Black Seed Oil – an ancient remedy backed by modern research

INTRODUCTION

Black seed oil is an ancient remedy that has been used for millennia in many different cultures around the world. This review will look at the history of black seed oil and then the current state of research into its efficacy and use. This report will review the most recent articles that are themselves reviews of the current state of research on black seed oil. Not only will the articles themselves be cited, but also their source material. This report includes over 240 sources, which demonstrates the tremendous level of research now being conducted on the black cumin seed (*Nigella sativa*) and its components. It is the goal of this review to be one of the most comprehensive resources on the current state of research into this important plant.

HISTORY

Black seed (*Nigella sativa*) oil has a long and illustrious history as a seasoning and herbal medicine. It has been used as a condiment and in medicine in many cultures throughout history (Botnick et al., 2012 citing Chevallier, 1996). Some of these include but are not limited to the following:

- **Ancient Egypt:** The history of black cumin seeds (*Nigella sativa*) as a domesticated plant dates back to ancient Egypt where they were found in King Tut's tomb (Padhye, et al., 2008 citing Zohary et al., 2000).
- **The Bible:** It is mentioned for its curative properties in the Bible in Isaiah 28:25, 27 (Padhye, et al., 2008; Botnick et al., 2012).
- **Ancient Greece:** Classical Greek physicians Hippocrates, Galen, and Dioscorides all used it or referenced it (Botnick et al., 2012 citing Padhye, 2008 and Gunther, 1959; Tavakkoli et al., 2017 citing Darakhshan, 2015).
- **Muslim Medicine:** It has a long and distinguished record in Muslim medicine (Botnick et al., 2012 citing Levy, 1966). Historic Muslim physicians Avicenna, al-Kindi, Ibn al-Baytar, and al-Qazwini all used it or referenced it for many different conditions (Botnick et al., 2012 citing all of the following: al-Akili, 1993; Levey, 1961; Butt, 2010; Zaid, 2012; Ibn Sina, 1877; Ibn al-Baytar, 1874; al-Antaki, 1935). The 2015 article "Thymoquinone and its therapeutic potentials" states: "Furthermore, the Prophet Muhammad (PBUH) advised: 'Hold onto use the black cumin, because it can heal every disease except death'" (Darakhshan et al., 2015 citing Goreja, 2003).
- **Arabic Tradition:** Black cumin seeds (*Nigella sativa*) have been used in traditional Arabic folk medicine for over 2000 years (Forouzanfar et al., 2014 citing all of the following Phillips, 1992; Sayed, 1980; Burits et al., 2000; Rajsekhar et al., 2011; Merfort et al., 1997; Aboutabl et al., 1986; Warrier et al., 2004).
- **Jewish Tradition:** Jewish medicine in the Middle Ages references it. Maimonides speaks of it (Botnick et al., 2012 citing Muntner, 1966 and Rosner, 1970) and it was found in the *materia medica* from the Middles Ages in the old Cairo synagogue (Botnick et al., 2012 citing Lev, 2006).

- **Middle East and Far East:** The medicinal use of black seed has a long tradition in these regions to treat a variety of pathological conditions (Darakhshan et al., 2015 citing Salem, 2005).

These are just a few examples of the history of this powerful and versatile plant.

CURRENT SCIENCE

Although black seed oil has been around for millennia, research into its use and efficacy is ongoing and robust. It is being studied for use as a stand-alone treatment and also as a complimentary agent in conjunction with modern Western medicine, with special emphasis on the amelioration of side effects from modern pharmaceuticals. In order to facilitate a more complete understanding of *Nigella sativa* (NS) and its main therapeutic component Thymoquinone (TQ), the following categories will be explored:

- **CHEMICAL PROPERTIES**
- **SAFETY**
- **VERSATILITY**
- **ANTIOXIDANT PROPERTIES**
- **ANTIDIABETIC PROPERTIES**
- **ANTIHYPERTENSIVE PROPERTIES**
- **ANTIHISTAMINE PROPERTIES**
- **ANTIMICROBIAL PROPERTIES**
    - **ANTIBACTERIAL**
    - **ANTIFUNGAL**
    - **ANTIVIRAL**
    - **ANTIPARASITIC**
- **ANTI-INFLAMMATORY AND ANALGESIC PROPERTIES**
- **ANTICANCER PROPERTIES**
- **NEUROPROTECTIVE PROPERTIES**
- **GASTROPROTECTIVE PROPERTIES**
- **DERMATOLOGICAL EFFECTS**

Chemical Properties

NS seeds contain many different well-defined chemical components. These include fixed and essential (volatile) oil, proteins, amino acids, carbohydrates, alkaloids, organic acids, saponins, crude fibers, vitamins, and minerals (Darakhshan et al., 2015 citing Gali-Muhtasib, 2006).

