

# INTERNATIONAL JOURNAL OF UNANI AND INTEGRATIVE MEDICINE



E-ISSN: 2616-4558  
P-ISSN: 2616-454X  
IJUIM 2019; 3(2): 29-30  
Received: 21-02-2019  
Accepted: 25-03-2019

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## **Kalonji (*Nigella sativa* Linn) a comprehensive review on ethnopharmacological properties with special focus on its Unani perspective**

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### **Abstract**

Kalonji (*Nigella sativa* Linn.) has been used for medicinal purposes for centuries, both as herb and pressed oil in Asia, Middle East and Africa. It is a time tested drug in Unani system of Medicine and is gaining positive reputation due to its wide and divergent actions on different systems of human body. The present study was carried out to compile and highlight its ethnopharmacological properties which can help in the exploration of this drug and its acceptance in the international market.

**Keywords:** Kalonji, nigella sativa linn, unani medicine, ethnopharmacology

### **Introduction**

In Unani system of Medicine, Kalonji (*Nigella sativa* Linn) is regarded as a valuable remedy for a number of diseases. It is also included in the list of natural drugs of Tibbe Nabavi and its many uses have earned the Arabic approbation "Habbul Barkah" meaning the seed of blessing. It belongs to family Ranunculaceae [1, 2, 3].

### **General description**

In classical literature, Kalonji has been described as seed of a herb that resembles with Fennel plant but its branches are longer and thinner than Fennel plant. Leaves are like Saatar plant. Mainly flowers are yellowish white, but few are bluish in colour also. Seeds are black in colour, trigonous. Seeds and seed oil is used therapeutically [4-6]

Botanical name	:	<i>Nigella Sativa</i> Linn [1]
Family	:	Ranunculaceae [1, 2]
Vernacular Names	:	
English	:	Black Cumin, Small Fennel [1, 2]
Unani	:	Kalonji, Kamaazarus
Siddha/ Tamil	:	Karum Seeragm
Ayurvedic	:	Kaalajaaji, Sushavi, Kalikaa
Bengali	:	Kalijira, Mungrela [7]
Arabic	:	Habbatus soudah, Habbul Barkah [4, 3]
Persian	:	Shownee, shoonuuz
Hindhi	:	Kalonji, Magreela
Turki	:	Karachoorak Oodhi [5, 4]

**Botanical description:** *Nigella* is a small genus of annual herbs found in Southern Europe and Western Asia, but chiefly in the Mediterranean region. Three species are recorded in India. *Nigella Sativa* Linn is one among them and it is 45 cm tall, said to be cultivated or occasionally found as a weed of cultivation in Punjab, Himachal Pradesh, Bihar and Assam. Leaves 2-3 cm pinnatiset, 3.5-5.0 cm longcut into linear lanceolate segments; flowers pale blue 3.0-3.5 cm, without an involucre, on solitary long peduncles; seeds trigonous black, rugulose tubercular [7].

### **Chemical constituents**

The active constituent of Kalonji is Thymoquinone [8]. Analysis of Kalonji gave following values; total ash, 3.8-5.3; ash insoluble in Hcl, 0.0-0.5; volatile oil, 0.5-1.6; ether extraction Fatty oil, 35.0-41.6; and alcoholic acidity, 3.4-6.3%. The seeds gave on steam distillation a yellowish brown volatile oil with an unpleasant odour [7].

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The oil contains Carvone, d-limonene and cyme. A Carbonyl compound, Nigellone. Besides volatile and fatty oils, seeds contain a bitter principle Nigellin, tannins, resins, proteins, reducing sugars (Mostly glucose), saponins and other alcohol soluble organic acids. The free amino acids in dormant seeds are Cystine, Lysine, Aspartic acid, Glutamic acid, alanine, Tryptophan, Valine and Leucine. A toxic Saponin, Melanthin, which gives on hydrolysis Melanthigenin is also present. The Concentration of alcohol soluble acids in broken or powdered seeds increases rapidly during storage even in closed containers [7].

#### Mizaj (Temperament)

Hot 2<sup>nd</sup> Dry 2<sup>nd</sup> [4, 6]

Hot Dry 3<sup>rd</sup> [5, 9, 10]

**Parts used:** Seeds and oil of seed [4, 5]

**Dosage:** 3-5 gm [4, 9]

#### Functions and uses

Jali, Jaazib, Munafise balgham, mohallile riyah, Muqavvie meda, Mulayyan, Qaatile Qirme shikam, Mohallile awraam, Musakine auja, Mukhrije janeen wa masheema. It is used in the treatment of various ailments. It acts as diuretic, antibacterial, emmenagogue, galactagogue, carminative, stimulant. It is also useful in skin infections, puerperal fevers, loss of appetite. Locally used, it removes painful swellings [2-6, 9-13].

#### Muzir (Adverse effects)

Toxic effects on kidney and Diptheria [4, 6].

It should be avoided during pregnancy when taken orally in doses exceeding food amounts. Use should be avoided during breastfeeding because of insufficient safety data [14].

**Musleh (Correctives):** Kateera (*Sterculia urens*) [4, 6]

**Badal (Substitute):** Anisun (*Pimpinella anisum* Linn) [6]

#### Ethnobotanical reports

##### Action and uses

Stimulant, carminative, diuretic, lactiferous, emenagogue, used in puerperal fevers. Powdered seeds externally applied to boils. Essential oil used in common cold, cough and bronchospasm [2, 7].

#### Scientific report

- Low concentration of Nigellone has been shown to inhibit the release of histamine from mast cells in animals.
- The ethanolic extract of the seeds and the volatile oil from seeds showed antispasmodic activity in experimental animals, possibly due to a calcium antagonistic effect.
- The oil exhibited CNS depressant and potent analgesic effects on experimental animals, possibly due to the presence of an opioid principle in the oil.
- Alcoholic extracts of the seeds show antibacterial activity against *Micrococcus pyogenes* var. *aureus* and *Escherchia coli* [2, 7].
- Thymoquinone is reported to have hepatoprotective activity.
- Significant hypoglycaemic activity has been reported and is thought to be due to essential oil present.

- Antifertility activity in male rats has been established, shown by an inhibition of spermatogenesis and a significant reduction in sialic acid content of the testis, epididymis, seminal vesicles and prostate.
- The essential oil produced significant analgesic activity using chemical and thermal noxious stimuli methods.

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