DRUG REVIEW
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TILA (Seed) 43

Tila consists of dried seeds of Sesamum indicum Linn. (Fam, Pedaliaceae), a herb extensively cultivated throughout the plains of India upto 1200 m for its seeds.

Synonyms
Sanskrit : Tila
Assamese : Simmasim
Bengali : Tilagachh
English : Sesame, Gingelly-oil Seeds
Gujrati : Tall
Hindi : Tila, Teel, Tili
Kannada : Accheellu, Ellu
Malayalam : Ellu
Marathi : Tila
Oriya : Til
Punjabi : Til
Tamil : Ellu
Telugu : Nuvvulu
Urdu : Kunjad

Description
a) Macroscopic
Seed white, brown, grey or black, flattened ovate in shape, smooth or reticulate, 2.5 to 3 mm long and 1.5 mm broad, one side slightly concave with faint marginal lines and an equally faint central line; taste, pleasant and oily.

Evaluation Of The Rasāyana Effect Of Kruṣṇa Tila (Semen Sesami Nigrum)-A Clinical Study
b) Microscopic
Test of seed shows single layered palisade-like, thin-walled, yellowish coloured cells, and the rest of the testa composed of collapsed cells; endosperm 3 layered, rarely 2 layered, consisting of cellulosic polygonal cells of parenchyma containing fixed oils and small aleurone grains; cotyledons two, externally covered with thin cuticle; single layered epidermal cell, followed by a single row of palisade-like cells; rest of the tissues consist of polygonal, parenchyma cells containing fixed oil and aleurone grains.
Powder - Blackish coloured; shows palisade-like cells in surface view, parenchyma cells, aleurone grains and oil globules.

**Identity, Purity And Strength**

<table>
<thead>
<tr>
<th>Property</th>
<th>Requirement</th>
<th>Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign matter</td>
<td>Not more than 2 per cent</td>
<td>2.2.2</td>
</tr>
<tr>
<td>Total Ash</td>
<td>Not more than 9 per cent</td>
<td>2.2.3</td>
</tr>
<tr>
<td>Acid-insoluble ash</td>
<td>Not more than 1.5 per cent</td>
<td>2.2.4</td>
</tr>
<tr>
<td>Alcohol-soluble extractive</td>
<td>Not less than 20 per cent</td>
<td>2.2.6</td>
</tr>
<tr>
<td>Water-soluble extractive</td>
<td>Not less than 4 per cent</td>
<td>2.2.7</td>
</tr>
<tr>
<td>Fixed Oil</td>
<td>Not less than 35 per cent</td>
<td>2.2.8</td>
</tr>
</tbody>
</table>

**T.L.C.**

T.L.C. of alcoholic extract on Silica gel 'G' plate using Toluene: Ethylacetate (9 : 1) shows under UV (366 nm) three fluorescent zones at Rf. 0.57, 0.64 (both light blue) and 0.72 (blue). On exposure to Iodine vapour five spots appear at Rf. 0.08, 0.57, 0.64, 0.72 and 0.94 (all yellow). On spraying with Vanillin-Sulphuric acid reagent and heating the plate for ten minutes at 110 °C seven spots appear at Rf. 0.08, 0.57, 0.64, 0.72 (all violet), 0.76, 0.84 (both light violet) and 0.94 (violet).
**Constituents** - Fixed Oil

**Properties And Action**

Rasa : Madhura, Tikta, Kashaya, Katu

Guna : Guru, Snigdha, Sukshma, Vyavaya

Virya : Ushna

Vipaka : Madhura

**Karma** :


**Important Formulations** -

Jatiphaladi Churna, Narasimha Churna, Haridradi Lepa, Vrusya Pupalika Yoga, Nagaradi Yoga, Tiladi Upanaha, Tiladi Yoga, Priyaladi Yoga, Mustadi Upanaha, shunthyadi Churna, Pathyadi Gutika, Hingvadi Yoga, Paniya Kshra, Bhallatakadi Modaka

**Therapeutic Uses** -

DOSE - Powder 5-10 gm/day.

The most comprehensive & basic manuscript related to the Traditional Chinese medicine (TCM) i.e. Materia Medica explains about black sesame as “Taking black sesame seeds can heal all the chronic illness after 100 days, improve skin tone on body and face after 1 year, reverse gray hair after 2 years, and regrow teeth after 3 years.”

Sesame is probably the oldest reported oil plant to the mankind. Open Sesame! The magic phrase from the age-old tales of ‘Ali Baba and the Forty Thieves’ opened the cave hiding the treasure of the forty thieves. The phrase highlights the fact that sesame was a valuable commodity in those days.

One of the first oil seeds known, sesame seeds are used in cooking as well as in traditional medicines for their nutritive, preventive, and curative properties.

