

Nigella Seeds Nutritional Aspects-Review

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Abstract

Nigella sativa has been mainly in use for decades in folk medicines, both as herb and for oil by people in Asia, Middle East and Africa, since it has plethora of medicinal purposes. Seeds are available as a new source of edible oils and food applications as spices and condiments in cakes, breads, pastries, curries, pickles and in seasoning etc. This paper gathers the information regarding the properties of *Nigella sativa*.

Keywords: *Nigella sativa*, Medicinal Properties, Food, Applications

INTRODUCTION

Plants and their bioactive compounds are of prime importance. Although different plants from different geographical areas have been tested in the past, many horizons still need to be addressed and assessed. Black cumin (*Nigella sativa* L.) is one such example that is much popular in South Asia and the Middle East. *Nigella sativa* has been available as herbal medicine for more than 2000 years. Also used as a food additive and flavor in many countries. The oil of *Nigella sativa* is very much beneficial due to its content of over a hundred active components (Abuharfeil et

al., 2001). Three thousand years ago the *Nigella sativa* has been traditionally available by various cultures as a natural remedy to treat numerous diseases. The seeds of the plant are available in Southeast Asia, Middle and Far East as a natural remedy to treat many diseases including asthma, hypertension, diabetes, hypercholesterolemia, inflammation, arthritis, tumor, gastrointestinal disturbances and gynecological disorders for over 1000 years (Abuharfeil et al., 2000).

FACTS OF *Nigella sativa*

Among Muslims, it is regarded as one of the intriguing form of healing medicine available. Like SAGE, *Nigella sativa* have enormous spiritual and medicinal value (Sreeremya, 2017). Recent pharmacological studies have proved the potential therapeutic effects of *Nigella* seed as well as its oil (Agarwal et al., 1978). Recent clinical and animal studies have shown that extract of the black seeds have many therapeutic effects such as , hypotensive, hepatoprotective and antidiabetic effects (Agarwal et al., 1979).

MEDICINAL PROPERTIES OF *Nigella sativa*

Nigella sativa possesses number of significant properties particularly antioxidant and antimicrobial which are beneficial for human health and nutritional status. Antioxidant property of *Nigella sativa* (NS) oil and its unique component thymoquinone (TQ) have been shown to prevent oxidative injuries. Incorporation of ethanolic extract of NS seeds in corn oil retarded the oxidative deterioration of triglycerides (Akhtar et al., 1993). These possible antioxidant effect may be linked to inhibition of eicosanoid generation, namely thromboxane B₂ and leucotrienes B₄ (by inhibiting cyclooxygenase and 5-lipoxygenase respectively), and membrane

lipid peroxidation. Oral consumption of *Nigella sativa* Oil and TQ has protected the methionine induced hyperhomocystenemia by tremendously enhancing the antioxidant status and amelioration of triglycerides, lipid peroxidation and cholesterol concentration in plasma. Black cumin (*Nigella sativa* L.) locally called as “Kalonji” is good source of nutritionally essential components (Al-Awadi et al., 1987).

PHARMACOGNOSY OF *Nigella sativa*

Scientific studies have delineated its composition i.e., moisture, oil, proteins, ash and total carbohydrates contents in the range of 3.9-7.1%, 22.0 to 40.36%, 20.85-31.2%, 3.8-4.8% and 24.8-40.0%, respectively (Al-Awadi et al., 1991). The health enhancing potential of black cumin has been attributed to the active ingredients that are mainly concentrated in fixed and essential oil (Akhtar, et al., 1991). Black cumin seed fixed oil encompasses quantities of unsaturated especially polyunsaturated fatty acids; constitute the bulk of oil ranging from 48-70%, while monounsaturated (18-29%) and saturated fatty acids (12-26%) are in lesser proportions (Al-Gaby, 1998).

Antibiotics were the main growth promoting substances for poultry (El-Tahir

et al., 1993). The use of antibiotics as feed additives is risky due to cross-resistance amongst pathogens and residues in tissues (Erkan et al., 2008). The use of most antibiotic growth promoters has been banned in many of the countries in the world. Consequently, the use of antibiotics in poultry diets was reduced and scientists have searched for alternative natural growth promoters and aromatic plants and essential oils extracted from these plants are becoming more important due to their antimicrobial effects and their stimulating effect on animal digestive systems (Jabeen et al., 2008). As an aromatic plant, black cumin (*Nigella sativa*) is vastly grown in different parts of the world and the seeds of black cumin have been used to promote health for countries especially in the Middle East and Southeast Asia (Akhtar et al., 1996). Black cumin seeds have been mainly availed in traditional medicine as diuretic and antihypertensive, digestive and appetite stimulant, antidiarrheal, anthelmintic and antibacterial agents (Hussein et al., 2005). Additionally, recent studies have shown black cumin to be antidiabetic, anticancer, anti-inflammatory, spasmolytic and bronchodilatory, hepatoprotective, renal protective and possessing antioxidant properties. The seeds of *Nigella sativa* encompass a volatile oil (0.5-

