy lifestyle through cooking easy to make dishes. In addition to the nutritional value of the study, it has a cultural value. The study has raised the awareness of the participants of other cultures through introducing international dishes.

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APPENDIX A

Code of Federal Regulations

Food & Drug Administration

[Code of Federal Regulations]
 [Title 21, Volume 3]
 [Revised as of April 1, 2011]
 [CITE: 21CFR182.10]

TITLE 21--FOOD AND DRUGS
 CHAPTER I--FOOD AND DRUG ADMINISTRATION
 DEPARTMENT OF HEALTH AND HUMAN SERVICES
 SUBCHAPTER B--FOOD FOR HUMAN CONSUMPTION (CONTINUED)

PART 182 -- SUBSTANCES GENERALLY RECOGNIZED AS SAFE

Subpart A--General Provisions

Sec. 182.10 Spices and other natural seasonings and flavorings.

Spices and other natural seasonings and flavorings that are generally recognized as safe for their intended use, within the meaning of section 409 of the Act, are as follows:

Common name	Botanical name of plant source
Alfalfa herb and seed	<i>Medicago sativa</i> L.
Allspice	<i>Pimenta officinalis</i> Lindl.
Ambrette seed	<i>Hibiscus abelmoschus</i> L.
Angelica	<i>Angelica archangelica</i> L. or other spp. of <i>Angelica</i> .
Angelica root	Do.
Angelica seed	Do.
Capers	<i>Capparis spinosa</i> L.
Capsicum	<i>Capsicum frutescens</i> L. or <i>Capsicum annuum</i> L.
Caraway	<i>Carum carvi</i> L.
Caraway, black (black cumin)	<i>Nigella sativa</i> L.
Cardamom (cardamon)	<i>Elettaria cardamomum</i> Maton.
Cassia, Chinese	<i>Cinnamomum cassia</i> Blume.
Cassia, Padang or Batavia	<i>Cinnamomum burmanni</i> Blume.

APPENDIX B

Questionnaire

TO PARTICIPATE IN THIS TASTE STUDY YOU NEED TO BE:

- 1- NOT PREGNANT**
- 2- NOT UNDER GOING CHEMOTHERAPY AND/
OR RADIATION THERAPY**
- 3- NOT TAKING AN ANTIHYPERTENSIVE**

Dish Name:

Date:

Add only one clear  beside your choice for each question

Dish without Nigella Sativa

1- Dish appearance

- A. Highly acceptable
- B. acceptable
- C. Unacceptable-I do not want to try it

Comments: -----

2-Taste:

- A. Excellent-I love it
- B. Good- acceptable
- C. Unacceptable- I don't like it

Comments: -----

3-Texture:

- A. Hard
 - i. I like it
 - ii. I don't like it
- B. Soft
 - i. I like it
 - ii. I don't like it
- C. Crunchy
 - i. I like it
 - ii. I don't like it

Comments: -----

Dish Name:

Date:

Dish with Nigella Sativa

1- Dish appearance

- A. Highly acceptable
- B. acceptable
- C. Unacceptable I do not want to try it

Comments: -----

2-Taste:

- A. Excellent-I love it
- B. Good- acceptable
- C. Unacceptable- I don't like it

Comments: -----

3-Texture:

- A. Hard
 - iii. I like it
 - iv. I don't like it
- B. Soft
 - iii. I like it
 - iv. I don't like it
- C. Crunchy
 - iii. I like it
 - iv. I don't like it

Comments: -----

Other comments/overall reaction:

APPENDIX C

Institutional review board (IRB) Determination of Exempt Status



Institutional Review Board

DATE: October 24, 2011

TO: Huda AL Herz

FROM: Ball State University IRB

RE: IRB protocol # 278281-1

TITLE: A METHODOLOGY FOR INTRODUCING NIGELLA SATIVA, INTERNATIONAL RECIPES, AND ITS BENEFITS: COOK WITH NIGELLA SATIVA COOK BOOK

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS

DECISION DATE:

The Institutional Review Board reviewed your protocol on and has determined the procedures you have proposed are appropriate for exemption under the federal regulations. As such, there will be no further review of your protocol, and you are cleared to proceed with the procedures outlined in your protocol. As an exempt study, there is no requirement for continuing review. Your protocol will remain on file with the IRB as a matter of record.

Editorial notes:

1. Exempt level review category 6

While your project does not require continuing review, it is the responsibility of the P.I. (and, if applicable, faculty supervisor) to inform the IRB if the procedures presented in this protocol are to be modified or if problems related to human research participants arise in connection with this project. Any procedural modifications must be evaluated by the IRB before being implemented, as some modifications may change the review status of this project. Please contact please contact Jennifer Weaver Cotton at 765-285-5034 or jmweavercott@gmail.com if you are unsure whether your proposed modification requires review or have any questions. Proposed modifications should be addressed in writing and submitted electronically to the IRB (<http://www.bsu.edu/irb>) for review. Please reference the above IRB protocol number in any communication to the IRB regarding this project.

Reminder: Even though your study is exempt from the relevant federal regulations of the Common Rule (45 CFR 46, subpart A), you and your research team are not exempt from ethical research practices and should therefore employ all protections for your participants and their data which are appropriate to your project.

APPENDIX D

Power Point Presentation

Creative Project

A methodology for introducing Nigella Sativa, International recipes, and its benefits:

Cook with Nigella Sativa
Cookbook



By: Huda AL Herz

What is Nigella Sativa

"Herb of the Mediterranean region having pungent seeds used like those of caraway"

("Nigella sativa," 2011)



The purpose of this creative project



Is to broaden people's knowledge of food culture, introduce Nigella Sativa & its benefits, and to help people discover international dishes.

This creative project will provide a cookbook that contains Nigella Sativa in each dish, will be appropriate for all age groups.

Nigella Sativa helps to combat many illnesses and at the same time improves general health conditions.



Is it safe to consume??

<http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcr/CFRSearch.cfm?fr=182.10>

If you like to participate

**Date: Thursday Nov 3ed and/or
Tuesday Nov 8th
Time: 5-6 pm
Where: AT 159**

To sign up: email me the date that you plan to participate.

E-mail: hfalherz@bsu.edu

Thank you for your time



APPENDIX E

Handout

Nigella Sativa is safe to consume according Food & Drug Administration. It is on the GRAS (generally recognized as safe).

Who might be at risk consuming Nigella Sativa:

1-Pregnant women since who consumption of Nigella Sativa may cause uterus contraction.

2- Individuals undergoing chemotherapy and radiation. According to the Memorial Sloan-Kettering Cancer Center this herbal supplement can decrease the efficacy of standard cancer treatments.

3-People who have hypertension, especially if they are currently taking a diuretic or antihypertensive medication. The drop in blood pressure impedes the transport of oxygen to the brain, heart and other organs

If you under one or more of the three categories above, you are asked not to participate.



If you like to participate you will be asked to taste two or more of the following:

- 1.Salad
- 2.Soup
- 3.Appetizer
- 4.Main dishes and
- 5.Dessert

•Each dish will be divided into two parts: one with Nigella Sativa and one without.

•You will complete an anonymous questionnaire about the dishes with questions such as characteristics of color, taste, texture, and the difference between the two dishes.