The fixed oil (32-40 %) contains unsaturated fatty acids. These include: “arachidonic, eicosadi-enoic, linoleic, linolenic, oleic, almitoleic, palmitic, stearic and myristic acid as well as beta-sitosterol, cycloeucalenol, cycloartenol, sterol esters and sterol glucosides” (Forouzanfar et al.,

2014 citing all of the following: Tembhurne et al., 2014; Ahmad, et al., 2013; Staphylakis et al., 1986).

The essential (volatile) oil contains the main active ingredient, Thymoquinone, along with "thymohydroquinone (THQ), dithymoquinone, thymol, carvacrol, α and β-pinene, d-limonene, d-citronellol, p-cymene volatile oil of the seed also contains: p-cymene, carvacrol, t-anethole, 4-terpineol and longifolene" (Forouzanfar et al., 2014 citing all of the following: Tembhurne et al., 2014; Ahmad, et al., 2013; Enomoto et al., 2001).

NS is also a source of "vitamins, carbohydrates, mineral elements, fats and proteins that include eight or nine essential amino acids" (Forouzanfar et al., 2014). The different vitamins and minerals include but are not limited to Fe, Ca, K, Zn, P, Cu (Forouzanfar et al., 2014 citing all of the following: Tembhurne et al., 2014; Ahmad, et al., 2013).

NS contains phytosterols which can lower low density lipoprotein and total cholesterol levels. The major sterols in NS are β-sitosterol, campesterol, stigmasterol, and 5-avenasterol (Yimer et al., 2019-1 citing all of the following: Matthaus et al., 2011; San Mauro-Martın et al., 2018; Cheikh-Rouhou et al., 2007).

NS contains tocopherols which have free-radical scavenging potential (Yimer et al., 2019-1 citing Matthaus et al., 2011).

NS contains steroidal glycosides (Yimer et al., 2019-1 citing Mehta, 2009) which can play a role in cardiac health.

NS contains two alkaloids: isoquinoline alkaloid and pyrazol alkaloid. (Forouzanfar et al., 2014 citing all of the following: Tembhurne et al., 2014; Ahmad, et al., 2013).

Safety

The first issue of concern is the safety of *Nigella sativa* (NS) and Thymoquinone (TQ). The 2017 article "Review on Clinical Trials of Black Seed *(Nigella sativa*) and Its Active Constituent, Thymoquinone" reviewed 23 published papers to determine the safety of NS (Tavakkoli et al., 2017 citing all of the following: Amini et al., 2011; Huseini et al., 2013; Bilal et al., 2009; Datau et al., 2010; Qidwai et al., 2009; Bamosa et al., 2010; Bilal et al., 2010; El-Shamy et al., 2011; Dehkordi et al., 2008; Ghorbanibirgani et al., 2014; Valizadeh et al., 2009; Kolahdooz et al., 2014; Mohtashami et al., 2015; Barakat et al., 2013; Dirjomuljono et al., 2008; Akhtar et al., 1991; Ansari et al., 2010; Alsamarai et al., 2014; Dogar et al., 2009; Arslan et al., 2014; Ibraheim, 2002; Gelot et al., 2012; Al-Jenoobi et al., 2010). These clinical trials included both healthy volunteers and patients being treated with NS and TQ. The review concluded:

> **Taken together, NS has been established as a safe herbal product.** Nevertheless, according to the mentioned studies, some adverse effects, including nausea, bloating, and burning sensation, have been reported after administration of NS oil in functional dyspeptic patients, and a slight increase in liver and kidney enzymatic markers has been

> shown following consumption of NS oil and crushed seeds. (Tavakkoli et al., 2017, bold emphasis added)

The 2015 article "Dermatological effects of *Nigella sativa*" concluded, "Acute and chronic toxicity studies on laboratory animals have reported that N. sativa seed, its oil and thymoquinone, the most abundant and widely studied active principle, are safe, particularly when given orally" (Aljabre et al., 2015 citing all of the following: Badary et al., 1998; Mansour et al., 2001; Al-Ali et al., 2008).