1.7%), a fixed oil (35.6-41.7%), proteins (23.7%) and amino acids (Hameed et al., 2008). The seeds have also been found to contain fats, crude fiber, minerals; e.g. Fe, Na, Cu, Zn, P, Ca and vitamins like ascorbic acid, thiamine, niacin, pyridoxine and folic acid. *Nigella sativa* seeds synthesize esters of fatty acids, free sterols and sterylesters. The seeds also contain lipase, phytosterols and sitosterol (Katsanidis et al., 1999). The bioactive constituents of the seeds include the volatile oil consisting of carvone, an unsaturated ketone, terpene or dlimonene also called carvene, pinene and p-cymene (Gali-Muhtasib et al., 2004). Pharmacologically active constituents of volatile oil are thymoquinone, dithymoquinone, thymohydroquinone and thymol (Jamroz et al., 2002). To determine usefulness of black cumin seeds in animal nutrition as a natural growth promoting substance to replace antibiotics. Functional and nutraceutical foods are gaining immense popularity among the masses (Janbaz et al., 2003).

Black cumin (*Nigella sativa* L.) is one of the most revered medicinal seeds in history. The seeds come from Egypt where they grow under almost perfect conditions, where they are watered until the seedpods form. Although black cumin seed is

mentioned as spiritual in the Bible as well as in the words of the Prophet Mohammed, it was not carefully researched until about 40 years ago (Kapoor et al., 1990). Since this time, several researches have been conducted. The popularity of the plant was highly copious by the ideological belief in the herb as a cure for multiple diseases. In fact, this plant has occupied special place for its wide range of medicinal value. Black cumin has been extensively studied particularly, which justifies its broad traditional therapeutic value. The reason might be seen in the ramified chemical composition of the seeds (Jang et al., 2004). Black cumin seed has over 105 different chemical constituents, including abundant sources of all the essential fatty acids (Khan et al., 1999). Although it is the oil that most often availed medicinally, the seeds are a bit spicy and are often used whole in cooking curries, pastries and Mediterranean cheeses. *Nigella sativa* seed has very little aroma but are carminative, meaning they tend to help digestion and relieve gases in the stomach and intestines. They aid peristalsis and elimination. The essential oil of black cumin is antimicrobial and helps torrid the intestines of worms (Kruk et al., 2000). Black cumin is regarded by many as a panacea and may therefore not be taken seriously by some,

but for those inclined to dismiss folklore, it should be researched that these humble seeds have been found superior to almost every other natural remedy when used for autoimmune disorders, conditions in which patients suffer greatly because their own systems attack their bodies. Black cumin is very appreciated for its seeds with a strong, hot, peppery taste. Oil is extracted from them, which was a precious remedy of the Egyptian and named for its benefits (Pharaohs' oil). A water-retentive protein is extracted from the seeds, which are mainly capable of helping the skin resist free radical aggression. The seeds have been availed to promote health and fight disease for centuries especially in the Southeast Asia and Middle East (Khanna et al., 193).

Non-conventional seeds are being considered because their constituents have peculiar chemical properties and may augment the supply of nutritional and functional products. Black cumin (*Nigella sativa* L.) seeds and its crude or essential oils have been widely used in traditional nutritional and medicinal applications. Consequently, black cumin has been extensively studied for its nutritional value and biological activities. The black cumin oilseed had been shown to be anticancer, antidiabetic, antiradical and immunomodulator, analgesic,

antimicrobial, anti-inflammatory, spasmolytic, bronchodilator, hepatoprotective, antihypertensive and renal protective. Moreover, black seeds have many antioxidative properties and activities. In consideration of high utilisation, detailed knowledge on the composition of black cumin oilseed is of major importance.

CONCLUSION

Black cumin has been a major focus of research for centuries and has several traditional uses and consequently has been researched extensively for its active constituents. The effect of dietary black cumin seeds on performance in broilers has not been researched. The splendid properties of *Nigella sativa* is yet to be untapped.

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