



PHARMACOLOGICAL AND ETHNOBOTANICAL STUDY OF *NIGELLA SATIVA* LINN. (KALONJI) WITH RESPECT TO SEVERAL DISEASES

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Abstract

Nigella sativa Linn (Ranunculaceae), commonly known as black seed or black cumin, is used in folk (herbal) medicine worldwide to treat and prevent a number of diseases and disorders such as asthma, diarrhea, cancer, and dyslipidemia. Black Cumin (seeds) was added as food flavors. It is carminative, stimulating, diuretic, emmenagogue, galactagogue and used as a medicine for puerperal fever. This is often used professionally for skin disorders. Seeds contain an essential oil that is useful for coughing and bronchial asthma. Seeds have antibacterial resistance. This is a herbal component to a purgative. The decoction of seeds offered directly after delivery increases the secretion of milk. This is an effective treatment for dyspepsia, lack of appetite, nausea, and intermittent fever. It is also beneficial for amenorrhea and dysmenorrhea. Locally used, it prevents painful inflammation of the hands and legs. Black cumin (seeds) contains both essential oil and high medicinal value fatty oil, Saponin is present too. The paper discusses the key Ethnomedic product studies, Pharmacological and Toxicological applications or products of *Nigella sativa* and its constituents.

Keywords: *Nigella sativa*, Pharmacological and Ethnobotanical uses and nutritional aspects.

Introduction

Seeds of *N. sativa* include fixed fats, proteins, alkaloids and saponin. The essential oil thymoquinone is a vital component of plant biological activity. Crude remove pharmacological activities from plants, including those related to nephrotoxicity induced by disease or pollutants and other active ingredients such as volatile petroleum and thymoquinone. The seed or oil has anti-inflammatory, analgesic, antipyretic, antimicrobial and anti-allergic, antioxidant, antihistaminic, anti-cancerous, antiviral, anti-asthmatic and antihypertensive (Agarwal *et al.*, 1979). The active component is oil-reducing blood pressure (Omega-6). In treating diarrhea, asthma and hypertension, Nigellone, a part of the seeds of *Nigella sativa*, may be of use. Its black seeds have a very distinct flavor and are used to flavor baked goods and as a spice in food preparation (Jamshidi-Kia *et al.*, 2018).

Nigella sativa is carminative, stimulant, diuretic, emmenagogue, galactagogue and used for puerperal fever. The seeds contain essential oil, which is useful in cough and bronchial asthma. It is an annual flowering plant native to southwest Asia. It grows up to 20-30 cm, with fine linear (but not thread-like) leaves. Large flowers, usually light blue and white, with 5-10 petals.

Importance of *Nigella sativa* in the Muslim community by the references of the holy Quran

All plants on this earth are important in one way or

another and reflect the importance of ALLAH. The plants quoted in the Heavenly Quran have exceptional criticality, not because of their properties and uses, but because of their importance to their occasions. Realizing these plants is essential to understanding various Quranic sections.

1. The Prophet stated, "Nigella sativa (Habb: Sauda) is the remedy for all maladies aside from Saam and "Saam is passing." (Described Abu Huraira; Bukhari, Muslim, Ibn Maja, Mashad Ahmad).
2. The messenger of ALLAH said, "Black Cumin is the cure for all ailments except death" (tradition; Saam), (Narrated Burda; Masha Ahmed).
3. Apostle of ALLAH said, "Make Black Cumin obligatory (its use as a medicine) for you as it's a cure for every disease except Saam" Someone asked, "What is Saam?" He said "Death" (Narrated Ayesha (RA); Mashad Ahmed; Abdullah Bin Umar; Ibn Maja; Abu Huraira; Trimidhi).

In addition to the traditions mentioned above, many others have identified Black Cumin as a medicine of great value. Several of the books on "Prophet Mohammad's Life (PBUH) (Sirat al-Nabi)" recorded regularly making Black Cumin with honey (Farooqi, 2010). *N. sativa* seeds are popular Arab medicine. These treat hypertension, flatulence, pneumonia, kidney stones and stomach pain. This is also thought to strengthen the mother during childbirth; facilitate balance, urination and liver function; assist indigestion; remove stones in the kidneys and increase intelligence. The herb is of

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considerable significance in Islam and is considered one of the best possible methods of medicinal healing. Prophet Mohammed (PBUH) once said that the black seeds might heal all illnesses except death (Farooqi, 2011). The present paper deals with the study of *N. sativa* from its Taxonomy & Bio-medicinal importance and its overall nutritive importance also.

