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# ALSI (LINUM USITATISSIMUM L): AN INSIGHTFUL REVIEW OF A CLASSICAL MUFRAD ADVIA IN UNANI MEDICINE

Unani Medicine

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## ABSTRACT

Linum usitatissimum, commonly known as flaxseed or Alsi, is a significant medicinal plant in Unani medicine, recognized for its therapeutic potential since antiquity. While all parts of the plant are utilized, the seeds, particularly their oil, are most prominent in treatment protocols. This study explores the historical, phytochemical, and pharmacological aspects of Alsi, emphasizing its role in managing ailments such as throat disorders (Amraz-e-Halaq) and others. Literature from diverse databases, including PubMed, Google Scholar, and traditional Unani texts, was reviewed to consolidate existing knowledge. The findings highlight the extensive applications of Alsi in both traditional and modern medicine, advocating for further scientific research to validate its therapeutic claims.

## KEYWORDS

Alsi, Linum usitatissimum, Unani medicine, Tukhm-e-Katan, flaxseed

## INTRODUCTION

Flaxseed (Linum usitatissimum), Alsi in Unani medicine, has a rich historical and medicinal heritage. Originating in Mesopotamia around 5000 BC, it has been widely cultivated for its fiber, oil, and therapeutic applications. Ancient Egyptian texts document its dual use as food and medicine, emphasizing its cultural and health significance.(Ibn Sina, 2010; Jurjani I,1878;Arzani M, 2002.)

In Unani medicine, flaxseed is described as having a hot and dry temperament (mizaj) in the first degree, making it suitable for treating cold and moist conditions. Modern research corroborates its pharmacological properties, which include anti-inflammatory, hypolipidemic, and antioxidant effects. Despite its extensive use in traditional medicine, scattered scientific literature warrants a comprehensive review to bridge the gap between classical knowledge and modern therapeutic applications. (Ghani, 2001; Kabiruddin2006; Khan,1964.)

### Objective

This review aims to consolidate information on the botanical, phytochemical, and pharmacological aspects of Alsi, providing insights into its historical context and therapeutic significance in Unani medicine.

## MATERIALS AND METHODS:

This review systematically collected and analyzed information on Linum usitatissimum (Alsi) from various sources. Key Unani texts and classical treatises, including Khazain-ul-Advia and Makhzan-ul-Mufradat, were consulted. Modern databases such as PubMed, Google Scholar, ScienceDirect, and Scopus were searched using keywords like "Alsi," "flaxseed," "Tukhm-e-Katan," and "Roghan-e-Katan."(Ibn Sina, 2010; Jurjani I,1878; Arzani M, 2002; Kabiruddin 2006.)

The search emphasized publications related to traditional uses, phytochemical composition, pharmacological properties, and clinical studies. Data from scientific journals, books in Urdu and English, and online resources were systematically reviewed to ensure a comprehensive understanding. Relevant studies were categorized based on their relevance to Unani medicine and modern therapeutic applications.

### Drug Summary

### Description of Alsi in Ancient Literature

Flaxseed has been a part of human history since Mesopotamian times, approximately 5000 BC, primarily cultivated for fabric and paper production. Unani scholars like Ibn Baitar and Hakim Ajmal Khan highlighted its extensive therapeutic applications. The plant is described as an annual herb, with slender, branching stems, narrow lance-shaped leaves, and blue or violet flowers. The seeds, glossy and dark brown, are oval with a mucilaginous taste (Ghani, 2001; Kabiruddin2006; Khan,1964.)

### Geographic Distribution

Today, flaxseed is cultivated in over 2.6 million hectares globally. Leading producer's include Canada, India, China, and the United States, with Canada accounting for 80% of global flaxseed trade. The plant thrives in fertile, clay-rich soils and is primarily grown during the rabi season in India.(Ghani,2001; Kabiruddin 2006; Khan,1964.)