Date: Thursday Nov 3ed and/or Tuesday Nov 8th

Time: 5-6 pm

Where: AT 159

To sign up: email me the date that you plan to participate.

COOKING WITH NIGELLA SATIVA COOK BOOK

Nigella Sativa



**A Creative Project
by: Huda AL Herz**

**Phone: 814-441-2660
E-mail: hfalherz@bsu.edu**

What is Nigella Sativa:

"It is herb of the Mediterranean region having pungent seeds used like those of caraway, or a plant genus of the family RANUNCULACEAE that contains alpha-hederin, a triterpene saponin in the seeds, and is the source of black seed oil"



The purpose of this creative project is:

To broaden people's knowledge of food culture, introduce Nigella Sativa & its benefits, and to help people discover international dishes. Nigella Sativa is a delicious seed that can be added to our food .

Nigella Sativa and Health Related claims:

•Disease Resistance: Nigella Sativa enhances antibody production. Thus the resistance of the body against bacterial, viral and fungal infections is significantly increased.

Hair Loss: Very effective in the prevention and treatment of hair loss.

•Respiratory Illnesses: Nigella Sativa helps in the prevention and treatment of respiratory ailments like allergic rhinitis and bronchial asthma.

•Digestive System: It helps to promote digestion and has potent anti-helminthic properties, which helps in curing intestinal worms. It also enhances liver function.

•Cancers: Nigella Sativa's anti-cancer properties are well documented. It helps prevent a number of cancers by facilitating early detection and destruction of cancer cells.

•Diabetes: Found to be effective in the regulation of blood glucose.

•Skin Diseases: Very effective in the treatment of acne, eczema and psoriasis and also in the quick healing of burns.

•Migraine: Effective in the prevention and treatment of headaches and migraine.

•Kidneys: It enhances kidney function and is an effective diuretic.

•Milk Production: It increases milk production in lactating mothers.

•Libido: Increases sexual energy and libido in both men and women.

•Sperm count: Known to enhance fertility among men by increasing the sperm count.

•Opioid Dependence: Effective in treating opioid dependence.

•Beauty: Cosmetic preparations of Nigella Sativa are good moisturizers and helps decrease wrinkles.

•And finally, Menstrual Problems: Nigella Sativa acts as a stimulant of menstruation in conditions like oligomenorrhea

Black seed benefits . (2011). Retrieved from <http://blackcumin-seed.info/black-cumin-benefits/>



A sample of this food was found in the Assyrian civilization that resided in Mesopotamia, which is today Iraq, and was also found at the burial places of the old pharaohs of Egypt. It is well known that the old civilizations considered this product as part of their medicinal remedies. Besides using Nigella Sativa as a spice and/or condiment, it was also considered as a part of the medicinal remedies in the old civilizations. The health benefits of Nigella Sativa were well known, and the seeds were used to fight illness and also to boost health and wellbeing of sickly individuals in the old civilizations.

APPENDIX F

Consent Form

Study Title

A METHODOLOGY FOR INTRODUCING NIGELLA SATIVA, INTERNATIONAL RECIPES, AND IT'S BENEFITS: COOK WITH NIGELLA SATIVA COOK BOOK

Study Purpose and Rationale

Purpose:

The purpose of this creative project is to broaden people's knowledge of food culture, introduce Nigella Sativa and its benefits, and to help people discover international dishes. Nigella Sativa is a delicious seed that can be added to our food. The cookbook includes several sections such as soups, salads, appetizers, main dishes, and sweets recipes.

Rationale:

Many people enjoy cooking and it may be one of their favorite hobbies. People also love to eat and try new foods. The black seed is something not common to eat in the United States. People purchase cookbooks that help address health issues. Many useful cookbooks emphasize the use of antioxidant- rich ingredients, but there is no known cookbook that features Nigella Sativa in its recipes, including international dishes. The cookbook also will include some benefits and history of Nigella Sativa. This creative project will provide a cookbook that contains Nigella Sativa in each dish

Inclusion/Exclusion Criteria

You are eligible to participate in this experiment if you are 18 and older, not pregnant, not undergoing chemotherapy and/or radiation, and are not taking any hypertension medication.

Participation Procedures and Duration

- There will be presentation of "introduction of Nigella Sativa"
- Receive handout that include information about Nigella Sativa and its benefits, history, and people who are at risk of consuming Nigella Sativa.
- There will be two days/week only for tasting different recipes
- Each time I will make five different dishes; that will take about six hours
- Who plan to participate need to send an email to me in two days before the time to know the number of panelists
- Panelists will taste more than two dishes and can participate twice
- The dishes will be prepared with and without Nigella Sativa to let people taste the difference
- Six anonymous questionnaire, which will include questions about the dishes such as characteristics of color, taste, and texture, need to be filled
- The result of the questionnaire will be presented in the cookbook as graph associated with some of the recipes

Audio or Video Tapes

There will be no audio or video tapes

Data Confidentiality or Anonymity

All data will be maintained as confidential and no identifying information such as names will appear in any publication or presentation of the data.

Storage of Data

Paper data will be stored in a locked filing cabinet in the researcher's office for three years and will then be shredded. Only members of the research team will have access to the data.

Risks or Discomforts

The Food Drug & Administration considers Nigella Sativa to be safe and approved to use as food additives ("FDA, C.F.R. 182" 2011). On the other hand, Nigella Sativa may cause side effects for some people, including:

1-Pregnant women since consumption of Nigella Sativa may cause uterus contraction
 2- Individuals undergoing chemotherapy and radiation. According to the Memorial Sloan-Kettering Cancer Center this herbal supplement can decrease the efficacy of standard cancer treatments.

3-People, who have hypertension, especially if they are currently taking a diuretic or antihypertensive medication, should not consume Nigella Sativa. The drop in blood pressure impedes the transport of oxygen to the brain, heart and other organs.

Benefits

Knowledge and awareness of a Nigella Sativa will increase for participation in the study, a potentially beneficial substance.

Voluntary Participation

My participation in this study is completely voluntary and I am free to withdraw my permission at any time for any reason without penalty or prejudice from the investigator. Please feel free to ask any questions of the investigator before signing this form and at any time during the study.

IRB Contact Information

For one's rights as a research subject, you may contact the following: Office of Research Integrity, Ball State University, Muncie, IN 47306, (765) 285-5070, irb@bsu.edu.

Study Title A METHODOLOGY FOR INTRODUCING NIGELLA SATIVA, INTERNATIONAL RECIPES, AND IT'S BENEFITS: COOK WITH NIGELLA SATIVA, COOK BOOK

Consent

I, _____, agree to participate in this creative project entitled, "A METHODOLOGY FOR INTRODUCING NIGELLA SATIVA, INTERNATIONAL RECIPES, AND ITS BENEFITS: COOK WITH NIGELLA SATIVA, COOK BOOK" I have had the study explained to me and my questions have been answered to my satisfaction. I have read the description of this project and give my consent to participate. I understand that I will receive a copy of this informed consent form to keep for future reference.

To the best of my knowledge, I meet the inclusion/exclusion criteria for participation (described on the previous page) in this study.