Materials and Methods

The data for current investigation were collected from the first-hand information through NBRI (National Botanical Research Institute), Lucknow and Herbal garden of Jamia Hamdard, Delhi. The study was carried out from 2018 to 2020 using a standard ethnobotanical research approach through field surveys using pre-structured questionnaire methods. Traditional healers who practice herbal treatments for human ailment over an extended period were considered as a source of data for this study. Detailed information about the availability of different products of *Nigella sativa* and people's preferences of its uses in various Unani medicines used mostly by different communities. Personal interviews were conducted by some Hakim, Vaidya, Unani and Ayurvedic physicians. The information about the traditional knowledge of *Nigella sativa* also gathered from the available literature in the university library and from the websites.

Pharmacological action of *Nigella Sativa*

Nigella sativa has been broadly concentrated over the most recent couple of decades and studies show point-by-point that it has certain important properties and pharmacological activities. To recover the enormous structure with various subtopics, we utilized PubMed, Science Direct, Scopus Google Researcher and diminish creating utilizing words, for example, "*Nigella sativa*" or "Diminish cumin" or "Dull seed" and a few states of burden.

1. Antioxidant Activity: Oxidative pressure and escalation in the degrees of free radicals are among the main focal markers related with a few dynamic neurotic conditions including neurological confusion, malignant growth, maturing and endocrine ailment. Until now, there has been developing significance in the helpful alternative of restorative plants as normal cell reinforcements. Among the different normally happening therapeutic plants, *N. sativa* has been accounted for its dynamic cell reinforcement exercises of in-vivo and in-vitro contemplates.

2. Antidiabetic Activity: Indeed, even with the revolution in diabetes mellitus organization, review for innovative authorities continues as the new developed administrators have specific repressions. The combination of dull cumin seed to streptozotocin-induced diabetic rodents for one month showed a crucial reduction in fasting plasma glucose, serum MDA, interleukin-6, and immunoglobulin A, G and M while huge expansion of endogenous malignant growth anticipation was observed in synthetic concoctions; grass, glutathione-S –

transferase and catalase verbalization.

3. Antihypertensive Activity: Specific antihypertensive masters were clinically used to regulate hypertension and associated comorbid conditions. In any case, the magnitude of these managers is simply in 40-60% of hypertensive patients, and every now and then a combination of two blood cutting masters from separate antihypertensive groups is needed to achieve the perfect results. That, in the long run, reduces the risk of untoward consequences and raises care costs. Some homegrown stuff, for example, *N. sativa* seeds used and believed to have useful heartbeat (BP) results.

4. Neuroprotective Effects: Neurological turmoil, for example, sadness, is among the most well-known ailments all around as an Ethnomedicinal employments of *Nigella sativa*.

5. Anti-Inflammatory and Analgesic Effects: Bothering has a fundamental movement in different sicknesses, for example, cystic fibrosis, rheumatoid joint exacerbation, osteoarthritis, asthma, sensitivities and danger, which all are associated with outrageous and steady torment. The energy easing experts all things considered fuse classes of medications that produce preposterous inauspicious impacts, for example, gastric ulcer, bone marrow misery, water and salt help, coming to fruition because of expanded use. Therapeutic flavors, including dull cumin, may be a typical wellspring of novel regular upsets that are more secure and with fewer symptoms.

6. Antimicrobial Activity: Among the awakening therapeutic plants, diminish cumin is the one that exhibited strong antibacterial, antifungal, antiviral, and threatening to parasitic activities. The ever-expanding mental mistreatment of microbial afflictions and antimicrobial-safe microorganisms requests for a general battle to find for novel approaches that may be grounded on the select things.

Ethnomedicinal Uses of *Nigella Sativa*

1. Asthma, Hack and Sensitivity: For the treatment of these illnesses, the accompanying technique is received. Take some warm water, one spoon nectar and 2.5 ml *N. sativa* oil. Combine and drink toward the beginning of the previous day breakfast, also after supper around evening time.

2. Diabetes (Sugar): To cure this infection, the procedure is given a handle on. Take one cup of decoction (Dull Tea), blend 2 to 5ml of *N. sativa* oil and enjoy it in the morning before hitting the bed. Keep up main decent ways of smooth food things, particularly seared things. Start therapy with any such allopathic care. Test sugar after 20 days. After forty days, take sweet to test your sugar level, off chance it's regular and avoid medication.

