



***Nigella sativa* – A Herbal Remedy for All Ailments Except Death**

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ABSTRACT

The seed of *Nigella sativa* or black seed or *Nigella sativa* L. is a member of buttercup family Ranunculaceae. It's massively used for centuries all through different civilizations around the world to treat various ailments and disorders. Thymoquinone (TQ), the main active constituent of the seed of *Nigella sativa* was so far demonstrated through numerous studies to be medicinally very effective against various illnesses including chronic illnesses like cancer, cardiovascular system (CVS) disorders, inflammatory disorders, diabetes, neurological disorders and nephrological diseases. Wide range of pharmacological activities like- antimicrobial, immunomodulation, wound healing, antifungal, antiviral and carminative property are shown by black seeds. This review aims to briefly emphasize some of the extensive pharmacological effects exerted by the black seeds.

Keywords: *Nigella sativa* (NS), Black seed oil, Curative, Ailments, Traditional medicine, Cardiovascular system (CVS).

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INTRODUCTION

Kalonji (*Nigella sativa*) also known as black seeds or black cumin or caraway; belongs to the dicotyledonous family of Ranunculaceae. It is a flowering plant which is widely found in south and southwest Asia.¹ Better known as Black Cumin or Kalonji, the seeds of *Nigella sativa* are prevalent and popular among various traditional systems of medicine which include Ayurveda, Unani, Tibb and Siddha. As mentioned in Tibb-e-Nabwi, black cumin is a "Prophetic Medicine" strongly recommended being consistently by virtue of Islamic texts.²

Due its substantial medicinal applications, it has acquired the nickname 'the herb from heaven', or Haba-al-Barakh (blessed seeds) or miracle seeds. Kalonji was prescribed by Prophet Mohammed (PBUH) as a 'universal healer', that is a cure for all ailments besides ageing or death. The use of black seeds has also been mentioned in many ethnic and religious books. Black seeds have also been mentioned as the 'curative black cumin' in the holy Bible; they are also elucidated as the 'melanthion' of Hippocrates and Dioscorides. In the Greco-Arab or Unani-Tibb system of medicine which cradled from Hippocrates, his associates Galen and Ibn-sina regarded black seed as an exquisite remedy in digestive and hepatic disorders.³

Black cumin or kalonji has been used in different civilizations around the globe for diverse culinary and medicinal uses. The aroma and flavor of black cumin is so distinctive that it is often used as a flavoring spice in Pakistan, India and many other Middle East countries. Seeds of *N. sativa* bring a lot of significance in traditional use medicine and has been used for over hundreds of years in many cultures. Conventionally, the use of black seeds dates back to over 3000 years to the kingdom of the ancient Assyrians & Egyptians. In many historical documents and ancient texts, the black cumin seed is eminent for its medicinal attributes and its potential to support the body in the natural healing process.⁴

Nutrition Value

The nutritional composition of black cumin seeds from various sources was reported as: protein (20-85%), fat (38.20%), fibre (7-94%), total carbohydrates (31.94%), crude fiber (8.4%) and total ash (4.8%). The seeds also contain various vitamins and minerals like Copper, Phosphorus, Zinc, Iron, etc. Carotene present in the seeds is converted to vitamin-A by the liver.

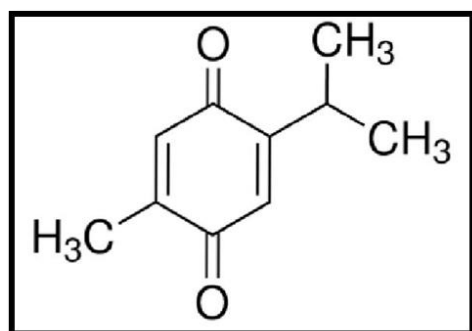
Additionally, the phytochemical chemical investigation of this seed revealed the presence of over hundreds phytoconstituents which include - alkaloids, saponins, sterols, and essential oil. Unsaturated fatty acids present in the seeds are mainly - linoleic acid (50-60%), oleic acid (20%), eicodadienoic acid (3%), and dihomolinoleic acid (10%). Saturated fatty acids (palmitic acid, stearic acid) are present to less than or about 30%. The seed oil comprises essential oil (0.4%-2.5%).⁵