 Participant's Signature

 Date

Researcher Contact Information

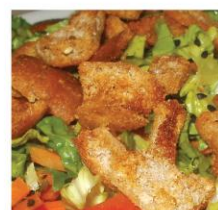
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APPENDIX G

Sample of the Cookbook

Healthy International Recipes With Nigella Sativa (*Black Seed*)



54 Recipes
From Different Countries

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First Edit: Louise Eddington

Second Edit: Spangler, Alice

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A Word From The Author

One of the author's favorite hobbies is cooking. She was raised in a family who loves to cook and create new dishes. Also her family enjoys trying new and different cuisines such as Indian, Chinese, and others. The author's mother insisted on teaching her how to cook when she was at elementary school. The author started with eggs and dessert. Coconut Macaroons was her first dessert that she made and still her favorite one. Spending time in the kitchen and cooking delicious dishes is her time of pleasure and relaxation. The best part of cooking is converting unhealthy recipes to healthy recipes. This, in turn, has created new texture, taste, and appearance.

In this cookbook, some dishes were fully created by the author, and other dishes were adapted from other recipes. All in all, the author created many new dishes by increasing or omitting some ingredients. The author started collecting ideas for recipes January 2011. She started with a small number of simple and easy recipes. Later, she collected recipes of traditional dishes.

In the summer of 2011, the author went to Saudi Arabia, her home country, and together with her mother and sisters cooked many of the dishes included in the cookbook. Between the summer of 2011 and March of 2012 the author completed cooking and photographing all the recipes included in the cookbook.

The author is a graduate student in both the Department of Family and Consumer Sciences – Nutrition and the Institute of Wellness and Gerontology from Ball State University. With her double majors in Family and Consumer Sciences and gerontology, the author has acquired wide knowledge about nutrition in general and specifically for the older population.

Introduction

Because there are no cookbooks that include Nigella Sativa in each dish, I would like to be the first author to introduce Nigella Sativa, its benefits, history, and international recipes to which the seed has been added. Nigella Sativa has been used in different regions such as Egypt, India, Middle East, and more. Nigella Sativa has been used not only as an additive to foods, but it also has been used for many different purposes such as beauty, improved health, and healing wounds. Cooking with Nigella Sativa is simple and easy; you can add Nigella Sativa to a dish at any step. You can mix Nigella Sativa with food, bake it with sweet dishes, or add it in the last few minutes to dishes like rice.

All of the recipes were prepared and tested by the author. In addition, she had the opportunity to recruit students in the Department of Family and Consumer Sciences at Ball State University who test tasted several of the recipes and provided excellent feedback.

The food tasting by the students was conducted over two days. Each day the author cooked five different dishes: Soup, salad, appetizer, main dish, and dessert. Each one of the dishes was made with and without Nigella Sativa totaling ten dishes. Following the food tasting the participants filled out a questionnaire. The questionnaire consisted of two sets of six questions regarding the food appearance, taste, and texture of each of the dishes. The first set of questions related to the dishes without the Nigella Sativa, and the second set of questions related to the dishes that were cooked with the Nigella Sativa. The data presented with those ten recipes are represented in graphs besides the dishes in the cookbook.

Nigella Sativa has various health benefits because of its highly anti-oxidant, anti-inflammatory, anti-allergic properties, and because of its healthy components such as minerals and vitamins. In addition, Nigella Sativa is nutritious because it is a source of healthy fats. In general, the recipes included in the current cookbook contain low proportions of fat. Additionally, the dishes use whole grain products, so the author named this cookbook "Healthy International Recipes with Nigella Sativa (Black Seed) – 54 Recipes from Different Countries." Because of the emphasis on the two characteristics of low fat and whole grains, the author use the term "healthy" in the title of the cookbook.

It is worth indicating that as a rule of thumb when considering healthy foods fried foods are less desirable. However, if a certain recipe calls for fried vegetables or pastries, consumers need to use a healthy type of oil such as canola oil. In addition, consumers need to use frying oil only once since heating oil many times can be harmful. Alternatively, the author recommends baking vegetables instead of frying them if the consumer needs to reduce dietary fat intake.

What is Nigella Sativa?

“Nigella sativa is an annual flowering plant, native to southwest Asia. It grows to 20–30 cm (7.9–12 in) tall, with finely divided, linear (but not thread-like) leaves. The flowers are delicate, and usually coloured pale blue and white, with 5–10 petals. The fruit is a large and inflated capsule composed of 3–7 united follicles, each containing numerous seeds. The seed is used as a spice” (“nigella sativa,” 2012).

Another definition of Nigella Sativa is “Black seed is an annual herbaceous plant, black cumin seed (botanical name is Nigella Sativa L.), or black seed for short, is believed to be indigenous to the Mediterranean region but has been cultivated into other parts of the world including the Arabian Peninsula, Northern Africa, and part of Asia” (“The Seed of.”).

Description and cultivation of the Nigella Sativa

The shape of Nigella Sativa seed is triangular, with four non regular dimensions. It is about 0.112 inch length and about 0.068 inch thick (See Figure 1). The seed is black in color, has cracked pepper taste, and has a strong pungent smell. The flower that produces the seeds contains capsule composed of about 5 follicles, each follicle containing many seeds.

Nigella Sativa plant can grow in one life cycle per year. Nigella Sativa is a summer plant. The bushes grow to 20 inches high (See Figure 2). The bush produces flowers (See Figure 3). When the flowers start blossoming, they open to air. The seed converts from light to black in color; hence it also known as black seed. It can be cultivated in-door with temperature 70°F (21°C).



Figure 1: Appearance and size of Nigella Sativa

When it is blossoming, the seedpods start to open. The farmers collect the seeds (Nigella Sativa). They may find green seeds, but those are not ready to collect. The black seeds that they collect have to be exposed to the air until the black seeds become dry. Then, the farmers remove the poor seeds. The rest of black seeds are ready to save in clean dry containers. Nigella Sativa is similar to milts, grapes seeds, and sesame ("Homepage: Black cumin," 2012).



Figure 2: Nigella Sativa bush grows up to 20 inches high

Despite the rarity of *Nigella Sativa* in the new world, this food product has been very well known in the old world for thousands of years. Recordings mention it as far back as 1400 years ago, and have been used for over 2000 years according to Natural Medicines Comprehensive Database ("Black seed," 2012). Black seed was found in the tomb of King Tutankhamen. Sample of this food was found in the Assyrian civilization that resided in Mesopotamia, which is today Iraq and also at the burial places of the old pharaohs of Egypt.



Figure3: Flower of *Nigella Sativa*

Besides using *Nigella Sativa* as a spice and for condiments, the old civilizations considered *Nigella Sativa* as part of the medicinal remedies. The health benefits of *Nigella Sativa* were well known and the seeds were used to fight illness and also to boost health and wellbeing of sickly individuals in the old civilizations. With the advent of the modern technologies, many of the old beliefs about these seeds are more scientifically proven today.