3. Polio and Paralysis (Laqwa): Take one cup of warm tea, add one spoon nectar and 2.5 ml *N. sativa* oil, and drink twice daily. Moreover, in two spoons, milk contains three

drops of black cumin oil and uses this mix three times a day. Treatment can take forty days. This therapy is also useful for weight-evacuation.

4. **Memory Power:** For expand cerebrum limit, take 10-gram mints and shower it with water, and utilize 2.5 ml *N. sativa* oil twice regular. Care twenty-one days.
5. **Renal Coli (Kidney Pain):** Take 250 grams *N. sativa* seeds pound it and take one cup of nectar, join. Out of this mix take two spoons of mix and incorporate half cup of water and 2.5 ml *N. sativa* oil should use in step by step sustenance or its oil once consistently. Treatment may continue for twenty-one days.
6. **Freshness and Shininess:** Take one olive oil spoon, blend in with 2 to 5 ml *N. sativa* oil and rub it on the body parts. Clean with chemical water following 60 minutes. Multi-week treatment can continue.
7. **General Weakness:** Take the *N. sativa* leaves and heat up this with water at that point take this water, *N. sativa* oil and one spoon nectar, combine and use it once in a day. General shortcoming and different ailments will be evacuated gradually.
8. **Treatment of Swelling of Vital Organ:** Wash them with chemical water and flush. Rub *N. sativa* oil on the broaden divide modestly and hold it for what it merits the following morning. Treatment can take three days.
9. **Blood Pressure:** In any hot drink, tea/coffee, incorporate 2.5 ml *N. sativa* oil and use this mix two times each day. Similarly eat two cloves of garlic consistently.
10. **Falling of Hair Rashly:** Rub lime juice on the head and leave it for fifteen minutes, by then wash it with concoction in the wake of getting dried rub *N. sativa* oil wherever all through the head. Falling of hairs will be controlled inside seven days. Treatment may continue for multi week.
11. **Piles, Oozing of Blood, Constipation:** Take 2.5 ml *N. sativa* oil blended in with one cup decoction (Dim Tea) twice a morning (before breakfast and night). Keep up key good ways from hot things.
12. **Skin Disease (White/Black Spots):** In one cup of vinegar include 2.5 ml *Nigella* and apply that on the influenced region before resting and clean up in the first part of the day. Treatment may proceed until you get help.
13. **Round Worms and Tape Worms in the Stomach:** Take half-spoon vinegar joined with 2.5 ml *N. sativa* oil and use it twice ordinary and eat some coconut bits. Dodge sugar stuff.
14. **Cracked Hand and Foot with Oozing Blood:** Take one glass of sweet lime (Mausambi) squeeze and include 2.5 ml *N. sativa* oil and utilize this blend two times every day (toward the beginning of the prior day breakfast and the prior night heading to sleep). Keep away from chicken, egg, brinjal, additionally utilize natural treatment produced using *N. sativa*.
15. **Hemoglobin loss (Anemia) and Ulcer in the Intestine:** take most of the basil, cover with salt, bubble it and make the tea, and use 2.5 ml *N. sativa* oil twice a day (once at the beginning of the day and second at night). Using curd for milk regularly. Treatment can take 21 days.
16. **Jaundice:** Take one cup of milk, include 2.5 ml *N. sativa* oil and utilize this blend two times every day (once toward the beginning of the day and once after the supper). Treatment may proceed for multi weeks. Keep away from greasy and harsh edible things.
17. **Burning Sensation in Stomach:** Take one sweet lime (Mausambi) squeeze and include 2.5 ml *N. sativa*. Utilize this blend two times every day (in the first part of the prior day breakfast and the previous night heading to sleep). Treatment may proceed for ten days. Avoid hot stuff items, chilly and sour food items.
18. **Obesity:** Blend 5 ml *Nigella sativa* oil with two spoons of nectar in lukewarm water and take two times every day. Abstain from taking rice.
19. **Dandruff:** Blend 10 grams of Kalonji oil, 30 grams of Olive oil, 30 grams of Mehandi powder, heat for some time. Apply after the glue gets cool.
20. **Sound Sleep:** After supper, take 2.5 ml *Nigella sativa* oil with one spoon of nectar, the individual will get sound rest.
21. **From Head to Toe:** Blend one cup of pressed Orange in half teaspoon *N. sativa*, before bed, then at rest. Four-month therapy.
22. **Psoriasis:** Blend juice of six limes in with 50 grams of *N. sativa* oil together. Rub on the influenced places.
23. **Asthma:** Blend (press) salts, 1 to 2 ml *N. sativa* oil with unadulterated ghee, apply or rub on chest and throat simultaneously.

