**Scientific Name:** *Nigella sativa* L.

**Local Name(s):** Alhaba Alsodaa, Habat Albaraka.

**Arabic Name(s):** Alhabah Alsodaa, Habat Albaraka; Cumon Aswad, Showneez(Per.)

**Common Name(s):** Black seed, Black Cumin

**Family:** Ranunculaceae

**Description:**
Annual herb, 30-50 cm high, pubescent or glandular-hirsute. Leaves much divided, finely pinnate, leaf-segments linear to linear-lanceolate. Flowers solitary at end of branches, blue, star-shaped, sepals 5, petaloid, oval c.7-14x 6-8mm, shortly clawed; petals smaller than the sepals, 5(-8), nectariferous, with a bent claw and two lobes, stamens numerous, carpels 2-10 fused with five free styles. Fruit several follicles, crowned by persistent styles, many-seeded, brownish when ripe; seeds dark grey to black, trigonous, wrinkled, white and oleaginous inside, aromatic

**Habitat & Distribution:**
The plant is found wild in southern Europe, northern Africa, Asia Minor and in the Mediterranean region, but has been cultivated into other parts of the world including Saudi Arabia, Mediterranean countries, northern Africa and parts of Asia, in UAE rarely cultivated in private farms.

**Part Used:**
Seeds, oil

**Traditional & Medicinal Uses:**
The seeds are acrid, bitter, aromatic, thermogenic, carminative, diuretic, emmenagogue, anodyne, antibacterial, anti-inflammatory, digestive, appetizer, anthelmintic, febrifuge, stimulant, galactagogue, expectorant and sudorific.
The seeds are also used for cough, amenorrhea, flatulence, jaundice, dyspepsia, inflammation, paralysis, skin, eyes, respiratory, stomach and liver problems, diarrhea, dysentery and dysmenorrhea.

**Pharmacognosy and Phytochemistry**

Parts Studied: Seed

**Microscopic Description:**

The epidermis of the testa is composed of compact polygonal cells with straight thick cell walls and they are rich in dark-coloured pigments. The parenchyma of the testa are also polygonal and they show beaded thick cell walls and the cell pigment contents are dark orange to red in colour. The outermost layer of the endosperm is composed of compact whitish parenchyma cells. The endospermic parenchyma are also polygonal and are rich in fatty material. (DPS ZCHRTM Unpub. Results).

(a). A general TS of the seed near the tip showing its typical pyramidal shape. Shown from outside are the papillose cells and normal epidermal cells (dark purple) then layers of parenchymatous cells (light brown) and then the circular light pink area of the endosperm. (b). TS of the seed showing the outer most group of papillose cells with thick cells walls followed by normal oval epidermal cells underlain by layers of parenchyma followed by the yellowish-brown colored collenchymas (outermost layer of the endosperm) then the polygonal endospermic cells. (c). TS at the seed endosperm polygonal cells some of which are almost square in outline. Those to the right side are filled with aleurone grains and other substances while those on the left side contain oil droplets. (Magnifications: x 100, x 400 and x 400, respectively).
**Organoleptic characteristics:**

- **Appearance:** Solid powder
- **Colour:** Grayish black
- **Odour:** Spicy
- **Taste:** Hot

**Physicochemical constants:**

**Loss in weight on drying at 105°C (%):** 6.10

**Solubilities (%):**
- **Alcohol solubility:** 34.80-36.80
- **Water solubility:** 12.00-
- **10% ethanolic extractive:** Not done

**Ash values (%):**
- **Total ash:** 4.50
- **Water soluble ash:** Nil
- **Acid-insoluble ash:** 0.33

**Successive extractive (%):**
- **Petroleum ether (60-80°C):** 37.0-38.3
- **Chloroform:** 1.5-1.6
- **Absolute alcohol:** 550-5.90
- **Distilled water:** Not done

**pH values:**
- **pH of 1% solution:** 6.14
- **pH of 10% solution:** 5.97

**Chemical constituents:**

Volatile oil (1.5%) consists of carvone (45-60%), carvene (limone, a terpene) and cymene. Seeds yield 38% of fixed oil. Negellimine N-oxide, Citronellol, Nigellicine and thymoquinone have also been reported from seed. (Buckingham 1994, DPS, ZCHRTM Unpub. results).

**Pharmacological and Toxicological Studies:**

*Nigella* seeds showed CNS and analgesic activity (Khanna and Zaidi, 1993); anti-inflammatory activity (Ali aand Ammar, 1997); antimicrobial effect (Morsi, 2000), diuretic and hypotensive effects, (Zaoui and Cherrah 2000); antiviral activity (Salem and Hossain, 2000).