Optional Name of Nigella Sativa

Nigella Sativa has many different names all over the world (Table 1)

Table 1: Nigella Sativa name associated with country

Country	Optional Name of Nigella Sativa
English	Nigella, love-in-a-mist, fennel flower, black cumin, black caraway, black coriander, black seed English
Finnish	Neidonkuka
French	Cheveux de venus, Nigelle or Faux cumin
German	Schwarzhuemmel, later protvurz or brotchrut
Greek and Ancient	Melánthion or melásperron
Hebrew	Ketzah
Hindi and Urdu	Kalonji
Indian	Nutmeg flower
Italian	Nigela
Persian	Schonaiz
Sri Lankan	Kaladuru
African	Kolonji
Arabic	Habbatussada (or habba sooda).
Armenian	Shouhma
Egyptian	Habat et Baraka

(Albert-Matesz, 2003)

Moreover, according to Natural Medicines Comprehensive Database there are more than 23 names of Black Seed: Ajenuz, Aranuel, Baraka, Black Cumin, Black Caraway, Charnuska, Cominho Negro, Comino Negro, Fennel Flower, Fitch, Kalajaji, Kalajira, Kalonji, La Grainer Noire, Love in a Mist, Mugrela, Nigelle de Crete, Nutmeg Flower, Roman-Coriander, Schwarzkummel, Small Fennel, Toute Epice, Upakuncika. The scientific name is *Nigella Sativa* from the Ranunculaceae family (2012).

Nigella Sativa nutritional composition and benefits

Nigella Sativa contains several ingredients with potential value (Table 2).

Table 2: The chemical analysis, separation, and composition of Nigella Sativa

Fundamental Oil Composition (1.4%)	Nigella Sativa
Carvone	21.1%
Alfa-Pinene	7.4%
Sabinene	5.5%
Beta-Pinene	7.7%
P-cymene	46.8%
Others	11.5%
Fatty Acids	
Myristic Acid (C14:0)	0.5%
Palmitic Acid (C16:0)	13.7%
Palmitoleic Acid (C16:1)	0.1%
Stearic Acid (C18:0)	2.6%
Oleic Acid (C18:1)	23.7%
Linoleic Acid (C18:2)(Omega-6)	57.9%
Linolenic Acid (18:3n-3)(Omega-3)	0.2%
Arachidic Acid (C20:0)	1.3%
Saturated & Unsaturated Fatty Acids	
Saturated Acid	18.1%
Monounsaturated Acids	23.8%
Polyunsaturated Acids	58.1%
Nutritional Value	
Protein	208 ug/g
Thiamin	15ug/g
Riboflavin	1 ug/g
Pyridoxine	5ug/g
Niacin	57 ug/g
Folacin	610 IU/g
Calcium	1.859 mg/g
Iron	105 ug/g
Copper	18 ug/g
Zinc	60 ug/g
Phosphorus	5.265 mg/g
Nutritional Composition	
protein	21%
carbohydrates	35%
fats	35-38%

<http://www.nigella-sativa-seeds.com/scientific-analysis.html> ("Scientific analysis of" 2009

In addition further nutritional composition and benefits follow:

- **Essential Fatty Acids (EFAs):** Nigella Sativa seeds are a rich source of essential fatty acids (Linoleic acid and Linolenic acid). EFAs are omega-3 and omega-6 unsaturated fatty acids which cannot be synthesized in the body. They are important constituents for the generation of immune cells and for the growth and maintenance of the nervous system.
- **Essential Amino Acids (EAAs):** amino acids are building blocks of proteins. Nigella Sativa Seed contains 15 amino acids, 8 of which are essential amino acids that cannot be synthesized in the body.
- **Nigellone:** It is potent anti-histamine, which is responsible for anti-allergic and anti-asthmatic responses.
- **Sterols:** The seed is rich in sterols especially beta-sitosterol, which has anti-inflammatory and anti-cancer properties.
- **Thymoquinone and other volatile oils:** Thymoquinone is the potent anti-cancer agent found in Nigella Sativa, which was demonstrated to significantly inhibit the growth of pancreatic cancer cells, one of the most invasive cancers of man. Other volatile oils include p-cymene, limonene and carvone. All these have potent anti-oxidant and anti-inflammatory properties.
- **Immunomodulators:** These are substances that rectify imbalances in the immune system, thereby preventing the occurrence of auto-immune diseases.
- **Vitamins:** Contains many of the water soluble and fat soluble vitamins, especially carotene, the precursor of vitamin A, which is a potent anti-oxidant.
- **Minerals:** Nigella Sativa is a rich source of minerals like sodium, potassium, iron and calcium, which play a number of roles in maintaining health and vitality.
- **Monosaccharides:** Good source of monosaccharides like glucose, rhamnose, xylose and arabinose.
- **Polysaccharides:** Contains non-starch polysaccharides, which are a good source of dietary fiber – a component with a proven role in the prevention of colonic cancer. (Gilani, Jabeen & Ullah Khan, 2004) ("Primary properties of," 2005)

Nigella Sativa usage for treatment

A bottle of *Nigella Sativa* was discovered in the tomb of King Tutankhamun. Queen Nefertiti used the oil to keep her skin supple and to preserve her bronze complexion. Also to treat insect stings, the Romans applied a paste of crushed seeds mixed with vinegar and honey. Now, *nigella* is found in cough syrups, wound salves, and topical preparations (Albert, 2006). According to Chen, Tang, Bao, & Wu, "Thymoquinone (TQ) is the main constituent of *Nigella Sativa* oil, which has been traditionally used against arthritis in the Middle East" (2010). Moreover, *Nigella Sativa* (black cumin) and *Syzygium Aromarticum* (clove) oil are used for the treatment of inflammatory diseases and have antioxidant properties. "Treatment with *Nigella Sativa* and *Syzygium Aromarticum* oil of rates fed an aflatoxin-contaminated diet resulted in significant protection against aflatoxicosis. However, *Nigella Sativa* oil was found to be more effective than *Syzygium Aromarticum* oil in restoring the parameters that were altered by aflatoxin in rats" (Abdelwahhab, & Aly, 2005).

In addition, Randhawa reported that "there is a great potential in the *Nigella Sativa* and its active principles for the development of new antimicrobial drugs. Although a lot of work has been done to demonstrate these effects, a lot more is needed to develop new anti-cancer drugs. *Nigella Sativa* as seed powder did not produce any toxic effects at very high doses (28g/kg orally) in rabbits; its oil was also very safe when given orally to rats (LD50 of 28.8ml/kg) and oral thymoquinone was also found to be quite safe (LD50 of 2.4g/kg)" (2008).

Traditionally, *Nigella Sativa* has been used for a variety of conditions and treatments related to respiratory health, stomach and intestinal complaints, kidney and liver function, circulatory and immune system support, and to improve general health. It can be topically used for eczema, psoriasis, arthritis, inflammation, and scalp massage. *Nigella Sativa* is an excellent herb with many benefits, especially when it comes to maintaining a strong and healthy immune system. It is also very useful to individuals suffering from asthma and respiratory complaints, weakened or over-stimulated immune system, kidney or liver problems, digestive and stomach problems, arthritis and circulatory complaints, allergies and hay fever, and acne. *Nigella Sativa* is a safe and excellent herb that can be used by anyone. It has no known side effects and has had long history of use for several years (CalgaryIslam.com Editorial Staff, 2009).