Versatility

NS and TQ have been used to treat many diseases and conditions.

The 2015 article "Thymoquinone and its therapeutic potentials" states:

> It is used in ethnomedicine to treat ailments and symptoms including, asthma, bronchitis, inflammation, eczema, fever, influenza, hypertension, cough, headache, dizziness, diabetes, kidney and liver dysfunctions, nervous disorders, rheumatism, cancer and related inflammatory diseases, gastrointestinal problems, and overall for general well-being. (Darakhshan et al., 2015 citing all of the following: Salem, 2005; Ali et al., 2003; Khan, 1999)

The 2017 article "Review on Clinical Trials of Black Seed (*Nigella sativa*) and Its Active Constituent, Thymoquinone" states:

> Cell culture studies and animal models have indicated several therapeutic potentials, such as anti-cancer, antimicrobial, analgesic, antipyretic, contraceptive and anti-fertility, anti-oxytocic, anti-tussive, anti-inflammatory, and anti-oxidant potentials, for black seed and its active component TQ. NS or TQ anticancer activity has been demonstrated for blood, breast, colon, pancreatic, liver, lung, fibrosarcoma, prostate, and cervix cancer cell lines and in animal models of lung, kidney, skin, colon, and breast cancer. Black seed's antimicrobial effects include those on gram-negative and gram-positive bacteria, viruses, parasites, Schistosoma, and fungi pathogens. NS was also found to be able to relieve the symptoms of or cure patients with several diseases, such as hypertension, dyslipidemia, metabolic syndrome, diabetes, asthma, convulsion, and natural and chemical toxicities. Additionally, a suggestion was made that NS and TQ utilization could prevent many disorders, including neurobehavioral, kidney, and liver disorders. (Tavakkoli et al., 2017 citing all of the following: Ahmad et al., 2013; Abukhader, 2013; Ali et al., 2003; Amin et al., 2014; Amin et al., 2015; Banerjee et al., 2010; Butt et al., 2010; Forouzanfar et al., 2014; Havakhah et al., 2014; Hosseinzadeh et al., 2008; Hosseinzadeh et al., 2007-1; Hosseinzadeh et al., 2007-2; Hosseinzadeh et al., 2007-3; Hosseinzadeh et al., 2007-4; Hosseinzadeh et al., 2005; Hosseinzadeh et al., 2004; Hosseinzadeh et al., 2012; Javidi et al., 2016; Khan, 1999; Khan, et al., 2011; Mehri et al., 2014; Mollazadeh et al., 2014;

> Parvardeh et al., 2005; Pourbakhsh et al., 2014; Razavi et al., 2014; Salem, 2005; Shabana et al., 2013; Shafiq et al., 2014)

The 2019 article "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" states:

> The medicinal use of black cumin seeds in various traditional herbal systems is known for a wide range of ailments which include different airway disorders, for pain such as chronic headache and back pain, diabetes, paralysis, infection, inflammation, hypertension, and digestive tract related problems administered in different kind of preparations. It has also been used topically where it is applied directly to the blisters, nasal abscesses, orchitis, eczema, and swollen joints. (Yimer et al., 2019-1)

As these articles illustrate, NS and TQ have been used to treat conditions and diseases affecting almost every system in the body.

Antioxidant Properties

With the increase in oxidative stress that can accompany many diseases and conditions, antioxidants may play an important role in alleviation or reversal of oxidative stress. The 2019 article "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed eight studies on the antioxidant potential of NS and TQ, concluding, "Hence, the marked antioxidant activity of *N. sativa* and thymoquinone might be a potential newer antioxidant agent and used as essential nutrients for life for health promotion and diseases prevention." (Yimer et al., 2019-1 citing all of the following: Lupoli et al., 2018; Ozdemir et al., 2018; Mostafa et al., 2013; Sultan et al., 2015; Omidi et al., 2017; Namazi et al., 2015; Ahmad et al., 2016; Shahid et al., 2018)

The 2013 article "A review on therapeutic potential of *Nigella sativa*: A miracle herb" reviewed five animal studies to determine the antioxidant properties of NS and TQ. All of the studies established significant antioxidant effects of NS and TQ. (Ahmad, et al., 2013 citing all of the following: Umar et al., 2012; Bourgou et al., 2012; Khan et al., 2005; Al-Othman et al., 2006; Gendy et al., 2007)