Table 1: Nutritional composition of NS

Nutrient	Amount% (approx.)
Protein	20-85%
Fat	38.20%
Fiber	7-94%
Carbohydrates	31.94%
Crude fibre	8.4%
Total ash	4.8%
Unsaturated fatty acids	≥80%
Saturated fatty acids	≤30%
Essential oil	0.4-2.5%
Manganese	370.87%
Phosphorus	77.57%
Copper	288.89%
Iron	121.25%

In the essential oil, the most bioactive compound among all other active components was found to be Thymoquinone (TQ) which exhibits wide-ranging therapeutic benefits. TQ has further proven to boost body's immune system to prevent and fight diseases.

**Figure 1:** Structure of Thymoquinone

Pharmacological actions

Nigella sativa has been significantly researched and studied in the past decades. Studies have reported that it owns numerous therapeutic properties and pharmacological actions.

1. Blood pressure:

The black seed oil shows its effects by decreasing pressure and increasing respiration. Changes in the haemogram which we show an increase in both the packed cell volume (PCV) and haemoglobin (Hb), and a decrease in plasma volume concentrations of cholesterol, triglycerides and blood glucose were found upon treatment of rats with the seed extract up to 12 weeks. It was proved that the seeds have very low degree of toxicity.

2. Hypoglycemic effect:

Prevention of diabetes is the primary function of Kalonji or black seeds. Studies conducted on the mixture *N. sativa*

reported that the blood lowering effect was due to the inhibition of gluconeogenesis in liver and the plant extract mixture may prove to be a useful herbal medicinal agent in the treatment of non-insulin dependent diabetes mellitus. It can also prevent other symptoms of diabetes like excessive thirst, fatigue and confusion. Considerable lowering of blood glucose level was found after oral administration of an aqueous decoction of a plant mixture containing *Nigella sativa*. Developed of insulin resistance may also be seen by regular intake.

Method of intake: Drink on an empty stomach; a quarter spoon of black seed oil to a cup of black tea to lower the levels of blood sugar.⁶

3. Lowers Cholesterol:

National Institute of Health (NIH) demonstrated a study regarding a decline in the levels of bad cholesterol or LDL by the use of black seed oil while black seed powder improves HDL or good cholesterol. Dyslipidemia (abnormal in release in the levels of cholesterol or days in bloods) can be improved by NS supplementation in type-2 diabetic patients. Hence, NS is considered as a significant protective herbal agent against in the treatment of conditions like atherosclerosis and cardiovascular problems.⁷

4. Rheumatoid Arthritis:

Pain caused due to rheumatoid arthritis is eased by the use of black seed or kalonji oil which causes an increase in the lubrication between the joints. A decrease in inflammatory markers in the blood was found by the intake of black seed or kalonji oil and its supplements, resulting in healing of the swollen joints.

5. Stomach Ulcers:

A large number of pharmacological activities of NS consisting of anti-ulcer potential have been reported by previously conducted studies on black seed (NS). Components like fixed oil, volatile oil components and different extracts of the solvent were involved in these studies. In traditional practices, *Nigella* seeds are taken as such; that is in the form of coarse dry powder or the powdered seeds mixed with water. Ingestion of black cumin seeds not only reduces stomach ulcers but also protects the stomach lining from the ill effects of alcohol and promotes digestion.⁸

6. Anti-Cancer properties:

Black seed is a store house of antioxidants and helps in neutralizing different types of cancer-inducing free radicals. Thymoquinone (TQ) is a major bioactive phytoconstituent found in *Nigella* seeds. It has proven to have anti-cancer properties that act by inactivating the cancer cells thus, further work against lung, pancreatic, cervical and breast cancers.⁹

7. Antioxidant Activity:

In present times, there has been an increase in the significance of therapeutic alternatives of herbal plants as

natural antioxidants. Amid the variety of naturally occurring medicinal plants, *Nigella Sativa* has been reported for its effectual antioxidant activities through in-vivo and in-vitro studies.