### Ethnobotanical Description

**Plant:** It is an erect annual herb, about 0.6-1.2 m high.
**Stem:** It is solitary or few, corymbosely branched. The branches are ascending towards the apex. Stem may be unbranched, erect or ascending curves.
**Leaves:** These are up to 3.8 cm long, linear, lanceolate, ovate. It is attenuated at both the ends acute at the apex. It has a smooth edge grey-green in color.
**Flowers:** It is usually blue in color may be bluish violet or white.
**Fruits:** The fruit is almost globular in shape, 6-8 mm long capsule on an erect or slightly bent stem. They have 5 cells, each containing 2 seeds.
**Seeds:** The seeds are compressed, dark brown. It is 4-6mm lenticular oval in shape. The surface is smooth shining. They are slightly flattened laterally and have one edge more acute than the other. The hilum lies in a depression close to the more acute edge of the seed. The raphe extending from the hilum to the broader end of the seed is in the form of a yellowish line along the acute edge. The seeds are highly mucilaginous in taste but completely devoid of any odor.
**Roots:** The root is short, fusiform and light yellow in color.
**Part Used:** Flowers, seeds, oil
**Part Studied:** Seeds.(Arzani 2002; Khan 1964; Rashid 2018)

**Alsi (Linum Usitattisimum)**

**Scientific/Taxonomical Classification:**
**Kingdom:** Plantae
**Subkingdom:** Tracheobionta
**Superdivision:** Spermatophyta
**Division:** Mangoliophyta
**Class:** Magnoliopsida
**Sub Class:** Rosidae
**Order:** Linales

**Family:** Linaceae
**Genus:** Linum L
**Species:** Linum Usitatissimum Linn
**Botanical Name:** Linum Usitatissimum
(Rashid2018; S., Fukumitsu2008;Rodriguez-Leyva2006)

**3.5: Vernacular Names**

| S.N | Languages | Vernacular names |
|---|---|---|
| 1. | Urdu | Alsi, Katan |
| 2. | English | Flax, Flix, Linseed, Lint Bells |
| 3. | Hindi | Tisi |
| 4. | Arabic | BazrulKatan, Buzruk, Bazen, Katan |
| 5. | Greek | Linon |
| 6. | Sanskrit | Nilapushpi, |
| 7. | Kannad | Agasebeeja, Semeegara, Agasi, Kain Atish, |
| 8. | Kashmir | Alish, Kenu |
| 9. | | Flachs, Haarlinsen, Lein, Saatlein |
| 10. | Telgu | German |
| 11. | Malayalam | Agastha, Cheruchana،Vittintevilta |
| 12. | Punjabi | Alish, Alsi,Tisi |
| 13. | Kannada | Agasebeeja, Semeegara, Agasi, KainAtish, |
| 14. | Unani | Lisfermoon, Lifertus |
| 15. | Persian | Bazarug, Kuman, |
| 16. | Marathi | Alashi, Javas |
| 17. | Behar | Chikna, Tisis |
| 18. | Bengali | Tisi, Alasi |
| 19. | Bombay | Javasa, AlasiJavass |
| 20. | Gujarati | Alshi, Arasi |
| 21. | Tamil | Alshi |
| 22. | Chinese | Hou la Tse |
| 23. | Italian | Lino |
| 24. | Turki | Ziggar |

(Arzani2002; Ghani, 2001; Kabiruddin2006; Khan, 1964.)

**6. Nutritional Composition**
Flaxseed is a functional food with a high nutrient density. Its nutritional profile is summarized in **Table 1.**(Smith, 2020; Johnson et al., 2018).

| Nutrient | Amount per 100 g |
|---|---|
| Moisture (g) | 6.5 |
| Protein (g) | 20.3 |
| Fat (g) | 37.1 |
| Minerals (g) | 2.4 |
| Crude Fiber (g) | 4.8 |
| Total Dietary Fiber (g) | 24.5 |
| Carbohydrates (g) | 28.9 |
| Energy (kcal) | 530.0 |
| Potassium (mg) | 750.0 |
| Calcium (mg) | 170.0 |
| Phosphorus (mg) | 370.0 |
| Iron (mg) | 2.7 |
| Vitamin A (µg) | 30.0 |
| Vitamin E (mg) | 0.6 |