Antidiabetic Properties

The 2019 article "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed eight animal and human studies on the antidiabetic potential of NS and concluded that several benefits of NS could influence this potential. These include "upregulation of endogenous antioxidants or reduction of oxidative species", its anti-inflammatory properties, "improvement of lipid profiles, increased good cholesterol," and its potential to reduce bad cholesterol and body weight. All of these combined have the potential to aid in diabetes treatment. (Yimer et al., 2019-1 citing all of the following: Daryabeygi-

Khotbehsara et al., 2017; El Rabey et al., 2017; Kaatabi et al., 2015; Rachman et al., 2017; Bamosa et al., 2015; Abdelrazek et al., 2018; Kaatabi et al., 2012)

The 2013 article "A review on therapeutic potential of *Nigella sativa*: A miracle herb" examined nine animal studies to substantiate the antidiabetic properties of NS and TQ. (Ahmad, et al., 2013 citing all of the following: Salama, 2011; Abdelmeguid et al., 2010; Kanter et al., 2009; Pari et al., 2009; Altan et al., 2007; Najmi et al., 2008; Kapoor, 2009; Bamosa et al., 2010; Benhaddou-Andaloussi et al., 2011)

Antihypertensive Properties

After reviewing seven studies on the antihypertensive potential of NS, the 2019 article "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" concluded, "Based on majority of these reports, various preparation of *N. sativa* showed a sustainable reduction of the BP in animal models and clinical studies hence can be explored as a promising basis of natural antihypertensive drugs." (Yimer et al., 2019-1 citing all of the following: Vasant et al., 2012; Badar et al., 2017; Rizka et al., 2017; Dehkordi et al., 2008; Qidwai et al., 2009; Jaarin et al., 2015; Leong et al., 2013)

Antihistamine Properties

The 2015 article "Thymoquinone and its therapeutic potentials" reviewed four studies to demonstrate the antihistamine properties of TQ while noting the anti-inflammatory properties also contributed to its antihistamine properties. (Darakhshan et al., 2015 citing all of the following: Hayat et al., 2011; Mahgoub, 2003; Al-Majed et al., 2001; Kahraman et al., 2003)

Antibacterial Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed five studies that demonstrated the antibacterial properties of several different TQ preparations from NS. TQ had broad spectrum activities against *Bacillus, Listeria, Enterococcus, Micrococcus, Staphylococcus, Pseudomonas, Escherichia, Salmonella, Serovar, Vibrio parahaemolyticus,* among others including *H. pylori*. (Yimer et al., 2019-1 citing all of the following: Abdallah, 2017; Maryam et al., 2016; Chaieb et al., 2011; Salem et al., 2010)

The 2013 article "A review on therapeutic potential of *Nigella sativa*: A miracle herb" reported on the results of five culture studies on the antibacterial properties of NS and TQ against various bacterial isolates. Both showed varying degrees of effectiveness. The method of extraction/isolation of the NS oil and TQ played a role in the rates of effectiveness. (Ahmad, et al., 2013 citing all of the following: Bakathir et al., 2011; Morsi, 2000; Hannan et al., 2008; Salem et al., 2010; Chaieb et al., 2011)

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Antifungal Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" cited five studies in establishing the antifungal properties of NS and TQ. The range of its effectiveness went from moderate to powerful depending on the fungal form being treated. Against certain strains it was stronger than fluconazole but weaker than ketoconazole. Overall it showed great effectiveness against fungal forms. (Yimer et al., 2019-1 citing all of the following: Shokri, 2016; Mahmoudvand et al., 2014; Aljabre et al., 2015; Piras et al., 2013; Taha et al., 2010)

Antiviral Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed four studies dealing with hepatitis C virus and HIV which showed the effectiveness of NS and TQ in treating these chronic viral conditions. (Yimer et al., 2019-1 citing all of the following: Forouzanfar et al., 2014; Barakat et al., 2013; Onifade et al., 2013; Onifade et al., 2015)

Antiparasitic Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed four animal studies that demonstrated a strong biocidal effects. (Yimer et al., 2019-1 citing all of the following: Assi et al., 2016; Abd El-Hack et al., 2016; Bafghi et al., 2011); Okeola et al., 2011)