The antioxidant activity of black seeds has been observed in various studies. It has portrayed its therapeutic use in oxidative stress reduction, which is decrease in the free radical-accumulation. The build-up of free radicals has a negative impact on all the body systems, causing either of the various diseases related to the nerves and the nervous system, hormone imbalance like diabetes, cancer and also ageing.¹⁰

8. Menstrual issues:

During the stage of menstruation, women are often troubled with the premenstrual syndrome where some may even encounter intense abdominal cramps, while others may have to deal with an irregular menstrual cycle. Black seed or Kalonji oil has a lot of volatile oils that hold strong anti-inflammatory properties which therapeutically aid in management of abdominal spasm or cramps linked to menstruation. The oil also helps in ensuring even and regular blood flow.¹¹

9. Cardiovascular Diseases:

There is a diverse variety of synthetic medicinal drugs available for the treatment and prophylaxis of different cardiovascular disorders at clinical level. Bitterly, most of them are facing difficulties of having unwanted side effects, showing inefficacy in many patients, and also problems in their pharmacokinetics. Furthermore, the interactions between cardiovascular medication and other drugs also limits the usage of specific medications. Addressing this problem, many natural therapies with diverse clinical uses and their efficacy in different patients together with their acceptable safety profile are the objectives to be achieved by several research teams around the world.

Among various herbal products used in traditional medicine, *Nigella Sativa* and its constituents showed an appealing activity against many cardiovascular risk factors, both in its direct pharmacological actions and anti-oxidant capacity.

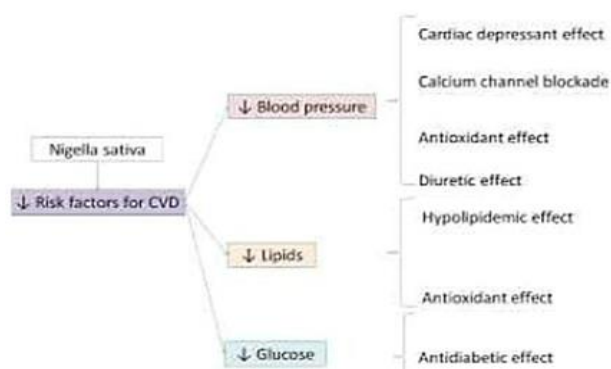


Figure 2: *Nigella sativa* showing an appealing activity against CVD risk factors

10. Neuroprotective effects:

Neurological disorders, especially depression is amongst the most predominant illnesses globally. It is primarily affected by the hypoactivity of neurotransmitters, mainly due to the inadequacy in serotonin activity. Stress is especially the principal trigger aspect in the initiation of depression and this postulate is steadily supported by various clinical studies and observations. Experimental studies conducted on animals displayed that excessive stress conditions release neurochemical modifications and behavioural deficits. A huge number of herbal drugs and their isolated compounds have revealed to possess medicinal therapeutic potential. Among many promising medicinal herbs, black cumin seed is a valuable herb with a rich historical background and religious fundamentals to manage many neurological disorders including depression.¹²

Nigella sativa for the treatment of COVID-19

A recent study led by the researchers at the University of Technology in Sydney suggests that *Nigella* seeds can help treat COVID-19 infection. This study has been presented in the 'Journal of Clinical and Experimental Pharmacology and Physiology'. The active constituents of *Nigella sativa* including 'nigellidine' and 'α-hederin' have been identified as potential inhibitors of SARS CoV-2.

Kaneez Fatima Shad, a Professor at the University of Technology stated, "There is growing evidence from modelling studies that thymoquinone, which is an active ingredient of *Nigella Sativa*, more commonly called as the 'Fennel Flower', can stick to the COVID- 19 virus spike protein and thus, stop the virus from causing a lung infection. It may also block the 'cytokine' storm that affects seriously ill patients who are hospitalised with COVID-19."¹³

CONCLUSION

Various controlled trials, studies, case reports and in vitro and in vivo studies confirmed that black cumin or black seed has antiviral, antioxidant, anti-inflammatory, immunomodulatory, bronchodilatory, antihistaminic, antitussive activities. In addition, it has also shown anti-hypertensive, anti-obesity, anti-diabetic, anti-hyperlipidemic, anti-ulcer, and antineoplastic activities. *Nigella sativa* could also be used as an adjuvant therapy along with repurposed conventional drugs to manage the patients with COVID-19. Thus, making kalonji or black seed a miraculous seed with endless remedial treatments.

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