Today Kruṣṇa Tila (black sesame seeds) is only “remembered” in religious ceremonies, neglecting the medicinal values in health promotion and preventive aspects of consuming black sesame seeds.

Many Chinese references with relation to consuming of Kruṣṇa Tila (black sesame seeds) for achieving long life and health benefits even at the old age are very famous.

The relationship of the Kruṣṇa Tila (black sesame) with long life is similarly seen in early Indian traditions and classical writings like Veda’s and traditional Indian medicinal references (Ayurvedic classics), where the black sesame seed is considered a symbol of immortality and having rejuvenating qualities. Sesame oil mills are reputed to be magical places. Folklore beliefs suggest they are home to numerous spirits.

*Evaluation Of The Rasāyana Effect Of Kruṣṇa Tila (Semen Sesami Nigrum)-A Clinical Study*
Various studies carried on the nutritional values of the Kruṣṇa Tila (black sesame seeds) has provided encouraging evidences which are supportive to the Chinese references for the use of the Kruṣṇa Tila (black sesame) for its anti-aging property.

The Kruṣṇa Tila (black sesame seeds) are rich in plenty of micro nutrients like vitamins B and iron, deficiencies of which are linked with the premature graying of hair, impairments in thinking or memorizing and hearing impairment. Kruṣṇa Tila (black sesame seeds) is also rich in other elements like calcium and zinc, which are important minerals associated with maintaining strength of the bones and thereby preventing diseases related to bones like osteoporosis etc.

The seed also contains substances known as sesamin and sesamolin, which are found to increase vitamin E supplies (important for skin health) and lower cholesterol levels. This review deals with understanding the qualities and benefits of black sesame seeds.
Scientific Classification:-

Botanical Source: Dry Seed of Sesamumindicum L

Latin Name: Semen SesamiIndici

Family: Pedaliaceae

Genus: Sesamum

Species: S. indicum

Synonyms: Benne Seed.

Beng. - Sanki til, Khaslatil, Raktatil, Til, Bhadutil, Krishna til, Kala til.
Guj. - Tal.
Kan.- Ellu, Wollelu, Achchellu, Valle-yanne, Yallu.
Mal.- Ellu, Schit-eluu, Mimakbijan, Nallenna, Karelluchitrallu, Karuthellu.
Mar- Til, Tila.
Punj.- Til, Tili, Kunjad.
Tam.- Ellu, Nal-lenny, Yellu-cheddie, Nuvvulu, Ellu-cceti.
Tel.- Nuvvulu, Nuvvu, Manchi-nune, Pollanuvvulu.
Arab.- Shiraj, Duhn.
Oriya- Rasi, Khasa.
Pers.- Roghen, Kunjed, Kunjad, Roghanekunjad, Roghaneshirin.
Santhal- Tilmin, Kat.
Sing.- Tun-pattala, Tel-tala, Talla-atta.

Black Sesame is the dried ripe seed of Sesamumindicum L. (Fam. Pedaliaceae). It spread through human intervention from East Africa to North Africa and eastwards to India and China. All cultures gave it names that sound similar to sesame; for example in Arabic it is called simsim, in Aramaic sums ma and in Greek sesamon. It is likely that the name refers
to sesame as an oil plant: the Accadian word šamaššammū could be made up of šamnu = oil, fat and šammum = plant.

**Botanical Description:-**

Probably originating in Asia, the Chinese used it 5,000 years ago, to make soot for the finest Chinese ink blocks. Records suggest cultivation of sesame in parts of India around 1600 BC. From there it was brought to Europe, grown in Egypt, and its value both medicinally and for cooking gradually spread throughout Europe.

Sesame grows best in sandy well-drained soil and a hot climate with moderate rainfall.

Sesame is an erect annual plant that can grow to a height of two meters. It bears elongated oval leaves on a stem which can be branched or unbranched, depending on the variety. Approximately six weeks after sowing, the sesame plant develops furry, tubular flowers reminiscent of a cornucopia in shape. The flowers can be white, yellow, pink or violet. They may be speckled and grow in groups of three in the leaf axils.

The flowers are usually self-pollinated and in most cases only the middle fruit of the group fully ripens. The long taproot has many lateral roots. The plant is native to tropical and subtropical regions and needs much warmth and moisture for its growth and dry weather for the seed to ripen. When the seed capsules have turned brownish black they burst and release the ripe seeds, which may be white, light brown or black, again depending on the variety.

The fruit, about 2.5 cm long, is an oblong capsule with small seeds. Each plant may grow 15-20 fruits, which contain 70-100 seeds each. Plants and fruits will reach maturity in 80-100 days after sowing.
The seeds of Kṛuṣṇa Tila (black sesame) are flat ovular in shape, measuring approximately 3mm in length and around 2mm width. Surface of Kṛuṣṇa Tila (black sesame) is dusky and smooth. The tip of the seeds has punctate hilum. Coating of the seeds is thin consisting of two cotyledons, which are white, and rich with oils in it. It has sweet taste, and aroma similar to oils.