Nigella Sativa, which is rich nutritionally, has been used as a supplement for senior people to improve their immune system and provide energy. In addition it is used for babies because it is rich in carotene which is important for infant's growth. Over all, Nigella Sativa decreased childhood illness especially during winter time ("Black seed uses," 2005)

According to Natural Medicines Comprehensive Database, people use Nigella Sativa orally for treating the following: gastrointestinal conditions including gas, colic, diarrhea, dysentery, constipation and hemorrhoids. Nigella Sativa can also treat respiratory conditions including asthma, allergies, cough, bronchitis, emphysema, flu, swine flu, and congestion. Moreover, Nigella Sativa treats hypertension, hyperlipidemia, and vermifuge. It can also be used orally for birth control, stimulation of menstruation, and increasing milk flow. Traditionally, Nigella Sativa has been used for headache, toothache, nasal congestion, and intestinal worms. It has also been used for conjunctivitis, abscesses, and parasites. In combination with cysteine, vitamin E, and saffron, Nigella Sativa is used to decrease cisplatin-induced side effects ("Black seed," 2012). In foods, black seed is used as a flavoring or spice.

Nigella Sativa and Health Related claims

Nigella Sativa has been associated with the treatment of several diseases listed below. However, the use of Nigella Sativa is not considered to be a quick solution for any of the following diseases. It strengthens the body when taken over a period of time. This is what is implied in the prophetic phrase “hold on to the use of the black seed....” (“Black seed benefits,” 2011).

- Disease Resistance: Nigella Sativa enhances antibody production. Thus the resistance of the body against bacterial, viral and fungal infections is significantly increased.
- Hair Loss: Very effective in the prevention and treatment of hair loss.
- Respiratory Illnesses: Nigella Sativa helps in the prevention and treatment of respiratory ailments like allergic rhinitis and bronchial asthma.
- Digestive System: It helps to promote digestion and has potent anti-helminthic properties, which helps in curing intestinal worms. It also enhances liver function.
- Cancers: Nigella Sativa’s anti-cancer properties are well documented. It helps prevent a number of cancers by facilitating early detection and destruction of cancer cells.
- Diabetes: Found to be effective in the regulation of blood glucose.
- Skin Diseases: Very effective in the treatment of acne, eczema and psoriasis and also in the quick healing of burns.
- Migraine: Effective in the prevention and treatment of headaches and migraine.
- Kidneys: It enhances kidney function and is an effective diuretic.
- Milk Production: It increases milk production in lactating mothers.
- Libido: Increases sexual energy and libido in both men and women.
- Sperm count: Known to enhance fertility among men by increasing the sperm count.
- Opioid Dependence: Effective in treating opioid dependence.
- Beauty: Cosmetic preparations of Nigella Sativa are good moisturizers and helps decrease wrinkles.
- Menstrual Problems: Nigella Sativa acts as a stimulant of menstruation in conditions like oligomenorrhea.

Safety and dosage of Nigella Sativa

The Food Drug & Administration considers Nigella Sativa to be safe and approved to be used as a food additive ("FDA, C.F.R. 182" 2011). Although experiments did not find any toxicity to the black cumin seeds, some experts advise to consume a maximum 75 000 mg (75grams) per day ("Black seed preparations," 2011). Moreover, the Natural Medicines Comprehensive Database addressed that the dosage for hypertension people from Nigella Sativa extract orally was 100–200 mg (0.1–0.2 grams) twice daily ("Black seed," 2012).

Adding Nigella Sativa added to foods

Nigella Sativa has been used in baked items and other popular food recipes. Although there is no evidence showing that the high temperature affects the Nigella Sativa nutritional elements, Nigella Sativa is usually added in the last step in some recipes such as rice. On other dishes, such as dessert, black seed is mixed with other ingredients and then baked. Therefore, there are different ways to add the black seed to recipes. Nigella Sativa can be added to cheese, pastries, bread, and salad. The powder of Nigella Sativa can be mixed with honey or dates. Also, Nigella Sativa can be consumed alone with water.

Side effects of Nigella Sativa

Although Food & Drug Administration considers Nigella Sativa to be safe and approved to use as a food additive ("FDA, C.F.R. 182" 2011), Nigella Sativa may cause side effects for some people. Uterus contraction can happen for pregnant women who consume Nigella Sativa. Further assessment is necessary to determine exactly how this can affect pregnancy, so it's best to avoid this substance when expecting a child. However, as studies have shown, black seed helps increase milk production during breastfeeding. Other information noted Nigella Sativa is not allowed for breastfeeding women. ("Black seed," 2011) & ("Natural medicines comprehensive," 2012).

Also, Nigella Sativa is known to adversely interact with both chemotherapy medications and radiation, according to the Memorial Sloan-Kettering Cancer Center. Since it may act like an antioxidant in the body, this herbal supplement can decrease the efficacy of standard cancer treatments (Butt, & Saltan, 2010). In addition, "As with almost any herbal supplement, there's the potential for an allergic reaction from ingestion. Unlike contact dermatitis, this allergic reaction isn't isolated to the skin" ("Natural medicines comprehensive," 2012)

Simply touching black seed may cause a red rash along the skin. This rash is often accompanied by an itching sensation. It may also result in blistering, pain or tenderness isolated to the exposure site. "It may cause swelling of the lips, tongue, throat or face as well as difficulty breathing, a tingling sensation in the mouth, hives, dizziness, nausea, vomiting, diarrhea and abdominal cramping".

There is a side effect of black seed for people who have hypertension especially if they are currently taking a diuretic or antihypertensive medication. The drop in blood pressure impedes the transport of oxygen to the brain, heart and other organs. This can result in fatigue, nausea, blurred vision, shallow breathing, dizziness, lightheadedness and loss of consciousness.

If blood pressure dips too low, it may be life threatening ("Side effects of," 2011). However, Natural Medicines Comprehensive Database mentioned that consuming *Nigella Sativa* extract 100-200 mg twice daily for 8 weeks modestly reduces systolic and diastolic blood pressure by about 2 mmHg in men with mild hypertension. The clinical significance of this finding is not clear. More evidence is needed to rate the effectiveness of *Nigella Sativa* ("Black seed," 2012).

In conclusion, *Nigella Sativa* helps to combat many illnesses and at the same time improves general health conditions. This cookbook, which contains *Nigella Sativa* in each dish, will be appropriate for all age groups. The purpose for this cookbook is to provide recipes which have the potential of improving health status of people and introducing international recipes. If you think that you are going to have a side effect because one or more risk factors, you can cook the same international recipes and just eliminate the *Nigella Sativa*.

Thank you all for your incredible support as I wrote this Cookbook.

Carrot Soup

Ingredients:

1 cup carrots, chopped into big pieces	½ teaspoon ginger
½ small onion, chopped	Salt
1 small potato, chopped	1 garlic clove, finely chopped
5 tablespoons of lentil	½ small onion, sliced
2 ½ cups of water	2 tablespoons of Nigella Sativa
¼ tablespoon of Cumin	10 parsley leaves (Italian Parsley)

Directions:

In medium pot add all the ingredients, except the sliced onion, Nigella Sativa, and the Italian Parsley.

Bring the mixture to a boil at high temperature, then reduce the heat, and cook until the carrots become soft.