**Main Components of Alsi and Their Health Benefits:**
**1. Omega 3 Fatty Acids**
Recent studies have continued to explore the health benefits of omega-3 fatty acids found in flaxseed, particularly alpha-linolenic acid (ALA). A 2020 review suggests that omega-3s, including ALA, may help reduce inflammation and prevent the buildup of fat in arteries (atherosclerosis).

Additionally, a comprehensive review highlighted that regular consumption of flaxseed may help improve lipid profiles, lower blood pressure, and reduce fasting glucose levels, contributing to cardiovascular health.

These findings underscore the potential of flaxseed-derived omega-3s in supporting cardiovascular health and managing related conditions. ( Chowdhury S. R et al 2020)

**2. Protein in Alsi**
Flaxseed (Linum usitatissimum) is a rich source of high-quality proteins that offer various health benefits. Recent studies have highlighted the antioxidant, antihypertensive, and anti-inflammatory properties of flaxseed proteins and cyclic peptides, which contribute to overall health improvement.

Additionally, flaxseed proteins have been found to enhance nutritional quality when incorporated into food products, thereby supporting better health outcomes.

These findings underscore the potential of flaxseed proteins as functional ingredients in promoting health and preventing disease. (Zhou et al, 2022)

**3. Dietary Fiber of Alsi and its Health Benefits:**
Flaxseed meal is an excellent source of dietary fibers, including crude, acid detergent, neutral detergent, and total fibers such as cellulose, lignin, and hemicellulose. Its fiber content ranges from 22% to 26%, which is significantly higher than many high-fiber legumes, with a half-ounce of dry flaxseed fulfilling up to 25% of daily fiber requirements. Flaxseed fibers, comprising both soluble (20-40%) and insoluble (60-80%) fractions, contribute to health benefits such as appetite regulation and reduced nutrient absorption, aiding in weight management. Soluble fiber forms a gel in the stomach, slowing gastric emptying, which may lower blood glucose levels and reduce cholesterol absorption, promoting its excretion. ( Bernacchia r et al, 2014)

**Miqdare Khurak (Dose):**
10-15 gms
10-15 g of seed – in kidney disease
40 g-in menopausal syndrome
35-50 g –muffins or breads in hypercholestremia.
500-600 mg of seed extract in diabetes type -2
1-2 tablespoonful daily-decrease platelet aggregation[2].

**Muzir (Side Effects):** For digestion, Khusiya i.e. testes, Eyes, Decrease blood formation (Ibn Sina,2010;Jurjani I,1878;Arzani M, 2002. Rashid2018.)

**Musleh (Corrective):**
Kishneez (Coriandrumsativum)
Sikanjabeen (A syrup obtained by mixing vinegar and honey)
Shahad/ Asl-e- Khalis(honey)
Anar (punicagrantum)
Gulqand (A preparation made of rose petals or petals some other flowers and powdered sugar, mixed in ratio of 1:3(Jurjani I,1878; Arzani M, 2002 Kabiruddin 2006)

**Badal (Subsititue) of Tukhm-e-Katan**
Tukhm-e-bqilla (ViciaFaba)
Tukhm-e-Hulba(Trigonellafoenum-graceum) (Ibn Sina, 2010; Jurjani I,1878; Arzani M, 2002.)

