



THERAPEUTIC POTENTIAL OF NIGELLA SATIVA: A MIRACLE HERB

Khamroeva Sarvinoz Azamat Kizi

**3rd Year Student Of The Faculty Of Pharmacy, Tashkent Pharmaceutical Institute,
Uzbekistan**

Azimova Baxtigul Jovli Kizi

Scientific Adviser, Phd In Biology, Tashkent Pharmaceutical Institute, Uzbekistan

ABSTRACT: - *Nigella sativa* (*N. sativa*) (Family Ranunculaceae) is a widely used medicinal plant throughout the world. It is very popular in various traditional systems of medicine like Unani and Tibb, Ayurveda and Siddha. Seeds and oil have a long history of folklore usage in various systems of medicines and food. The seeds of *N. sativa* have been widely used in the treatment of different diseases and ailments. In Islamic literature, it is considered as one of the greatest forms of healing medicine. *N. sativa* has got the place among the top ranked evidence based herbal medicines. The present article is an effort to provide a detailed survey of the literature on scientific researches of pharmacognostical characteristics, chemical composition and pharmacological activities of the seeds of this plant.

KEYWORDS: *Nigella sativa*, Miracle herb, Ranunculaceae, Habat-ul-Sauda, Thymoquinone, Tibb-e-Nabwi, Black seeds, Anti-diabetic, Antioxidant.

INTRODUCTION

Medicinal plants have been used for curing diseases for many centuries in different indigenous systems of medicine as well as folk medicines. Moreover, medicinal plants

are also used in the preparation of herbal medicines as they are considered to be safe as compared to modern allopathic medicines. Many researchers are focusing on medicinal

“THERAPEUTIC POTENTIAL OF NIGELLA SATIVA: A MIRACLE HERB”

plants since only a few plant species have been thoroughly investigated for their medicinal properties, potential, mechanism of action, safety evaluation and toxicological studies. Among various medicinal plants, *Nigella sativa* (*N. sativa*) (Family Ranunculaceae) is emerging as a miracle herb with a rich historical and religious background since many researches revealed its wide spectrum of pharmacological potential. *N. sativa* is commonly known as black seed. *N. sativa* is native to Southern Europe, North Africa and Southwest Asia and it is cultivated in many countries in the world like Middle Eastern Mediterranean region, South Europe, India, Pakistan, Syria, Turkey, Saudi Arabia. The seeds of *N. sativa* and their oil have been widely used for centuries in the treatment of various ailments throughout the world. And it is an important drug in the Indian traditional system of medicine like Unani and Ayurveda. Among Muslims, it is considered as one of the greatest forms of healing medicine available due to it was mentioned that black seed is the remedy for all diseases except death in one of the Prophetic hadith. It is also recommended for use on regular basis in Tibb-e-Nabwi (Prophetic Medicine). *N. sativa* has been extensively studied for its biological activities and therapeutic potential and shown to possess wide spectrum of activities viz. as diuretic, antihypertensive, antidiabetic, anticancer and immunomodulatory, analgesic, antimicrobial, anthelmintics, analgesics and anti-inflammatory, spasmolytic, bronchodilator, gastroprotective, hepatoprotective, renal protective and antioxidant properties. The seeds of *N. sativa* are widely used in the treatment of various diseases like bronchitis, asthma, diarrhea, rheumatism and skin disorders. It is also used as liver tonic, digestive, anti-diarrheal, appetite stimulant, emmenagogue, to increase milk production in nursing mothers to fight parasitic infections,

and to support immune system. Most of the therapeutic properties of this plant are due to the presence of thymoquinone (TQ) which is a major active chemical component of the essential oil. Black seeds are also used in food like flavoring additive in the breads and pickles because it has very low level of toxicity. *N. sativa* is an annual flowering plant which grows to 20-90 cm tall, with finely divided leaves, the leaf segments narrowly linear to threadlike. The flowers are delicate, and usually colored white, yellow, pink, pale blue or pale purple, with 5-10 petals.

Characteristics of the seeds and powder

Macroscopically, seeds are small dicotyledonous, trigonus, angular, rugulose-tubercular, 2-3.5mm×1-2 mm, black externally and white inside, odor slightly aromatic and taste bitter. Microscopically, transverse section of seed shows single layered epidermis consisting of elliptical, thick walled cells, covered externally by a papillose cuticle and filled with dark brown contents. Epidermis is followed by 2-4 layers of thick walled tangentially elongated parenchymatous cells, followed by a reddish brown pigmented layer composed of thick walled, rectangular elongated cells. Inner to the pigment layer, is present a layer composed of thick walled rectangular elongated or nearly columnar, elongated cells. Endosperm consists of thin walled, rectangular or polygonal cells mostly filled with oil globules. The powder microscopy of seed powder shows brownish black, parenchymatous cells and oil globules.

