

A REVIEW ON NIGELLA SATIVA**Leena Nag***

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ABSTRACT

Nigella (Nigella sativa L.) can also be an annual angiosperm belonging to the Ranunculaceae and may be the most widely used phytomedicine in the world. Excessive fashion in various traditional medicine systems. Nigella seeds and their oil have been used extensively for many years to treat various ailments. It has now been discovered that a large number of potentially productive and productive activities are born out of its deteriorating oils and proteins. Most of the therapeutic properties of this remedy are due to the presence of thymoquinone and its isomers, which are the main active compounds of the flexible nigella oil. As such, it has a very low level of toxicity its seeds are also used in food as a flavoring agent, which is included in breads and cucumbers. Seeds and oils have an extended history of cultural use in

various medicinal and dietary systems. Nigella seeds are widely used to treat various ailments and diseases. In Islamic literature, only one type of medicine is considered collectively. it has been recommended for regular use in Tibb-e-Nabwi (Prophetic Medicine). It is widely used as antihypertensive, liver tonics, diuretics, digestive, anti-diarrheal, appetite suppressant, analgesics, antibacterials and skin disorders. Extensive research on Nigella was carried out by various investigators and tested for a reliable track record of its therapeutic and pharmacological actions including antidiabetic, anticancer, immune modulator, analgesic, antimicrobial, anti-inflammatory, spasmolytic, bronchodilator, hepato-defense, renal protection, gastro-protective, antioxidant properties, etc. because of its miraculous healing powers, the nigella has a place among the highest standards of evidence based on herbal medicine this review is an attempt to integrate the available textual data into scientific research of pharmacognostical properties, chemical composition and therapeutic activities of nigella and its fats. The review highlights the therapeutic value of Nigella seeds to stop and

treat many common diseases (illnesses) and to search for the current epidemic of infectious diseases (especially Corona virus). the latest details about Nigella will go a long way in boosting the immune system and improving safety in viral and fungal infections in humans.

KEYWORDS: Anti-diabetic, antioxidant, essential oil, miracle herbs, nigellone, Nigella sativa, drug profile, ranunculaceae, thymoquinone.

INTRODUCTION

Nigella (Nigella sativa L.) is a very important spice plant. It is an annual and winter (winter) plant on the cross of the plant from the family Ranunculaceae, better known as black cumin in English and Kalonji in Hindi. Nigella is native to Southern Europe, North Africa and Southwest Asia and is widely distributed in the Mediterranean, Southern Europe, North Africa, South and Southwest Asia. In India, nigella is grown in parts of Rajasthan, M.P., Punjab, Himachal Pradesh, Madhya Pradesh, Bihar and Bengal, Assam and Maharashtra. With regard to research related to improved cultivation, crop production and protection technology and post-harvest harvesting management, a separate study was conducted on nigella crops.^[1] Among the various medicinal plants, Nigella sativa L. It emerges as a miraculous tree with a rich historical and religious history as numerous studies reveal its powerful scope of medicine. Nigella is best known for its black seeds and for the various packages in India, which people call black cumin. Nigella seeds and their oils have long been used in ancient medicine to treat various ailments worldwide. It is an important medicine in the traditional Indian medicine system like Unani and Ayurveda.^[2] In Islamic literature, it is considered one of the greatest forms of medicine available and in one of the prophetic Hadith it was said that black seeds are the cure for all diseases except death. It is also recommended that it be used regularly in Tibb-e-Nabwi (Prophetic Medicine).^[3] Nigella has been widely studied for its natural properties and therapeutic properties and has been shown to have various properties, such as diuretic, antidiabetic, antihypertensive, anticancer and immunomodulatory, analgesic, antimicrobial, anthelmintics, analgesics, anti-inflammatory, spasmolytic, bronchodilator, gastroprotective, gastroprotective, gastroprotective, gastrointestinal, kidney protection and antioxidant. Nigella seeds are widely used in the treatment of various ailments such as bronchitis, asthma, diarrhea, rheumatism, and skin disorders. It is also used as a liver tonic, digestive tract, stomach, food stimulant, emmenagogue, to increase the production of milk for nursing mothers, to fight infections and to support the immune system.^[47] Many of the therapeutic properties of this plant are due to

the presence of thymoquinone which is a major component of the active chemical composition of essential oils. Nigella seeds are also used in foods such as flavors added to breads and cucumbers because they have very low levels of toxins.^[31]

