

UNANI INSIGHTS OF TUKHM SHIBAT (*ANETHUM GRAVEOLENS*): A
COMPREHENSIVE REVIEWAliya Parveen¹, Mariyam Roqaiya² and Nawazisha^{3*}¹PG Scholar Department of Niswan wa Qabalat, Luqman Unani, Medical College, Hospital and Research Centre
Vijaypur, Karnataka, India, 586101.²Lecturer, Department of Qabalat wa Amraze Niswan, State Takmeel-ut-tib College and Hospital, Lucknow, Uttar
Pradesh, 226002.³PG Scholar, Department of Qabalat wa Amraze Niswan, State Takmeel-ut-tib College and Hospital, Lucknow, Uttar
Pradesh, 226002.

*Corresponding Author: Nawazisha

PG Scholar, Department of Qabalat wa Amraze Niswan, State Takmeel-ut-tib College and Hospital, Lucknow, Uttar Pradesh,
226002.

Article Received on 06/04/2025

Article Revised on 27/04/2025

Article Published on 18/05/2025

ABSTRACT

Medicinal plant species contain a vast array of largely unexplored chemical compounds with significant therapeutic potential, making them valuable sources for biomedical research and drug development. *Anethum graveolens* is among the medicinal plant plays a significant role in several traditional healing practices, such as Chinese, Ayurveda and *Unani* system of medicine. The use of its seeds, leaves has been highly recommended by the *Unani* physicians to treat various ailments especially gynecological disorders and gastrointestinal disorders. Various alkaloids have been isolated in phytochemical analysis indicating the medicinal properties of this plant. various parts of this plant have different pharmacological actions proven by experimental studies such as Anti-inflammatory, Analgesics Antispasmodic etc. The main aim of this paper is to highlight the uses of this plant in *Unani* system of medicine as well as to give the snapshot of phytochemical and pharmacological actions.

KEYWORDS: Phytochemical; pharmacological; *Dill*; *Anethum graveolens*; *Tukhm Shibat*.

INTRODUCTION

Anethum graveolens (Fam. Umbelliferae), known as Dill. The drug is also known as *Tukhm-e-Soya*. Consists of dried fruits of *Anethum graveolens* (Fam. Apiaceae) is an Annual herb growing in the Mediterranean region, Europe, central and southern Asia. The herb grows wild as well as cultivated throughout India.^[1] This plant is belongs to the family Apiaceae Elderly known as Umbelliferae because of its Umbrella shaped flower.^[2] The common name "**dill**" is believed to originate from the Old Norse word *dilla*, which means "**to lull**" or "**to soothe**"—likely referring to the herb's traditional use in calming digestive issues and soothing colic in infants. This etymology reflects dill's long-standing role in folk medicine for its calming properties.^[3] Dill has been used traditionally as a popular aromatic herb and spice for gastrointestinal disturbances such as flatulence, indigestion and colic.^[4,5,6] Its efficacy of sowa increased by adding a teaspoonful of lime water^[7] *Anethum* grows up to 90 cm tall, with slender stems and alternate leaves finally divided three or four times into pinnate sections slightly broader than similar leaves of fennel. The yellow flower develops into umbels.^[8] The earliest known record of dill as a medicinal herb was found in Egypt 5000 years ago when the plant was called as a "soothing

medicine".^[9]

Various pharmacological effects have been reported in experimental studies including antispasmodic,^[10] antimicrobial,^[11] antihyperlipidemic and antihypercholesterolaemic activities,^[12] etc. It has been found effective in patients of dysmenorrhea, labor, diabetes, etc.^[13,14]

TAXONOMICAL CLASSIFICATION

Kingdom: plantae,**Division:** Magnoliophyta,**Class:** Magnoliopsida,**Order:** Apiales,**Family:** Apiaceae,**Genus:** *Anethum*,**Species:** *Graveolens*.^[15]

Vernaculars

- Urdu: *Sowa*^[1]
- Arabic: *Shibt*^[1]
- Persian: *Shibt*, *Shood*^[1]
- Kannada: *Sabbasige*^[7,16,17]
- Bengali: *Sowa*,^[1,7,18] *Shulupa*^[1,7,17]