Anti-inflammatory and Analgesic Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed 21 studies to determine the anti-inflammatory properties of NS and TQ. These were both animal and human studies. A wide range of conditions (from rheumatoid arthritis to asthma) and different preparations of NS and TQ were studied with good results. (Yimer et al., 2019-1 citing all of the following: Al-Ghamdi, 2001; Das et al., 2014; Pise et al., 2017; Zakaria et al., 2018; Bashir et al., 2010; Rajsekhar et al., 2011; Houghton et al., 1995; Mansour et al., 2004; Boskabady MH et al., 2008-1; Boskabady MH et al., 2008-2; Boskabady MH et al., 2010; Boskabady MH et al., 2011-1; Boskabady MH et al., 2011-2; Ikhsan et al., 2018; Saadat et al., 2015; Keyhanmanesh et al., 2013; Salem et al., 2017; Koshak et al., 2017; Gheita et al., 2012; Fathy et al., 2018; Yimer et al., 2019-2)

Anticancer Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed 15 studies examining three specific areas that the role of NS and TQ could play in cancer treatment. Charts were developed for each of these areas. First, was the role of

NS and TQ as complimentary treatment with current chemotherapies in seeking to make them more effective and to reduce their side effects. Second was in vivo studies and third was in vitro studies. The mechanisms by which NS and TQ help the effectiveness of the chemotherapies is laid out in the first chart. The mechanisms by which NS and TQ effect the different cancer markers is laid out in the second two charts. (Yimer et al., 2019-1 citing all of the following: Schneider-Stock et al., 2014; Arafa et al., 2011; Periasamy et al., 2016; Ng et al., 2011; Effenberger et al., 2010; Zhang M et al., 2018-1; Zhang Y et al., 2018-2; Kou et al., 2018; Kou et al., 2017; Elkhoely et al., 2015; Shahin et al., 2018; Kabil et al., 2018; Salim et al., 2003; Gali-Muhtasib et al., 2008; Salim, 2010)

Neuroprotective Properties

The 2019 article, "*Nigella sativa L.* (Black Cumin): A Promising Natural Remedy for Wide Range of Illnesses" reviewed 21 studies exploring the potential for NS and TQ to be used in five specific neurological areas: Alzheimer's disease, Parkinson's disease, Depression and anxiety, Epilepsy, and Opioid Dependence and Tolerance. The treatment protocol is listed along with the findings. The article concluded, "Based on the wide ranging neuropharmacological effects, black cumin seed, its oil, and the active principle thymoquinone (TQ) can be explored as a promising natural remedy for improvement of numerous neurological disorders." (Yimer et al., 2019-1 citing all of the following: Perveen et al., 2014; Wilson et al., 2015; Abulfadl et al., 2018; Hosseini et al., 2015; Sahak et al., 2016; Sharaf et al., 2014; Sayeed et al., 2013; Alhebshi et al., 2013; Radad et al., 2009; Sedaghat et al., 2014; Alhebshi et al., 2014; Norouzi et al., 2016; Bano et al., 2014; Gilhotra et al., 2011; Bin Sayeed et al., 2014; Seghatoleslam et al., 2016; Abdollahi Fard et al., 2013; Mostafa et al., 2012; Akhondian et al., 2011; Abdel-Zaher et al., 2010; Sangi et al., 2008)

Gastroprotective Properties

The 2013 article "A review on therapeutic potential of *Nigella sativa*: A miracle herb" examined five animal studies to determine the efficacy of NS and TQ on the gastrointestinal tract. The studies showed marked protective and restorative effects of both on the gastrointestinal tract. (Ahmad, et al., 2013 citing all of the following: Al Mofleh et al., 2008; El-Abhar et al., 2003; Khaled, 2003; Tayman et al., 2012; Lei et al., 2012)

The 2015 article "Thymoquinone and its therapeutic potentials" reviewed seven studies to ascertain the protective effects of TQ on the gastrointestinal tract. The article concluded, "Altogether, these studies confirm the gastroprotective effects of TQ in animal models and this makes it possible to use TQ as a natural drug against gastrointestinal defects in human(s)." (Darakhshan et al., 2015 citing all of the following: El-Abhar et al., 2003; Magdy et al., 2012; Zaman et al., 2004; Kapan et al., 2012; Mahgoub et al., 2003; Kanter et al., 2005; Kahraman et al., 2003)

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The 2017 article "Review on Clinical Trials of Black Seed (*Nigella sativa*) and Its Active Constituent, Thymoquinone" reviewed 3 studies that showed NS helped in the treatment of Celiac disease, Dermatitis herpetiformis (a complication of celiac disease), and dyspepsia. (Tavakkoli et al., 2017 citing all of the following: Osman et al., 2012; Osman et al., 2013; Mohtashami et al., 2015)