Chemical composition of nigella seeds

Many active chemicals have been isolated, identified and reported to date for various types of nigella. The main active ingredients are thymoquinone (30% -48%), thymohydroquinone, dithymoquinone, p-cymene (7% 15%), carvacrol (6% -12%), 4-terpineol (2% -7%), t- anethol (1% -4%), squiterpene longifolene (1% -8%), and this seeds also contain alpha-hederin, pentacyclic triterpene and water-soluble saponin, an anti-cancer agent in nigella ^[6]. Other chemicals such as carvone, limonene, citronellol are also found in the tracks. Most of Nigella sativa's pharmaceutical properties are mainly due to the components of quinine, the most abundant thymoquinone. Finally, thymoquinone exhibits dithymoquinone and higher oligocondensation products.^[43] Nigella seeds contain fat (28.5%), protein (26.7%), carbohydrates (24.9%), raw fiber (8.4%), ash (4.8%) and a good amount of various vitamins and minerals such as Cu, P, Zn and Fe etc. In addition it contains carotene which precedes vitamin 'A'. The roots and shoots are reported to contain vanillic acid ^[7,8]. The seeds are reported to contain fatty acids rich in fatty acids, especially linoleic acid (5060%). , oleic acid (20%). Adequate fatty acids (palmitic, stearic acid) are about 30% or less, sit-sitosterol is a major sterol, accounting for 44% and 54% of total sterols in the seed varieties. -Tunisian nigella respectively, followed by stigmasterol (6.57-20.92% of total sterols).^[2,13] -L-arabino-pyranosyl]α2) →-L-rhamnopyranosyl (1α3) →-D-xylopyranosyl (1β-amyrin, spermol cycloartenol, 24-methylene-cycloartanol, taraxerol, tirucallol, 3-O- [βOther constituents employed nigellone, avenasterol-5-ene, avenasterol-7-ene, campesterol, cholesterol, citrostadienol, cycloecalenol, gramisterol, lophenol, obtusifoliol, stigmastanol, stigmasterol-7-ene, -Dgluco-pyranosyl] hederagenin, trans fats (0.5-1.6%), trans fats (35.6-41.6%) , oleic acid, esters of unsaturated fatty acids with C15 and high terpenoids, esters of dehydrostearicβ6) →-D-glucopyranosyl (1β4) →-L-rhamnopyranosyl (1α-28 -O- [, 25-diol, nigellidine- 4-O-sulfite, N. mines A3, A4, A5, C, N. mines A1, A2, B1, and B2^[27].β-D glucopyranosyl] -11-methoxy-16 , 23-dihydroxy-28 -methyl-12 enoate, discrimination-5, 22-dien-3 --- D-glucopyranoside, cycl oart-23-methyl-7, 20, 22-triene-3β2) →-L-rhamno-pyranosyl- (1α2) →-Dxylopyranosyl- (1βand linoleic acid, aliphatic alcohol, aturunsaturated hydroxy ketone, hederagenin glycoside, melanthin, melanthigenin, bitter system, tannin, resin, protein, sugar reduction, glycosidal saponin.