- English: Dill Seeds,^[1,17] Sowa^[1,18]
- Gujarati: *Suah*^[1] *Surva*^[1,17,18]
- Hindi: *Sowa*,^[1,17,18] *Soya*^[1]
- Malayalam: *Chatukuppa*^[1,7]
- Punjabi: *Soya*^[1,7,17]
- Sanskrit: *Satapushpi*,^[1,7,17] *Misroya*^[17]
- Tamil: *Satakuppi*,^[1,18] *Shatakupivirai*^[1,7,17]
- Telugu: *Sompa*^[1]
- German: Garter Dill^[17]
- French: Persil des marais^[17]

Mahiyat (description in Unani literature): Seeds are flat oval shaped having six prominent lines, where sixth line is 1 inch long proximal part is wide, thin like membrane which is odours bitter in taste and yellow in colour. The seeds can be split in to two cotyledons. And each cotyledon has six ridges. Seeds are similar to Aniseed, Fennel, Cumin and shokraan. It is differentiated by thin membrane like wings which is attached from outside, that contains 3% of volatile oil which is responsible for its unique odour and effect.^[19] Seeds are small and flat compared to fennel seeds.^[20,21] Its effect is up to 2 years.^[21]

Part used: seeds, leaves,^[16] essential oil^[20]

Mizaj (temperament): Hot 2°-3° and Dry 1°-2°^[22,23,24]
Hot3° and Dry3°^[19,20,21]

Mazah (taste): Bitter^[19,21] and pungent^[20,21] Aromatic^[1,20]

Colour: Yellowish black.^[18,21]

Af'a l (actions)

Munziz balgham wa sauda^[22]

Musakkin-e-alam^[19,20,22,24]

Mudammil qurooh^[19,22]

Mufatteh^[19,22]

Kasir -e-riyah^[1,20,24]

Hazim^[19]

Muqawwie baah^[19]

Munawwim^[22,24]

Mulayyan^[22,25]

Muqi^[20,21,22]

Mudir baul^[19,20,21]

Mudir haiz^[19,20,21]

Mudir laban^[22,24]

Iste'malat (therapeutic uses)

- **Digestive system:** It is useful in hiccups. It cures haemorrhoids when used as sitz bath or as enema.^[21,22] Specially used for phlegmatic hiccup.^[19] It is also used in the form of ointment to treat the same.^[23] Along with honey it is highly beneficial in curing piles and rectal prolapse.^[21] Its oil is used to cure acidity, flatulence and colitis.^[20] Its decoction is used as sitz bath to relief abdominal cramps.^[24]
- **Genitourinary system:** It is helpful in healing genital ulcers and wounds.^[21,22] Its decoction is used

as sitz bath to reduce dysmenorrhea.^[20,23,25] It removes renal stones when used with salt and honey, also cures dysurea.^[19,21] Its decoction cures dysuria when given orally. Its decoction is useful to relieve pain in renal calculi.^[23] Seeds are crushed and mixed with jaggery and given with butter milk to cure dysurea.^[19]

- **Diseases of ear, nose and throat:** Its leaves extract is highly beneficial in otorrhea and earache.^[20,22,23] Seeds are boiled and vapours are inhaled to cure cold and catarrh. It relieves nasal blockage.^[19] Its oil is instilled in the ear to relieve ear ache.^[20]
- **Diseases of cardiovascular system:** Its decoction/infusion is beneficial for heart in postnatal women.^[19]
- **Miscellaneous:** Dusting of its powder heals wound.^[21] Seeds are crushed in sesame oil or olive oil and massaged on affected joints in Arthritis and Gout. Oil extract is used to cure colicky pain in children. Seeds are crushed and mix with jaggery and given with milk for lactating mother to increase milk production. Its seeds are crushed with castor seeds and applied hot, to dissolve benign tumors. Massage of its oil will relieve myalgia. Its massage is effective in phlegmatic diseases.^[19] Decoction of seeds removes excess of bile and *phlegm* from the body.^[23] Its decoction is used as emetic for phlegmatic disease. Its oil is used as massage for neuralgia, bell's palsy, hemiplegia and arthritis.^[20]