Scientific Research

N. sativa has accomplished a few works on its enemy of malignant growth properties, especially bosom disease with promising outcomes. Dull cumin oil produces Nigellone, which shields guinea pigs from bronchial fit achieved by histamine. *N. sativa* was accounted for to lessen rodent kidney math yield. The nature of anti-tumor sterol beta-sitosterol attributes its widespread use in the treatment of abscesses and tumors of the stomach, skin and liver. This includes over 100 products, including natural oils, trace elements, minerals and enzymes.

Advances in organic chemistry, metabolism, pharmacology and microbiology have led to the discovery of many successful principles in *N. sativa*, Nigelline,

Nigellidine, Nigellimini-N-Oxide, Thymoquinone, Thymol, Arvacrol, Oxy-coumarin, 6-methoxy-coumarin, and 7-hydroxy-coumarin, Alpha-hedrin, Steryl glucoside, as well as the high amount of flavonoids, tannins and essences. In addition to the beneficial effects of *N. sativa* seed and oil on many infectious diseases in veterinary medicine, the introduction of *N. sativa* seeds cake to buffalo and lamb feed improves their body weight and reproductive performance; and the application of its seed to boiler chick food has improved their immunity and effectiveness. The initiation of HIV infection and the introduction of immune suppression, e.g. for organ transplantation or cancer chemotherapy, increased the predisposition to infectious bacterial, viral and fungal infections, despite the lack of studies on the operation of *N. sativa* against fungi and the increasing need for the production of new antifungal drugs. A few experiments have been performed at King Faisal University (KFU), Dammam, Saudi Arabia on the antifungal impact of *Nigella sativa*.

Aspergillus niger, *Fusarium solani* and *Scopulariopsis brevicaulis* genera of dermatophytes: Trichophyton, Epidemophyton and Microsporum extracted from clinical cases were found to inhibit any of the extracts of *N. sativa* seeds and its derivative thymoquinone, equally considering the production of resistance to currently active helicobac antibiotics. In addition to the antioxidant and anti-cancer activities of *Nigella sativa*, further research is also required.

Discussion

The entirety of the above recorded employments of the plant *Nigella sativa* is a potential objective for more examination and improvement in the field of Ethnobotany, *in vivo* and *in vitro* investigations shows that the segments of *Nigella sativa* can have insusceptible modulatory, cancer prevention agent, antiparasitic and hepatoprotective effect. A few reports likewise show that it has hostile to malignant growth impacts. Yield constituents, including thymoquinone, diminished development and tumor size in rodents (Solati *et al.*, 2014; Herlina *et al.*, 2017; Isik *et al.*, 2017). For another study, *N. sativa* oil was shown to have a beneficial impact on radiation-induced tissue hurt. There is a deficiency of clinical preliminaries with such signs. Nigellone, a compound of *Nigella sativa* oil, can be useful in the treatment of looseness of the bowels, asthma and hypertension. It may likewise lighten side effects of unfavorably susceptible responses, albeit hypersensitive contact dermatitis related with effective utilization has been reported (Haseena *et al.*, 2015).

Adverse effects are uncommon, but large concentrations of *N. sativa* oil have induced liver and kidney harm in rats. *Nigella sativa* seed is high in healthy benefit. Monosaccharides as glucose, rhamnose, xylose and arabinose are available in dark seeds (Ramadan, 2007; Benkaci-Ali *et al.*, 2013; Ghahramanloo *et al.*, 2017). This involves a non-starch polysaccharide parcel that is a significant wellspring of dietary fiber. It is wealthy in unsaturated fats, especially in

saturated and basic unsaturated fats (linoleic and linolenic acids). Fifteen amino acids make up *Nigella* seed's protein, including eight of nine essential amino acids. Important amino acids cannot be absorbed into our body's sufficient aggregates and are removed from our feeding regimen. It contains Arginine, essential for children's development. Mixture work has demonstrated that *Nigella sativa* seeds create carotene, which is changed over to supplement A by the liver. It's also a calcium, magnesium, sodium, and potassium well (Takruri and Dameh, 1998; Hassanien *et al.*, 2015; Mamun and Absar, 2018). Provided the life form distinctly in limited numbers, the main function of these segments is to fill in various protein capacities as essential cofactors.