Traditional uses and folk remedies

Nigella has been known to treat various ailments, diseases and conditions related to the respiratory system, digestive tract, kidney and liver function, Cardio vascular system and immune system support and general well-being.^[31] Avicenna refers to the black seeds in "The Canon of Medicine", as the seeds rejuvenate the body and help to recover from fatigue and despair. Nigella seeds and their oil have a long history of cultural use in Indian and Arabian culture as food and medicine.^[13] Nigella seeds have long been used traditionally in Southeast Asia and the Middle East to treat a number of ailments and ailments, including asthma, bronchitis, rheumatism, and inflammatory bowel diseases. Due to its extensive use nigella gained the Arabic adoption 'Habbatul barakah', meaning the seed of blessing. A tincture prepared from Nigella seeds is found to be helpful in digestion, anorexia, diarrhea, dropsy, amenorrhoea and dysmenorrhoea as well as treatment of worms and skin rash. Outside the oil is used as an anti -eptic and local anesthetic. Roasted nigella seeds are given internally to stop vomiting,^[6,52] Essential oils from Nigella seeds are also sought after in the pharmaceutical and perfume industry. The major alkaloids present in Nigella seeds are nigellimin, nigellidin, nigellicin and are known to have anticarcinogenic properties. Nigella seeds have been used as a spice since ancient times in the preparation of cucumbers, as one of the ingredients. The seeds are dispersed as protection between the folds of the woolen linen to prevent insect invasion. Fats can be used as an edible fat stabilizing agent. Indians, Middle Easterners, Turks, and Egyptians often sprinkle all Nigella seeds on the rocks to give flavor and texture. In the Middle East Nigella is mixed with bread dough but in North Indian cuisine, whole dried seeds are fried or fried in oil to give off a very unpleasant odor. They are utilized in curries, nans, dals, yogurts, vegetables and chutneys. In Iran, Nigella is widely used in vegetable dishes. Nigella is an important ingredient in the Bengal, Bangladeshi, and Sikikim spice panchphoron (five spice combinations). Its combine with cumin, mustard seeds, ajowan & black pepper and fried in mustard oil to taste eggplant, cabbage, squash and meat.

Medicinal and Pharmacological Properties of Nigella

Antiviral activity

Nigella seeds have extensive therapeutic effects on the human and animal tissues and have been reported to have positive effects on many diseases such as intestinal problems, anorexia, conjunctivitis, dyspepsia, rheumatism, diabetes, skin diseases, jaundice, high blood pressure, bleeding. internal, bronchitis, headache, fever, fever, paralysis, amenorrhea, anorexia,

asthma, cough and eczema. Thymoquinone which is the most active ingredient of nigella oil and has flexible health effects. In several studies it has been shown to be effective in combating the infection of murine cytomegalo virus, H9N2), Chistosoma Mansoni Infection, PPR virus, broadband virus, HIV, Hepatitis C Virus, Zucchini Yellow Mosaic Virot, and Papaya.^[53] Various clinical and experimental studies have shown many TQ treatment effects including immunomodulatory, antiinfigeatory, anti-tumor, and antimicrobial.^[5,18,54] Due to the large number of biological targets and no adverse effects, Nigella seeds have developed a potential therapeutic interest in treating bacterial infections in the body.

Antifungal activity

Nigella methanolic extraction of the most potent found effect was followed by chloroform fragments that fight various types of Candida albicans. The inoculum in the veins of Candida albicans produced body colonies in the liver, kidneys and kidneys. Treatment of rats with the plant was discontinued 24 h after the introduction of inoculation had a significant effect on inhibiting growth in all studied organs^[20,43] reported that aqueous extraction of nigella seeds showed the ability to prevent candidiasis in mice. These findings have also been confirmed by Histopathological examination of the affected organs^[21]. The anti-yeast activity of black seed quinines, dithymoquinone, thymohydroquinone, and Thymoquinone was tested and found that thymohydroquinone and TQ have important anti-yeast activity.^[32] The two definins of the novel antifungal are called Ns-D1 and Ns-D2, separated by nigella seeds and sequenced. Ns-D1 and Ns-D2 defensins have shown strong anti-rot functions in dealing with phytopathogenic fungal numbers.^[55]

Antimicrobial activity

Nigella essential oil has been shown to have anti-gram-negative and gram-negative bacteria. It has shown strong antimicrobial activity in Salmonella typhi, Pseudomonas aeruginosa and others. Higher sensitivity to bacteria with the gram staphylococcus aureus and Vibrio cholera has been found to be stronger than the non-gram-free bacteria Staphylococcus aureus, Staphylococcus pyogenes and Staphylococcus viridans are at greater risk of Nigella sativa^[36] The dried seeds of nigella have shown bactericidal activity against Pseudomonas aeruginosa^[32,36]. The therapeutic efficacy of anti-drug resistant strains of Shigella spp., Vibrio cholera and Escherichia coli have been found to be associated with streptomycin and gentamycin interactions. A clear inhibition of the growth of Staphylococcus aureus was observed at 300 mg / ml. A good prevention can be caused by two important active ingredients of