Mix the vegetables in a food processor. The soup should thicken.

Fry the sliced onion until it becomes dark brown.

Add Nigella Sativa and parsley to the onion, set aside.

Return the vegetables to the pot with garlic.

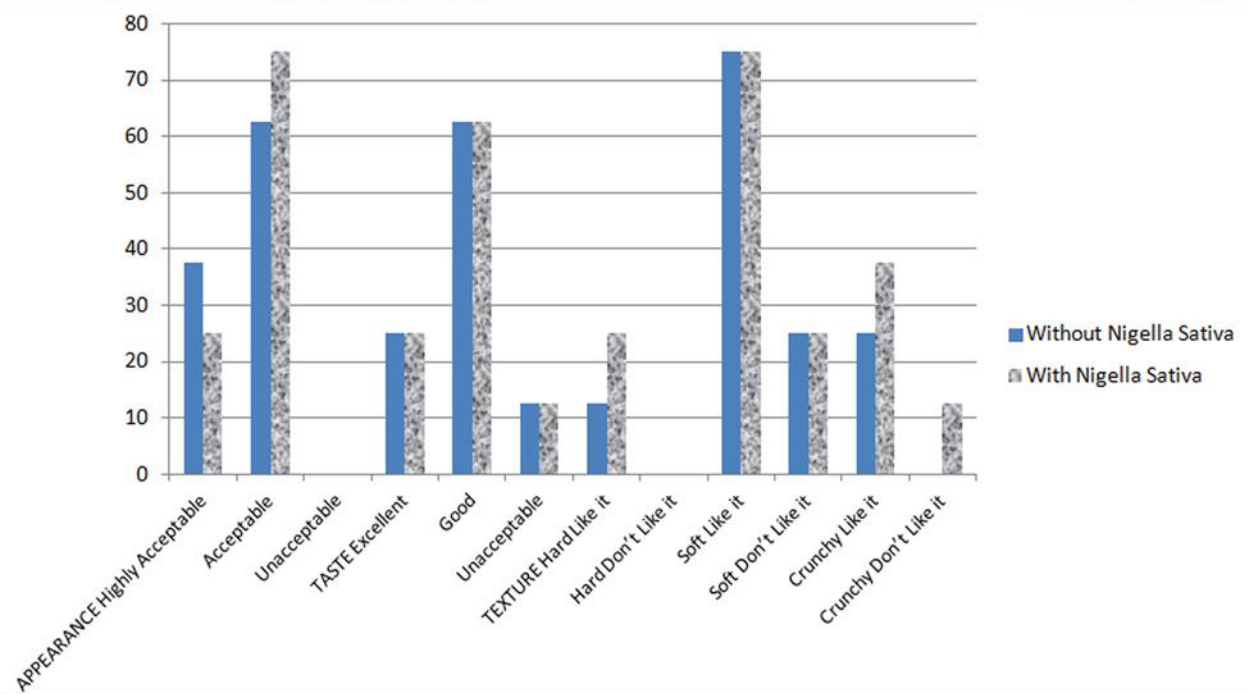
Cook on low temperature for 15 minutes.

Pour the soup evenly into bowl.

Add the onion on the top of each bowl.

Serve and enjoy!

(Bonneau, 2012)



Potato Salad (London)

Ingredients:

3 small potatoes
5 tablespoon olive oil
Salt
Ground paper

Stuffing:

2 Hot dogs, shredded
2 medium Carrots cut in small pieces
1 small can of Green peas
1 small can of corn
½ cup of mushroom, sautéed
2 tablespoons of sliced olive
2 tablespoons of Nigella Sativa
Salt
1 tablespoon of ground cumin
½ cup of Mozzarella cheese, shredded

Directions:

Preheat the oven to 350 F (175 degrees C)
Cut the potatoes in half.
Drizzle the potatoes with olive oil, salt, and freshly ground pepper.
Place them on baking sheet and bake until the potatoes are tender or for 30 minutes (You can boil the potato as well)
Scoop about one tablespoon of the half potato.
Combine all the stuffing except the mozzarella cheese, and put them inside the potatoes.
Spread the mozzarella on top and bake until the cheese melts.

Serve and enjoy!

(Baked potato salad, "2012)



Eggplant Salad (Egypt)

Ingredients:

Salad:
 1 large eggplant
 1 (6-inch) whole wheat pitas
 Olive oil spray
 Salt
 Cumin
 ½ cup lettuce, sliced
 1 cucumber, sliced
 2 cups of parsley, chopped
 1 small tomato, chopped

Dressing:

3 tablespoons of yogurt
 2 tablespoons of tahini (sesame paste)
 Salt
 Pepper
 1 clove of garlic, minced or garlic powder
 ½ a lemon freshly squeezed
 2 tablespoons of Nigella Sativa

Directions:

Preheat the oven to 350 degrees F (175 degrees C)
 Cut eggplants into ¾ to 1 inch cubes and fry until soft and golden.
 Cut the pita bread into small squares and lightly spray with olive oil, and sprinkle with salt, and cumin.
 Place on a baking sheet and bake until golden and crisp.
 Put the mixture of lettuce and cucumber at the bottom of a large dish.
 Add the parsley and tomato on the top of the parsley.
 Add the fried eggplant on top of the tomato.
 In small bowl mix the yogurt, tahini (sesame paste), salt, pepper, garlic, and lemon.
 Pour the mix on top of the salad.
 Then, add the pita bread to the salad.
 Add the Nigella Sativa on top of the salad.

Serve and enjoy!

(M. AL Herz, personal communication, March 22, 2011).



All ~ Purpose dough # 1

Ingredients:

1 tablespoon of yeast
3 cups of flour (better to use whole wheat flour)
½ cup of oil
3 tablespoons of sugar
3 tablespoons of powder milk
½ teaspoon of salt
3 tablespoons of Nigella Sativa

Directions:

Mix all together. Add water until become soft and dough does not stick to your hand.
Beat until the dough forms into a ball. If the dough is sticky, add additional flour. If the dough is too dry, add additional water.
Set aside for about 2 hours or until the dough has doubled in value.

You may use this dough for:

Pizza
Stuffed with minced meat
Chopped chicken
Cheese
Bake on 350 F (175 degrees C) for 20-30 minutes or until it becomes gold

Serve and enjoy!

(A.AL Herz, personal communication, January 28, 2011).



Vegetable pasta

Ingredients:

1 packet pasta 13.25 oz your choice (salt and 2 tablespoon oil to be boiled)	1 medium zucchini, chopped
1 medium onion, chopped	Oil for sauté
½ of green pepper, chopped	Salt
1 cup of carrot, chopped	½ tablespoon of mix ground spices (turmeric, cumin, and cardamom)
1 cup of mushroom, chopped	

Sauce:

1 can of table cream 7.6 oz	1 garlic clove, minced
1 cup of milk	3 tablespoon of cornstarch
1 cup of mozzarella cheese, shredded	3 tablespoons of Nigella Sativa
Salt	3 tablespoons of flax seeds
Black pepper	2 tablespoons of oregano

Directions:

Boil the pasta, add oil and salt. Sauté the onion until it becomes brown. Add the green pepper, carrot, mushroom, and zucchini for 5 minutes.