Miqdare khurak (dosage): 1-2^[1,21] Oil 1-3 drops.^[20]

Muzir (adverse effect)

- *Muqi*(emetic)^[22]
- *Zofebasar* (reduces vision)^[20,21,22,24]
- *Baahwamani*^[20,21,24]
- *Dimagh*^[20,21]
- *Gurda w Masana*^[19,20]
- *Mizaj e Har*^[19]

Musleh (corrective): *Sikanjabeen* and citrus fruits^[19,20,21]

For cold temperament: Honey, cinnamon and cloves^[19]

For hot temperament: *Sikanjabeen*.^[19]

Badal (substitute): *Soya khushk* or *soya tar*.^[19,20,21]

Murakkabat (compound formulations)

- *Jawarish-e-Fanjnosh*^[1]
- *Safoof-e-Moya*^[1]

Ethnobotanical description

Habitat: Dill is an annual herb and indigenous to Southern Europe. It is cultivated in England, Germany, Romania, USSR, USA and India.^[18] It is cultivated throughout India in gardens for culinary purposes.^[1,7,16,17]

Morphology: Dill usually consists of separated mericarps generally free from pedicels. Mericarps are broadly oval in shape, about 3 to 4 mm long, 2 to 3 mm

wide and 1 mm thick. The fruits are dorsally compressed. It has five primaries yellow-colored ridges in which three of them are not clearly seen, but the lateral two ridges are extended as wings.^[1,18] At apex, a distinct stylopod is found.^[18] Fruit sub-elliptical, the mericarps remaining joined together vittae with irregular marginal walls.^[16]

Actions: Carminative,^[7,16,17] Analgesic,^[7] Diuretic,^[16,17,18] Stimulant,^[17,18] Aromatic,^[17,18] Emmenagogue,^[16,17] Galactagogue,^[16,17] Anti-spasmodic,^[16] Anti-dysenteric,^[16] Anaphrodisiac,^[16] Febrifuge,^[16] Expectorant,^[16] Cardiotonic,^[16] Anti-inflammatory,^[16] Anthelmintic,^[16] Resolvent.^[17]

Uses: Essential oil of the seeds are used as carminative action for flatulence, colic and abdominal pain in children and in adults.^[7] It is used in the preparation of gripe water and Dill water for the same.^[17,18] The seeds are fried in butter and used to check diarrhoea. Seeds are bruised and boiled in water and mixed with the roots are applied externally in rheumatic and other swellings of joints. Leaves are moistened with a little oil and warmed and applied on boils and abscesses to hasten suppuration.^[7,17] Its common use in Ayurvedic medicine is in abdominal discomfort, colic and for promoting digestion which is used in the preparations of more than 56 ayurvedic preparations.^[26]

Phytochemical properties: Dill seeds contain volatile oil (3-4%) which is known as oleum Anethi. The main constituent of volatile oil is carvon (50-60%) along with other components like limonene, phellandrene, alfa-thujene dihydrocarbon.^[17,18] The Indian Dill oil contains low carvone (i.e., 22-46%) and high dillapiol which is not present in European dill. Dillapiol is poisonous in character that can be separated by fractional distillation. The European Dill contains only one flavonoid i.e., kaempferol, while Indian Dill contains three flavonoids, quercetin, kaempferol and isorhamnetin.^[18]

Pharmacological properties

- **Uterine relaxant property:** Dill fruit hydro alcoholic extract relaxed both KC1- and oxytocin-induced contractions in dose dependent manner with more potent spasmolytic effect on oxytocin-induced contractions.^[27]
- **Antispasmodic effect:** Dill fruit hydroalcoholic extract showed relaxatory effect on the BaCl₂ induced ileum contraction in rats which was found greater than spasmogens.^[10] Similarly Dill methanolic extract significantly reduced spontaneous and acetylcholine induced contraction in isolated rat ileum.^[28]
- **Analgesic effect:** The aqueous extract of *Anethum graveolens* exhibited significant analgesic effect in the dose of 250 mg/kg, body weight compared with the tramadol in Wister rats.^[9] *Anethum graveolens* reduced inflammatory pain in mice, probably by inhibiting inflammatory mediators.^[29] Further in another experimental study hydroalcoholic extract of