Dermatological Effects

The 2015 article "Dermatological effects of *Nigella sativa*" reviewed studies involving the application of NS and TQ to the skin to determine its dermatological potential. The article reviewed studies in many different areas as these relate to the skin. Here is a list of the main areas:

- **Antibacterial –** Seven studies were reviewed to determine the antibacterial properties of NS as a standalone treatment and in conjunction with antibiotics as it relates to skin. (Aljabre et al., 2015 citing all of the following: Topozada et al., 1965; El-Fatatry, 1975; Hanafi et al., 1991; Rafati et al., 2014; Morsi, 2000; Mashhadian et al., 2005; Salman et al., 2005)
- **Antiviral –** Three studies were reviewed were looking at the antiviral properties of NS. (Aljabre et al., 2015 citing all of the following: El-Kadi et al., 1986; Ma et al., 1994; Salem et al., 2000)
- **Antifungal –** Ten studies were reviewed looking at the history and efficacy of NS as an antifungal. (Aljabre et al., 2015 citing all of the following: Hanafi et al., 1991; Khan et al., 2003; Al-Jabre et al., 2003; Alqorashi et al., 2007; Randhawa et al., 2005; Aljabre, 2005; Kader et al., 1995; Aljabre et al., 2005; Taha et al., 2010; Elfadil et al., 2015)
- **Antiparasitic –** Three studies were reviewed were looking at the antiparasitic properties of NS. (Aljabre et al., 2015 citing all of the following: Bafghi et al., 2011; Mohamed et al., 2005; Mahmoud et al., 2002)
- **Wound Healing –** Three studies were reviewed to demonstrate the wound healing properties of NS. (Aljabre et al., 2015 citing all of the following: Ahmed et al., 1995; Abu-Al-Basal, 2011; Ab Rahman et al., 2014)
- **Psoriasis –** A 2012 *in vivo* and *in vitro* study was reviewed to show the potential of NS to treat psoriasis. (Aljabre et al., 2015 citing the following: Dwarampudi et al., 2012)
- **Acne Vulgaris –** One human and two animal studies were reviewed and indicated the potential for NS and TQ to treat acne. (Aljabre et al., 2015 citing all of the following: Abdul-Ameer et al., 2010; Kundu et al., 2013; Houghton et al., 1995)
- **Allergic reactions –** Three studies were reviewed noting the ability of NS to counter allergic reactions. (Aljabre et al., 2015 citing all of the following: Chakravorty, 1993; El-Dakhakhany, 1982; El Gazzar et al., 2006)
- **Eczema –** A 2013 study on hand eczema was reviewed to show NS was as effective as Betamethasone and more effective than Eucerin in treating eczema. (Aljabre et al., 2015 citing the following: Yousefi et al., 2013)

- **Skin cancer –** Six studies were reviewed to determine the potential of NS and TQ for treating skin cancer. (Aljabre et al., 2015 citing all of the following: El-Kadi and Kandil, 1986; Salomi et al., 1991; Mabrouk et al., 2004; Gali-Muhtasib et al., 2004; Ivankovic et al., 2006; Das et al., 2012; Ahmad et al., 2013)

The article concluded, "The published original research articles on the effects of *N. sativa* and its ingredients strongly indicate its pharmacological potential in dermatology" (Aljabre et al., 2015).

Potential Benefits

Based on its history over several millennia and on the current state of research into its medicinal potential, the black cumin seed oil (*Nigella sativa*) found in Black Seed Oil™ can be expected to possess the following benefits:

- **NUTRIENT DENSE**
- **SAFE**
- **VERSATILE**
- **ANTIOXIDANT POTENTIAL**
- **ANTIDIABETIC POTENTIAL**
- **ANTIHYPERTENSIVE POTENTIAL**
- **ANTIHISTAMINE POTENTIAL**
- **ANTIBACTERIAL POTENTIAL**
- **ANTIFUNGAL POTENTIAL**
- **ANTIVIRAL POTENTIAL**
- **ANTIPARASITIC POTENTIAL**
- **ANTI-INFLAMMATORY POTENTIAL**
- **ANTICANCER POTENTIAL**
- **NEUROPROTECTIVE POTENTIAL**
- **GASTROPROTECTIVE POTENTIAL**
- **DERMATOLOGICAL POTENTIAL**

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