Chemical composition of black seeds

Many active compounds have been isolated, identified and reported so far in different varieties of black seeds. The most important active compounds are thymoquinone (30%-48%), thymohydroquinone, dithymoquinone, p-cymene (7%-15%), carvacrol (6%-12%), 4-

“THERAPEUTIC POTENTIAL OF NIGELLA SATIVA: A MIRACLE HERB”

terpineol (2%-7%), t-anethol (1%-4%), sesquiterpene longifolene (1%-8%) α -pinene and thymol etc. Black seeds also contain some other compounds in trace amounts. Seeds contain two different types of alkaloids; i.e. isoquinoline alkaloids e.g. nigellicimine and nigellicimine-N-oxide, and pyrazol alkaloids or indazole ring bearing alkaloids which include nigellidine and nigellicine. Moreover, *N. sativa* seeds also contain alpha-hederin, a water soluble pentacyclic triterpene and saponin, a potential anticancer agent. Some other compounds e.g. carvone, limonene, citronellol were also found in trace amounts. Most of the pharmacological properties of *N. sativa* are mainly attributed to quinine constituents, of which TQ is the most abundant. On storage, TQ yields dithymoquinone and higher oligocondensation products. The seeds of *N. sativa* contain protein (26.7%), fat (28.5%), carbohydrates (24.9%), crude fibre (8.4%) and total ash (4.8 %). The seeds are also containing good amount of various vitamins and minerals like Cu, P, Zn and Fe etc. The seeds contain carotene which is converted by the liver to vitamin A. Traditional uses of folk remedies. *N. sativa* has been traditionally used for the treatment of a variety of disorders, diseases and conditions pertaining to respiratory system, digestive tract, kidney and liver function, cardio vascular system and immune system support, as well as for general well-being. Avicenna refers to black seeds in the "The Canon of Medicine", as seeds stimulate the body's energy and helps recovery from fatigue and dispiritedness. Black seeds and their oil have a long history of folklore usage in Indian and Arabian civilization as food and medicine. The seeds have been traditionally used in Southeast Asian and the Middle East countries for the treatment of several diseases and ailments including asthma, bronchitis, rheumatism and related

inflammatory diseases. Its many uses have earned *Nigella* the Arabic approbation 'Habbatul barakah', meaning the seed of blessing. A tincture prepared from the seeds is useful in indigestion, loss of appetite, diarrhoea, dropsy, amenorrhoea and dysmenorrhoea and in the treatment of worms and skin eruptions. Externally the oil is used as an antiseptic and local anesthetic. Roasted black seeds are given internally to stop the vomiting. Antibacterial activity. The antibacterial effect of ground black seeds was studied in a modified paper disc diffusion method. A clear inhibition of the growth of *Staphylococcus aureus* was observed by concentration of 300 mg/mL with distilled water as control, this inhibition was confirmed by using the positive control Azithromycin. The inhibition obtained was higher with *N. sativa* ground seeds from Hadramout than with *N. sativa* ground seeds from Ethiopia. The positive inhibition may be attributed to the two important active ingredients of *N. sativa*, TQ and melanin. Different crude extracts of *N. sativa* were tested for antimicrobial effectiveness against different bacterial isolates which comprised of 16 gram negative and 6 gram positive representatives. These isolates showed multiple resistances against antibiotics, specially the gram negative ones. Crude extracts of *N. sativa* showed a promising effect against some of the test organisms. The most effective extracts were the crude alkaloid and water extracts. Gram negative isolates were affected more than the gram positive ones. Antibacterial activity of *N. sativa* against clinical isolates of methicillin resistant *Staphylococcus aureus* was investigated in 2008 by Hannan et al. All tested strains of methicillin resistant *Staphylococcus aureus* were sensitive to ethanolic extract of *N. sativa* at a concentration of 4 mg/disc with an MIC range of 0.2-0.5 mg/mL. Antibacterial activity of *N.*

"THERAPEUTIC POTENTIAL OF NIGELLA SATIVA: A MIRACLE HERB"

sativa against and triple therapy in eradication of Helicobacter Pylori in patients with non-ulcer dyspepsia was carried out. It was showed that N. sativa seeds possess clinically useful anti H. pylori activity, comparable to triple therapy. The antibacterial activity of TQ and its biofilm inhibition potencies were investigated on 11 human pathogenic bacteria. TQ exhibited a significant bactericidal activity against various human pathogenic bacteria especially Gram positive cocci (Staphylococcus aureus ATCC 25923 and Staphylococcus epidermidis CIP 106510). TQ prevented cell adhesion to glassslides surface.

REFERENCES

1. Khare CP. Encyclopedia of Indian medicinal plants. NewYork: Springes-Verlag Berlin Heidelberg; 2004.
2. Sharma PC, Yelne MB, Dennis TJ. Database on medicinal plants used in Ayurveda. New Delhi: 2005. pp. 420–440.
3. Al-Bukhari MI. In: The collection of authentic sayings of prophet mohammad (peace be upon him), division 71 on medicine. 2nd ed. Al-Bukhari Sahi., editor. Ankara: Hilal Yayinlari; 1976.
4. Abel-Salam BK. Immunomodulatory effects of black seeds and garlic on alloxan-induced diabetes in albino rat. Allergol Immunopathol (Madr) 2012;40(6):336–340.
5. Khaled AAS. Gastroprotective effects of Nigella Sativa oil on the formation of stress gastritis in hypothyroidal rats. Int J Physiol Pathophysiol Pharmacol. 2009;1:143–149.
6. Assayed ME. Radioprotective effects of black seed (Nigella sativa) oil against hemopoietic damage and immunosuppression in gamma-irradiated rats. Immunopharmacol Immunotoxicol. 2010;32(2):284–296