Anethum graveolens showed short analgesic effect in mice.^[30] The decoction of *Anethum sowa* Linn. leaves and stem also showed significant analgesic activity against acetic acid induced writhing in mice.^[31]

- **Sedative property:** Aqueous extracts of dill, the volatile oil and carvone were tested on the motility of mice. The aqueous extracts of the leaf have a strong effect diminishing the spontaneous motility from 100 percent to 56 percent in the third hour. Concerning the volatile oil, an exciting effect was observed. Similar values were obtained with the main component of the volatile oil carvone.^[32]
- **Antinociceptive effect:** Among the different parts of *Anethum graveolens*, the anti-nociceptive effect was found strongest by the fruits while the volatile oil showed weaker effect.^[32] In contrast, this plant has no analgesic effects on spinal nociception and conversely may exacerbate it.^[29] hydroalcoholic extract of *Anethum graveolens* seeds showed anti-nociceptive effect by using formalin test in mice.^[33]
- **Anti-inflammatory:** Dill oil significantly reduced the Formalin-induced inflammation paw volume in rats which was comparable to diclofenac gel.^[34] Further hydro alcoholic extract of *Anethum graveolens* seeds showed anti-inflammatory effect in xylene induce ear oedema in mice.^[33]
- **Effect on reproductive hormone:** The hydro alcoholic extract of *Anethum graveolens* (Dill) significantly increased the serum concentration of progesterone hormone in Female Rats but the estrogen level was not significantly changed.^[35]
- **Antidepressant effect:** The aqueous extract of *Anethum graveolens* exhibited significant antidepressant effect in the dose of 250 mg/kg, body weight compared with the sertraline Wister rats.^[9]
- **Antidiabetic property:** Aqueous extract of *A. Graveolens* caused significant decrease in blood glucose level along with significant increase in body and organ weight in alloxan induced diabetic mice.^[36] Administration of Dill tablets significantly reduced fasting blood glucose levels and AGEs formation in diabetic animals.^[37]
- **Haematological property:** Carvone and aqueous extract of *A. Graveolens* significantly increased red blood cell count, haemoglobin, Mean Corpuscular Haemoglobin, Mean Corpuscular Haemoglobin Content when compared with control.^[36]
- **Antioxidant property:** Dill tablet showed significant antioxidant activity as oxidation of protein carbonyl and thiol group was significantly reduced by dill tablet in a dose dependent manner.^[37] In vitro, the crude extract of *Anethum graveolens* L. presented radical scavenging ability for ABTS radical cations as well as reducing activity for ferric ions.^[38] Dill tablet has shown significant antioxidant activity at doses of 100 and 300 mg/kg.^[39] The methanol fraction of *Anethum graveolens* L. displayed the highest level of DPPH radical scavenging while the deodorized hot water fraction

exhibited the highest inhibition of lipid peroxidation inhibiton.^[40]