**Murakkabat in Unani Medicine:**
QairootiBazr-e-Katan, Qairroti-e-Mohallil, Laooq-e-katan, Zamad-e-Khanazeer, Marham-e-Dakhilyun (Ibn Sina, 2010; Jurjani I,1878; Arzani M, 2002 Rashid2018.)
**Therapeutic Uses**
Unani medicine extensively utilizes flaxseed for its therapeutic benefits across various ailments. Table 2 summarizes the primary uses and formulations of Alsi.

| Therapeutic Application | Method of Use | Unani Term |
|---|---|---|
| Throat infections | Decoction or paste for gargling | Amraz-e-Halaq |
| Menstrual disorders | Oral consumption of seeds or oil | Mudir-e-Haiz |
| Inflammatory conditions | Poultice or oil massage | Muhallil-e-Waram |
| Digestive issues | Laxative use of whole seeds | Mushil |
| Respiratory disorders (asthma) | Flaxseed with honey | Zeequnnafas |
| Skin disorders (acne, chloasma) | Paste with vinegar | Kalaf |
| Wound healing | Application of seed oil | Musleh-e-Rehum |
| Menopausal symptoms | Dietary supplementation (seeds) | Nafa-e-Haiz |
| Ulcerative colitis and intestinal blockage | Enema with oil | Huqna |

(Ibn Sina, 2010; Jurjani I,1878;Arzani M, 2002;Ghani, 2001; Kabiruddin 2006; Khan, 1964.)

## DISCUSSION

Flaxseed (Linumusitatissimum), known as Alsi in Unani medicine, is a multifaceted therapeutic agent with a wide range of pharmacological activities. Its historical use as a medicinal and nutritional product highlights its enduring significance in traditional healthcare system. (Ibn Sina,2010;Jurjani 1878.)

### Therapeutic Significance in Unani Medicine

Unani scholars have extensively documented the benefits of Alsi in managing conditions such as throat infections (Amraz-e-Halaq), inflammatory disorders, and menstrual irregularities. The temperament (mizaj) of flaxseed, described as hot and dry in the first degree, aligns with its use in cold and moist conditions, emphasizing its adaptability in diverse ailments. (Ghani, 2001; Kabiruddin2006; Khan, 1964.)

### Modern Pharmacological Actions of Alsi (Linumusitatissimum)

Alsi (flaxseed) is a rich source of omega-3 fatty acids, lignans, dietary fiber, and other bioactive compounds, which contribute to its wide range of pharmacological actions. Numerous studies have demonstrated its therapeutic potential in various domains of health.

**1. Anti-inflammatory Effects:**

Flaxseed is a significant source of alpha-linolenic acid (ALA), an omega-3 fatty acid known for its anti-inflammatory properties.

**Study Evidence:**

A study published in Nutrition Reviews highlighted that ALA reduces the production of pro-inflammatory cytokines like interleukins and tumor necrosis factor-alpha (TNF-α). This makes it effective against chronic inflammatory diseases like rheumatoid arthritis and inflammatory bowel disease. (Rashid2018.Rodriguez 2010)

**2. Cardio Protective Effects**

Flaxseed helps in reducing the risk of cardiovascular diseases by improving lipid profiles and reducing blood pressure

**Study Evidence:**

- A clinical trial in Journal of Hypertension showed that daily consumption of flaxseed reduced systolic and diastolic blood pressure significantly.
- Another study in American Journal of Clinical Nutrition demonstrated that flaxseed supplementation reduced LDL cholesterol levels by increasing fecal bile acid excretion.(Rodriguez2010; Pan A, 2019)

**3. Antioxidant Activity:**

The lignans (such as secoisolariciresinoldiglucoside) in flaxseed act as potent antioxidants.

**Study Evidence:**

Research in Food Chemistry revealed that flaxseed lignans scavenge free radicals, reducing oxidative stress and preventing damage to cells and tissues.

**4. Anticancer Properties:**

Flaxseed has been studied for its potential role in cancer prevention and management, particularly hormone-related cancers like breast and prostate cancer. (Thompson LU2006)

**Study Evidence:**

- A study in Cancer Letters reported that lignans have estrogen-modulating effects, reducing the risk of breast cancer in postmenopausal women.
- Flaxseed supplementation was found to slow the growth of prostate cancer cells in a randomized controlled trial published in Urology. (Thompson LU2006)

**5. Antidiabetic Effects:**

Flaxseed helps regulate blood glucose levels and improves insulin sensitivity.