Add salt and spices.

In another pot mix the cream, milk, cheese, salt, black pepper, garlic and cornstarch in low temperature until thick.

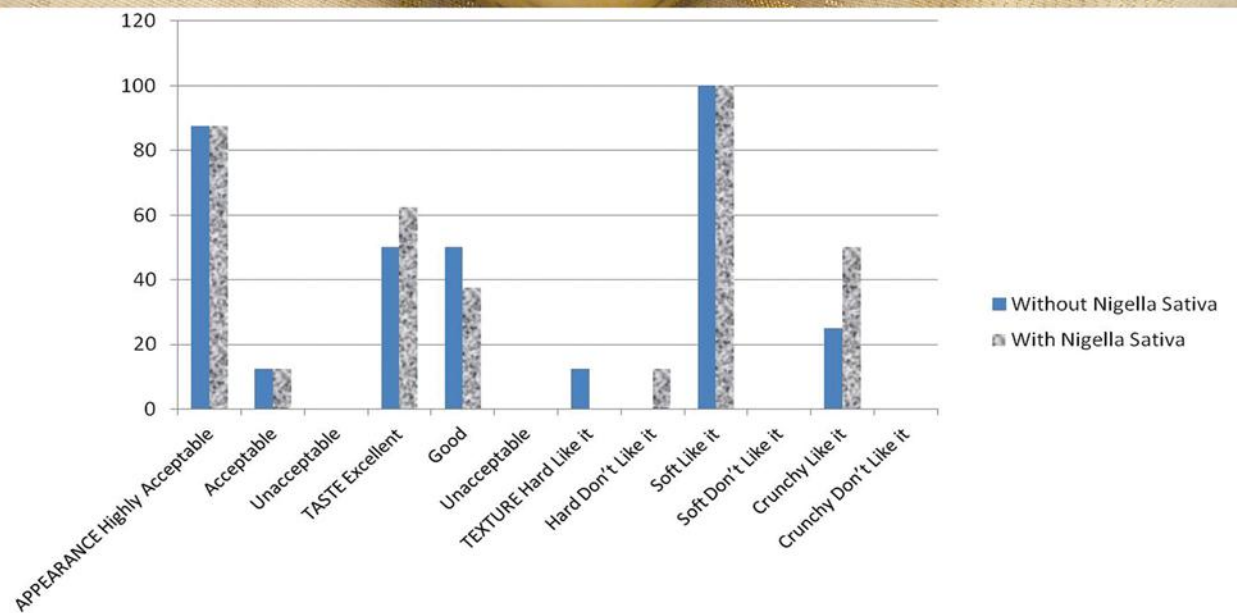
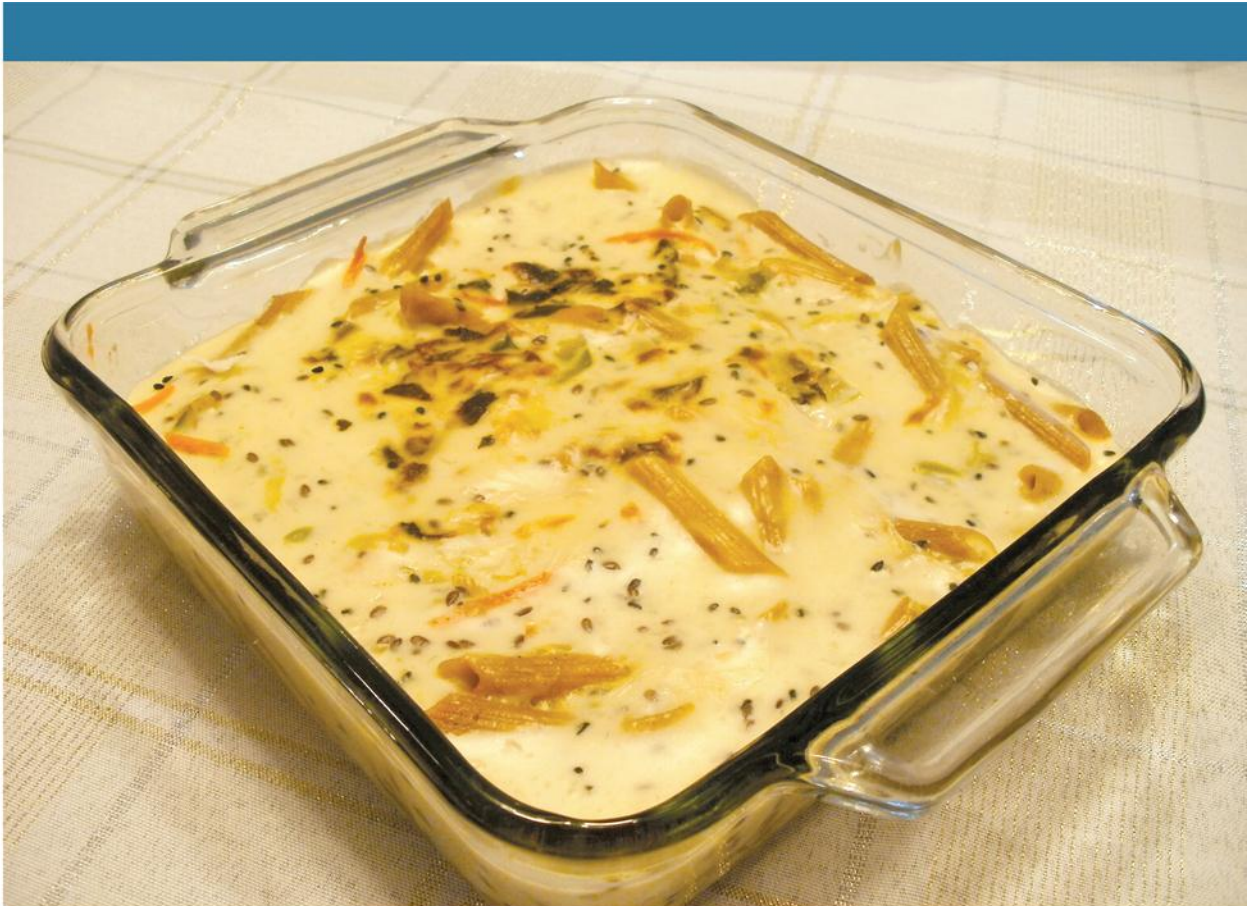
Set aside and add Nigella Sativa, flax seeds, and oregano.

In baking dish place the pasta and the vegetables.

Add the sauce on the top and bake for 20-30 minutes on 350 F (175 degrees C)

Serve and enjoy!

(De Laurentiis, 2012)



Bulgur (greesh) (Saudi)

Ingredients:

4 tablespoons oil	1 pound of cubed meat
1 medium onion, chopped	4 cups of water
Pepper	2 cups of bulgur, washed, dried, stir till
½ tablespoon of mix ground spices	become light brown
(cumin, chili pepper, clove, and	Salt
cardamom)	2 tablespoons of Nigella Sativa
3 tablespoons of tomato paste	One clove garlic, minced

Directions:

Heat oil in a pot and add onion, pepper, and spices.
 Cook for a few minutes, until the onion become light brown.
 Add tomato paste. Add the meat with the water.
 Bring water to a boil and then low the heat for about hour and thirty minutes or until the meat well done.
 Add salt.
 Then add the browned bulgur and the salt.
 Cook until the bulgur become soft low heat for an hour.
 Add Nigella Sativa and garlic and mix them with the bulgur.
 Then wait for 5 minutes and serve.