- **Hepatoprotective activity:** Dill tablet has shown significant Hepatoprotective activity on carbon tetrachloride-induced liver damage on rat and antioxidant activity at doses of 100 and 300 mg/kg showing its useful in the treatment of some hepatic disorders.^[39]
- **Anti-fertility effect:** In female rats, chloroform fraction of *Anethum graveolens* L. caused reduction in hormonal level, water fraction caused dioestrus phase prolongation and infertility, and chloroform and ether fractions exhibited increase in pregnancy duration.^[41] Aqueous extract of dill seeds induced infertility without showing any side effect on oocyte structure of female rats.^[42]
- **Anti-hyperlipidemic property:** The crude extract of *Anethum graveolens* L showed strong anti-hyperlipidaemic effects by reducing lipid peroxidation in liver and modulating the activities of antioxidant enzymes in rats fed with high fat diet. Oral administration of a water extract of *Anethum graveolens* leaves consecutively for 14 days reduced the triacyl glycerides and total cholesterol levels by almost 50 and 20%, respectively in rats.^[43] Daily oral administration of *Anethum graveolens* essential oil to rats for 2 weeks significantly reduced total cholesterol, triglyceride and low-density lipoprotein cholesterol in a dose dependant manner. It also increased significantly high-density lipoprotein cholesterol in the same model.^[44]
- **Antifungal property:** The essential oil extracted from the seeds of dill (*Anethum graveolens* L.) showed antifungal activity which results from its ability to disrupt the permeability barrier of the plasma membrane and from the mitochondrial dysfunction-induced ROS accumulation in *A. flavus*.^[45]
- **Antibacterial effect:** Various extracts of *Anethum graveolens* fruits were tested against H. Pylori infection and was found moderately against the tested bacteria.^[46] Essential oil fraction of *Anethum graveolens* L exhibited antibacterial activity against five pathogenic bacteria (*E. faecalis*, *K. pneumoniae*, *S. aureus*, *S. epidermidis* and *S. typhi*).^[40]
- **Diuretic effect:** The decoction of *Anethum sowa* Linn leaves and stem showed marked diuresis as compared to that of control in mice.^[31]
- **Effect on CNS:** The decoction of *Anethum sowa* Linn. leaves and stem reduced threshold tail flick response in rats and paw licking and jumping response in mice.^[31]

Clinical Studies

- **Dysmenorrhoea:** In a double blind randomized controlled trial dill was found effective in reducing the severity of dysmenorrhoea compared to mefenamic acid.^[13] Another randomized clinical trial found that *Anethum graveolens* is effective in reducing pain in patients of dysmenorrhoea with less

side effects compared to mefenamic acid.^[14] Dill seed was effective in reducing pain, followed by ginger wherein cumin did not exhibit any effect in a comparative study in dysmenorrhea.^[47]

- **Analgesic effect:** In a double-blind, clinical trial Dill seed oil was prescribed at intervals of half an hour and one hour before spinal anaesthesia and half an hour, one hour and two hours after spinal anaesthesia which showed reduction in pain, bleeding rate and use of narcotics and NSIADs indicating its usefulness in women undergoing caesarean section.^[48]
- **DM:** In clinical trial *A. graveolens* usage was found effective in reducing blood sugar level when compared with aerobic training and control group.^[49]
- **Lipid Profile:** *A. graveolens* showed significant increase in HDL and decrease in LDL to HDL in clinical trial.^[49] In patients with metabolic syndrome, 12 weeks of dill extract treatment showed beneficial effect in terms of reducing triglyceride from baseline. However no significant improvement in metabolic syndrome related markers was noted compared to control group.^[5] Administration of *Anethum graveolens* leave powder exhibited highly significant reduction in lipid profile and atherosclerotic index in hyperlipidemic patients which was found comparable to that of standard agent lovastatin.^[4]
- **Effect on labour duration:** Boiled *Anethum graveolens* seeds significantly reduced the length of the all stages of labour compared to control group in except for second stage in primiparous.^[50] In another clinical trial Dill seeds shortened the first stage of labour.^[51]
- **Antigiardial effect:** Administration of *Anethum graveolens* aqueous extract resulted in a significant decrease in incidence of *G. Lamblia* after 5 days of treatment in paediatric patients of both sexes indicating its efficacy in the treatment of giardiasis is comparable to that of Metronidazole.^[52]
- **Anti-anxiety effect:** Boiled seeds of *Anethum graveolens* are an effective treatment to reduce anxiety in labour patient. So, it could also be used to reduce cesarean section rates in women who are fearful and anxious of vaginal delivery.^[53]
- **Effect on uterine contraction in labour:** Administration of boiled *Anethum graveolens* seeds are effective in labour induction as compared with oxytocin.^[54] In another study also dill seeds reduced the length of labour.^[53]

ACKNOWLEDGEMENT

The Authors would like to Acknowledge the principal of Luqman Unani medical college and H.O.D of the department of Niswan wa Qabalat and Librarian of Luqman Unani medical College and Hospital Karnataka.

Conflict of interest

There is no conflicts of interest relevant to the content of this article.

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