**Study Evidence:**

- A study in Diabetes Care observed that the fiber in flaxseed slows glucose absorption, leading to improved glycemic control.
- The lignans in flaxseed were found to modulate insulin resistance in prediabetic individuals. (Thompson LU2006)

**6. Gastrointestinal Health:**

The dietary fiber in flaxseed promotes digestive health and prevents constipation.

**Study Evidence**

Research in Journal of Nutrition showed that flaxseed enhances stool bulk and acts as a mild laxative, making it beneficial for managing irritable bowel syndrome (IBS) and other digestive disorders.(Pan A,2019;Thompson Lu2006)

**7. Neuroprotective Effects**

Flaxseed oil, rich in omega-3 fatty acids, supports brain health and may prevent neurodegenerative diseases.

**Study Evidence**

A study in Neuroscience Research demonstrated that ALA in flaxseed oil reduced neuroinflammation and oxidative damage in animal models of Alzheimer's disease. (Rashid2018;Pan A,2019;Thompson Lu200)

**8. Weight Management**

Flaxseed aids in weight management by promoting satiety and reducing appetite.

**Study Evidence**

A randomized controlled trial in Appetite found that flaxseed fiber significantly reduced hunger and calorie intake in overweight individuals. (Rashid2018Pan A,2019;Thompson Lu2006; Kristensen 2013)

**9. Hormonal Balance**

Lignans in flaxseed exhibit phytoestrogenic activity, helping in conditions like menopause and hormonal imbalances.

**Study Evidence**

Clinical studies in Maturitas showed that flaxseed reduced menopausal symptoms like hot flashes and improved overall hormonal balance. (Thompson LU2006; Hallund J, 2006).

**10. Wound Healing**

Flaxseed oil promotes wound healing due to its anti-inflammatory and moisturizing properties.

**Study Evidence**

Research in Evidence-Based Complementary and Alternative Medicine indicated that topical application of flaxseed oil accelerated wound closure in animal models. (Jafarirad A et al, 2021), (Kakar A et al, 2022)

**11. Antimicrobial Properties**

Flaxseed (Linum usitatissimum) has demonstrated notable antimicrobial properties, particularly against oral pathogens. An in vitro study revealed that flaxseed extract exhibited bactericidal activity against Porphyromonas gingivalis, a key periodontal pathogen, at a concentration of 100 µl/ml. This suggests its potential as an adjunct to periodontal therapy. (Sharma P. et al, 2019)

**12. Antibacterial Properties**

Flaxseed oil has been shown to possess antibacterial and antibiofilm activities against various bacterial isolates, including methicillin-sensitive and methicillin-resistant Staphylococcus aureus, Staphylococcus epidermidis, and Klebsiellapneumoniae. These findings highlight flaxseed oil's potential as a natural antimicrobial agent.[23] (Said M. M et al, 2018)

### Integration of Traditional and Modern Knowledge

Despite its traditional efficacy, the fragmented nature of Unani literature on Alsi underscores the need for structured studies. Modern pharmacological validations bridge the gap, enabling a deeper understanding of its therapeutic mechanisms. This synthesis fosters an integrative approach that combines classical Unani wisdom with evidence-based medicine.

## CONCLUSION

Flaxseed (Linum usitatissimum) represents a remarkable therapeutic resource within Unani medicine. Its diverse pharmacological properties, including anti-inflammatory, hypolipidemic, and anticancer activities, validate its traditional uses. Beyond its medicinal value, flaxseed's nutritional profile makes it a functional food with potential for widespread health benefits.

While significant progress has been made in validating its therapeutic claims, further clinical research is essential to establish standardized dosages and explore its full potential. Integrating flaxseed into modern therapeutic protocols can address emerging health challenges, making it a vital component of contemporary medicine.

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