Nigellasativa, Thymoquinone and melanin. Thymoquinone has shown significant bactericidal activity against various human pathogenic bacteria especially gram cocci, i.e. Staphylococcus aureus and Staphylococcus epidermidis.^[22,32]

Anti-schistosomiasis activity

A study of the effect of nigella oil against liver damage caused by Schistosoma mansoni (S. mansoni) infection revealed a decrease in the S.mansoni worm worm in the liver and reduced the total amount of ova implanted in the liver and intestines. These results suggest that nigella seed oil may play a role in combating the changes caused by S.mansoni disease^[46]. In vitro testing of N. Sativa seeds against Schistosoma mansoni, miracidia, cercariae, and adult worms have also shown its strong anti-biocidal effects in all parasite stages and a deterrent effect on the laying of adult worm eggs.^[46]

Antioxidant activity

Nigella seeds suppress the liver from oxidative stress by increasing the action of enzymes such as myeloperoxidase, glutathione-S-transferase, catalase, adenosine deaminase, myeloperoxidase and by reducing hepatic lipid peroxidation in chicks. important antioxidant properties under the in vitro system. Previous treatment of Thethymoquinone restored the increased levels of malonyl di aldehyde and the combined diene levels.^[25,26,56]

Gastro-protective activity

The anti-ulcer effect of Nigella sativa may be prostaglandin-mediated and / or by its antioxidant and anti-secretory activities.^[4] Nigella inhibits alcohol-induced lipid peroxidation (e.g. thiobarbituric acid active substances) and lowers the content of gastric GSH, the functions of the gastric enzyme SOD, GSH-S-Transferase.^[41] Thymoquinone may be a potential therapeutic agent for the treatment of patients with inflammatory bowel disease . A decoction of rock salt nigella is given to relieve dyspepsia and stomach upset.^[39]

Hepato-protective and Nephro Protective activity

Studies have shown that nigella intraperitoneally eliminates the adverse effects of recurrent ischemic injury in the liver. Nigella treatment protected rat liver from damage from hepatic ischemia reperfusion.^[57] It was also thought to protect the hepatic tissue from the harmful effects of lead-like metals, and reduce hepatic lipid peroxidation after exposure to chemicals such as carbon tetrachloride.^[42] The nephro-protective effect of vitamin C and nigella oil was seen against gentamicin (GM) and associated prototoxicity was found to lower serum

creatinine, blood urea nitrogen and antioxidant activity compared to the values of the gentamicin control group. When these two antioxidants are given as a compound, they have been shown to have a nephro protective activity.^[10,58]

Antidiabetic and Anticancerous activity

Nigella seed extract has hypoglycaemic activity and antihyperglycemic effects and refers to a combination of appropriate insulinotropic and insulin-like properties.^[23] The polyherbal formulation of kalonji sugar powder has an antidiabetic effect and the extraction of this compound helps maintain healthy glucose levels and cholesterol levels.^[6] It is also reported that the combination of α -lipoic acid, L-carnitine and nigella can contribute significantly to the development of the body's carbohydrate metabolism as seed excretion has insulin-enhancing action by enhancing ACC phosphorylation, a major insulin component of the AMPK process and by increasing content muscle Glut4.^[38]

Nigella volatile oil did not cause any dysplastic mutations or carcinomas.^[59] Nigella oil has also been found to cause significant reductions in colonic lesions by suppressing cell proliferation in the colonic mucosa. No serious side effects were observed in the blood or urinary tract and there were no significant changes in vital organs. In addition, exposure to various human cancer cell lines in the digestive tract at a concentration of 120-380 $\mu\text{g} / \text{ml}$ resulted in significant cell death that exhibits clear cytotoxic action.^[39,57]