*Nigella sativa* L. oil protects against induced hepatotoxicity and improves serum lipid profile in rats (El-Dakhakhny and Mady et al., 2000). Hepatoprotective activity of the isolated fraction has also been shown (Daba and Abdel, 1998).
Barkat et. al., 2000); antioxidant activity. Antiulcer effects of aqueous extract (Mansoor, et. al., 2001) has been reported. Immunomodulatory effect of *Nigella sativa* proteins (Haq and Lobo, 1999) and of ethanolic extract of *Nigella sativa* L. seeds reported (Swamy and Tan, 2000). Subchronic toxicity has been carried out (Badary et. al., 1998).

Black seeds are reported to have preventive effect of skin tumors induced by 7,12-dimethylbenz (l) anthracene in mice (El-Dhakhany and Abdel et. al., 1997). The plant enhances its anti-tumor activity in mice (Badary, 1999). Anti-tumor activity of some crude and purified compound has been shown by *Nigella sativa* (Worthen and Ghosheh, 1998). The pharmacological and toxicological studies carried out in ZCHRTM laboratory (Aqueous extract)
The results presented without references showed unpublished data (UPD, ZCHRTM, DBMS):

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual studies-Copulatory activity (Acute activity)</td>
<td>The extract did not show any sexual stimulant activity (Copulatory activity).</td>
</tr>
<tr>
<td>Sexual studies-ICP</td>
<td>Significant increase in Intracavernous pressure (ICP) was found.</td>
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<tr>
<td>Anti-asthmatic activity-Tracheal Chain</td>
<td>Produced mild relaxation in histamine and ACH pre-contracted tracheal chain.</td>
</tr>
<tr>
<td>Anticonvulsion activity</td>
<td>Showed mild protective effect.</td>
</tr>
<tr>
<td>Antidepressant activity</td>
<td>Showed significant antidepressant effect.</td>
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</tbody>
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<th>ACTIVITY</th>
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</thead>
<tbody>
<tr>
<td>Acute toxicity studies</td>
<td>Found safe at the dose tested.</td>
</tr>
<tr>
<td>Antidepressant activity</td>
<td>Showed significant antidepressant activity.</td>
</tr>
<tr>
<td>Anti-convulsant activity</td>
<td>Showed significant anti-convulsant activity.</td>
</tr>
<tr>
<td>Anticonvulsion activity</td>
<td>Showed mild protective effect.</td>
</tr>
<tr>
<td>Estrogen activity</td>
<td>Failed to produce estrogenic activity.</td>
</tr>
<tr>
<td>Sub-acute toxicity test</td>
<td>Sub-acute administration of oil in the animals treated for 15 days showed no overt signs and symptoms at the dose tested.</td>
</tr>
</tbody>
</table>
Summary of the results:

The extract showed significant intracavernous pressure showing erectile activity. However, did not show any sexual stimulation in coupulatory experiment. The extract showed significant antidepressant activity and mild anticonvulsant activity in mice. The extract and oil of Nigella sativa showed no overt signs and symptoms of toxicity at the dose tested.

Antimicrobial activity

Extract of Nigella sativa seeds caused various concentration inhibition of Staphylococcus aureus, Bacillus cereus, Pseudomonas aeruginosa, Escherichia coli, Salmonella typhimurium and a pathogenic yeast Candida albicans (DM, ZCHR; Hanafy et al., 1991; Khan et al., 2003). On the other hand, black seed oil exhibited a striking antiviral effect against murine cytomegalovirus (MCMV) infection which may be mediated by increasing of macrophages; number and function, and interferon (IFN)-gamma production. (Salem et al., 2000).

References:

- Andrews, F.W. The Flowering Plants of Anglo-Egyptian Sudan; (1950&1952) vol 1+II; Arbroath, Scotland.
- Department of Biomedical Sciences, Zayed Complex for Herbal Research and Traditional Medicine, Unpublished results.
- **Department of Microbiology**, Zayed Complex for Herbal Research and Traditional Medicine, Unpublished results.
- **Department of Pharmacognostic Sciences**, Zayed Complex for Herbal Research and Traditional Medicine, Unpublished results.


- **هاني عروش الأعشاب في كتاب: الاستخدامات الطبية العلاجية التجميلية الصناعية. (1999) دار النفاس، دمشق، سوريا.**