Serve and enjoy!

(M. AL Olaywi, personal communication, January 7, 2010).



Dates and Walnut

Ingredients:

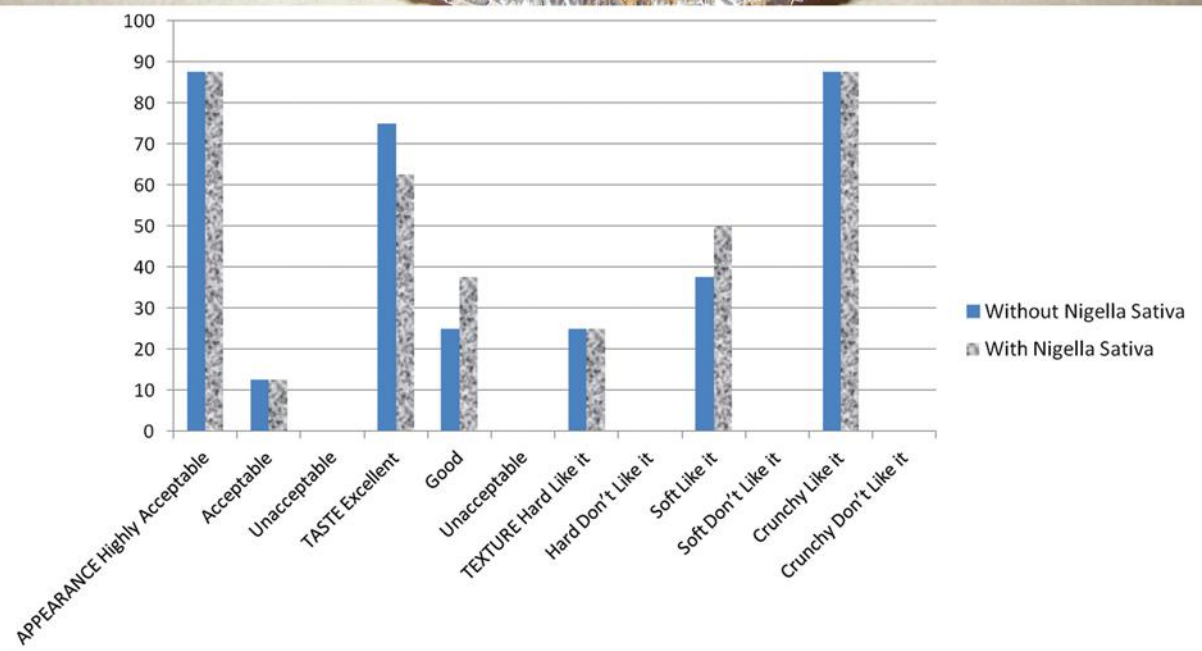
Ready Crusts 10 Inch Graham, 9 Oz Packages
8 pieces of dates without seeds
14 pieces of Walnuts cut into quarters
2 tablespoons of Nigella Sativa
¼ cup of coconut
3/4 can of milk condensed

Directions:

In the ready crust plate put the dates, walnuts, and Nigella Sativa. Then cover with coconut. Add milk on top.
Bake for 20 minutes at 350F (175 degrees C)
Cut into small squares.

Serve and enjoy!

(A.AL Herz, personal communication, Jun 10, 2011).



Reference

- Baked potato salad in roasted skins. (2012). Retrieved from http://www2.dupont.com/Teflon/en_US/carefree_cooking_magazine/recipes/200903_baked_potato_salad.html
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APPENIX H

Table of Contents - Cookbook

SOUP

- 1) Meatballs with Lentil (Iraqi)
- 2) Carrot Soup
- 3) Minced Meat Soup
- 4) Chicken Corn Soup (China)
- 5) Pasta Vegetable Soup

SALAD

- | | |
|---------------------------|------------------------------|
| 1) Potato Salad (London) | 5) Tuna Salad |
| 2) Fried Vegetable Salad | 6) Tabbouleh Salad (Lebanon) |
| 3) Pasta Salad (Italian) | 7) Fava Bean Salad |
| 4) Eggplant Salad (Egypt) | 8) Fattoush Salad (Lebanon) |

APPETIZER

- 1) Hummus with meat (Lebanon)
- 2) Vegetable cup cake
- 3) Boiled and fried potato
- 4) Egg roll (Chinese)
- 5) Mutabbal (Lebanon)
- 6) Baba Ghannouj (Lebanon)

PASTRIES

- 1) Potato pita bread (India)
- 2) Date pita bread (Saudi)
- 3) Cheese Puff Pastry
- 4) Arabic Samboosak (Saudi)
- 5) All-purpose dough #1
- 6) All-purpose dough #2
- 7) Samosas: Fried Indian Vegetable Pastries (Indian)
- 8) Chicken puff pastry
- 9) Bread roll
- 10) Cake Rusk (Saudi)

MAIN DISHES

- 1) Potato balls
- 2) Stuffed potato
- 3) Vegetable pasta
- 4) Bread with chicken
- 5) Baked kebab (Iraqi)
- 6) Baked vegetables
- 7) Stuffed grape leaves (Iraqi)
- 8) Stuffed green pepper (Syrian, Iraqi, and Saudi)
- 9) Cauliflower upside down (Palestinian, Iraqi, Saudi)
- 10) Saudi kabsa (red rice and chicken)
- 11) Bulgur (greesh) (Saudi)
- 12) Mashed Potatoes with Meat (Lebanese)
- 13) Eggplant with rice and béchamel

DESSERT

- 1) Maamoul: stuffed date (Saudi)
- 2) Luqaimat: sweet dumplings (Saudi)
- 3) Dates and walnut
- 4) Puff pastry
- 5) Date cake (Saudi)
- 6) Carrot cake
- 7) Muffin cake
- 8) Oatmeal cake
- 9) Semolina
- 10) Semolina dessert with cream
- 11) Nigella Sativa cake (USA)
- 12) Date fingers (Middle Eastern)

APPNDIX I

Comments of Study Dishes

Fava Beans Salad with Nigella Sativa

“The taste was excellent – love the chick peas”

Chicken Corn Soup with Nigellas Sativa

“Overall, this was a very tasty dish and it was my favorite out of them all”

Dates and Walnuts

“I love this dish – it is my favorite”

Vegetable Macaroni

“Really good – recipe please😊”

Baked Vegetables

“Nice variation in texture,” “Nigella Sativa fit well with the dish”

Fattoush Salad

“This salad has a bit more flavor and is not as bland as the first one [Fattoush salad without Nigella Sativa]”

Carrot Soup

“Good – more savory”

Egg Rolls

“Due to added benefits of nigella sativa – I would choose that [this] one”

Boiled and Fried Potatoes

“I like this one better- it has more flavor with the N.S. [Nigella Sativa]” “still very tasty😊”

Date Fingers

“Looks better with Nigella Sativa on top”