Anti-inflammatory and analgesic activity

Nigella dried oil and thymoquinone have been initiated to inhibit lipid peroxidation and eicosanoid generation in leucocytes in the same way nigellonein low concentration is effective in inhibiting histamine release in cells.^[60] Osteoporosis is connected to oxidative stress and inflammation. Studies on the anti-osteoporotic effects of nigella and thymoquinone were conducted. It was revealed that nigella and thymoquinone have been shown to inhibit inflammatory cytokines such as interleukin-1 and 6 and transcription factor, the nuclear factor κB . Both NS and TQ have shown potential as an anti-osteoporotic agent. The anti-viral effects of nigella sperm components can be caused by allergic rhinitis.^[61]

Immunomodulatory activity

The aqueous release of nigella significantly improved NK cytotoxic activity against YAC-1 cells and this was documented by the anti-N-cell effects. sativa may be, at least in part, due to its ability to act as a stimulant for NK anti-tumor activity. It was expected that N.Sativa ingredients could be used as effective therapeutic agents in controlling the various immune responses involved in various conditions and diseases such as cancer.^[62] The methanolic extraction of nigella offspring was found to increase the total number of white blood cells [up to 1.2×10^4 cells / mm³]. Bone marrow transplantation also increased significantly (P < 0.01) after administration of nigella semen extract. Nigella sativa seeds are found as a common cytotoxic agent in the body's immune system.^[63] Nigella oil is a promising natural radio reference for combating the immune and oxidative effects of ionizing radiation.^[16] Nigella sativa daily oral administration of oil also helps to reduce titol antibody hemitters.^[26]

Pulmonary-protective activity and anti-asthmatic effects

Numerous studies have shown that nigellone has antispasmodic effect and increased mucociliary secretion and may be helpful in the treatment of various respiratory diseases.^[32] It has shown the relaxing activity of many fragments from Nigella in the chains of ripening guinea pigs that were highly potent in the methanol and dichloromethane components.^[27] Results have shown that treatment of Nigella sativa inhibits respiratory organ inflammatory responses, reduces inflammatory cell infiltration, alveolar septate infiltration, alveolar hydrops, alveolar exudate, alveolar macrophages, opening pathology, tumour and formation.-necrosis in different models of pulmonary aspiration. The data also show significant reductions in nitucible oxide synthase activity and an increase in protein protein surfactant D in lung imaging of various forms of respiratory tract after Nigella sativa treatment emphasized that treatment of nigella may help with lung injury and potential clinical use.^[40] Studies have shown that nigella has a strong anti-respiratory effect on asthma. However, the effects of boiled extraction of this plant on most moderate PFTs were lower than those of theophylline in concentrated concentrations.^[27] It has also been found that thymoquinone may reduce the destructive effects of methotrexate on the testicular tissues of patients using this agent.^[34]

Contraceptive, Anti-fertility and Antioxytotic activity

Several studies have revealed that the release of Nigella sperm has the potential to fight fertility and that may be due to its estrogenic activity.^[4] The antioxytotic properties of nigella seeds were reported in some early studies. N.sativa seeds prevent smooth uterine contractions

caused by oxytocin stimulation. The flexible oil of nigella seeds inhibited the automatic movement of smooth muscles in the rat and guinea pig uterine as well as the reduction caused by oxytocin stimulation of the anti-oxytocic potential of *Nigella sativa* oil.^[63]

CONCLUSIONS

Nigella is an important herbaceous spice plant of India and the Middle East. It has a spectrum of pharmacological and nutraceutical possibilities. Its oil has been widely used for centuries to treat various ailments worldwide. It should be regarded as an important drug in the Indian traditional medicine system even in modern times. It is established that most of the potential and fruitful activities are based on its oil and protein components. The presence of thymoquinone and its isomers is the main active ingredient of the essential oil only responsible for all the medicinal properties of this remedy. *Nigella* seeds are also used in food as a flavor, which is added to breads and legumes because they have a very low level of toxins. Chemical modification in the molecular structure of Thymoquinone, α -Hederin and other components of *nigella* seeds can lead to the preparation of effective and safe drugs for the treatment of various diseases in the future in the right combination. In addition, further research should look at and evaluate specific cell and cellular targets of various *Nigella* structures, particularly Thymoquinone. and clinics on the use of spice in the treatment of various diseases and will also be useful in informing the public about the health benefits of *Nigella* and its action in the treatment of many diseases especially viral disease.

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