Recommendation

From the above discussion it is clear that, the Ethnomedico importance of *Nigella sativa* cannot be ignored. The plant bears much potential to serve the humanity. Although a good amount of work has been done in this field but still a lot research work is needed. The local people as well as the government should work hand in hand for the promotion of *Nigella sativa* as it contains enormous Ethnomedico importance. At the same time a detailed scientific evaluation of the *Nigella sativa* is also demand of the time.

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References

- Agarwal R, Kharya MD and Srivastava R (1979). Antimicrobial Anthelmintic Activities of the Essential oil *Nigella sativa* Linn. *Indian J. Exp. Biol.*, **17**: 1264-1265.
- Benkaci-Ali F, Akloul R, Boukenouche A and Pauw ED (2013). Chemical composition of the essential oil of *Nigella sativa* seeds extracted by microwave steam distillation. *Journal of Essential Oil Bearing Plants*, **16(6)**: 781-794.
- El-Kadi A and Kandil O (1986). Effect of *Nigella sativa* (the black seed) on the immunity proceeding of the 4th International Conference. On Islamic Medicine, Kuwait. *Bull Islamic Med*, **4**: 344-348.

- Farooqi MIH (2010). Medicinal Plants in the traditions of Prophet Mohammad (PBUH) (Prophetic Medicine). Turkey. *Ankara Üniversitesi Eczacılık Fakültesi Dergisi*, **41(1)**: 34-41.
- Farooqi MIH (2011). Plants of the Quran.
- Ghahramanloo KH, Kamalidehghan B, Akbari Javar H, Teguh Widodo R, Majidzadeh K and Noordin MI (2017). Comparative analysis of essential oil composition of Iranian and Indian *Nigella sativa* L. extracted using supercritical fluid extraction and solvent extraction. *Drug Design, Development and Therapy*, **11**: 2221-2226.
- Haseena S, Aithal M, Das KK and Saheb SH (2015). Phytochemical analysis of *Nigella sativa* and its effect on reproductive system. *Journal of Pharmaceutical Sciences and Research*, **7(8)**: 514-517.
- Hassanien MFR, Assiri AMA, Alzohairy AM and Oraby HF (2015). Health-promoting value and food applications of black cumin essential oil: An overview. *Journal of Food Science and Technology*, **52(10)**: 6136-6142.
- Herlina, Aziz SA, Kurniawati A and Faridah DN (2017). Changes of thymoquinone, thymol and malondialdehyde content of black cumin (*Nigella sativa* L.) in response to Indonesia tropical. *Journal of Biosciences*, **24(3)**: 156-161.
- Isik S, Kartal M and Erdem SA (2017). Quantitative analysis of thymoquinone in *Nigella Sativa* L. (Black Cumin) seeds and commercial seed oils and seed oil capsules from
- Jamshidi-Kia F, Lorigooini Z and Amini-Khoei H (2018). Medicinal plants: Past history and future perspective. *Journal of HerbMedPharmacology*, **7(1)**: 1-7.
- Mamun MA and Absar N (2018). Major nutritional compositions of black cumin seeds cultivated in Bangladesh and the physicochemical characteristics of its oil. *International Food Research Journal*, **25(6)**: 2634-2639.
- MOHAMMEDIA PRODUCTS (Proprietary Unani Medicine).
- Ramadan MF (2007). Nutritional value, functional properties and nutraceutical applications of black cumin (*Nigella sativa* L.): An overview. *International Journal of Food Science & Technology*, **42(10)**: 1208-1218.
- Solati Z, Baharin BS and Bagheri H (2014). Antioxidant property, thymoquinone content and chemical characteristics of different extracts from *Nigella sativa* L. seeds. *Journal of the American Oil Chemists' Society*, **91(2)**: 295-300.
- Takruri HRH and Dameh MAF (1998). Study of the nutritional value of black cumin seeds (*Nigella sativa* L.). *Journal of the Science of Food and Agriculture*, **76(3)**: 404-410.