Tila (sesame seeds) has commonly found two varieties used in different parts of the world i.e. black sesame seeds and white sesame seeds. Both of them having almost similar chemical composition. White sesame seeds are supposed to be better for edible purpose and the black sesame seeds are preferable for use of medical conditions.

**Culinary uses:-**

In Manipur (India) black sesame is used in the preparation of *Thoiding* and in *Singju* (a kind of salad). Thoiding is prepared with ginger and chili and vegetables are used in the spicy Singu dish.

In Assam, black sesame seeds are used to make *Til-Pitha* and *Tilorlaru* (sesame seed balls) during bihu.

In Japan whole seeds are found in many salads and baked snacks and tan and black sesame seed varieties are roasted and used to make the flavouring *gomashio*. *Gomashio* is also a part of the macrobiotic diet, where it is used as a healthier alternative to ordinary salt.

**Chemical Composition:-**

Chemical constituents in Kṛuṣṇa Tila (black sesame seeds) is - around 55% oils, sesamin, sesamolin, sesamol (3,4-methylenedioxy-phenol), Fatty oils are mainly composed of 48% of oleiic acid, 37% linoleec acid, palmate
acid, stearic acid, archidonic acid, and glycerol etc. which are supposed to poses antioxidant effects on the body.

Kruṣṇa Tila (black sesame) also contains vitamin E, B-complex vitamins (especially niacin), phytosterols, proteins, sucrose, saccharides, sesamose, and trace amount of phosphorus, potassium and cytochrome C. Kruṣṇa Tila (black sesame) contains folic acid, nicotinic acid, planteose, pentosan and rich source of calcium.

Around 100gm Kruṣṇa Tila (black sesame seeds) provides approximately 1.5 mg. or 74% of the DV, for copper, and 2.8 mg i.e. 19 percent of the DV for zinc. Kruṣṇa Tila (black sesame) is supposed to have highest phytosterol content i.e. around 400 to 412 mg per 100 grams of seeds. Kruṣṇa Tila (black sesame seeds) are very good source of calcium, which has been proved through various studies across the globe. One gram of Kruṣṇa Tila (black sesame) seeds contains approximately 85 mg. of calcium in it.

**Pharmacological Activities:-**

Based on Chinese Materia Medica, it is sweet in flavor and neutral in properties. It covers three meridians of liver, spleen, and kidney. Based on theories in Traditional Chinese Medicine (TCM), it is believed that aging, the toils of life and worrying could bring about deficiencies in bodily functions. In particular, the “Liver” and “Kidney” come to be deficient in “Jing” and “Blood”. This deficiency in turn brings about aging-related symptoms like blurry vision, graying of hair, ringing in the ears, as well as weakness in the bones and joints. Black sesame provides the nutrients needed to correct such a “Liver-Kidney” deficiency, helping the body to delay the onset of aging-related symptoms, also reversing the symptoms after they arise. The content of vitamin E contained in this black sesame
is the highest in all foods of plant origin. Vitamin E can promote cell division and delay cell senescence which is well understood. Long-term use can counteract or neutralize the accumulation of cell senescence substance of “radicals” and then delay aging and extend life expectancy. Vitamin E is also associated with healthy skin

The Chinese believe that the nutrients in black sesame seeds can help to correct a bodily deficiency (in Ying and Xue of the Gan and Shen) brought about by aging, worrying and the toils of life, which in turn bring about aging-related symptoms like graying hair, blurry vision and ringing in the ears.

Sesame seeds are rich in substances known as sesamin and sesamolin, which can help lower cholesterol levels. The black sesame seeds also contain magnesium, which help to reduce blood pressure. Black sesame seeds are rich source of phytosterols which are the plant compounds similar to chemically the structure of cholesterol. Intake of phytosterols in routine diet helps reduce cholesterol levels in the blood and also decrease the risk of development of cancers. The fatty oils present in the Kruṣṇa Tila (black sesame) helps lubrication of intestines which in turn is beneficial in relieving signs of constipation. These substances are from group of fibres called lignans, which are rich in dietary fibre and have a property of lowering cholesterol. The fibres, lignans and other nutritional contents (e.g. phytosterol, calcium etc.) present in the Kruṣṇa Tila (black sesame seeds) poses protective effects against the cancers, specifically colon cancer. The sesamin present in Kruṣṇa Tila (black sesame seeds) is supposed to have protective action on the liver against the damages caused by the free radicals

Magnesium (Mg) and calcium (Ca) are essential minerals which help in regulation of blood pressure, reduce the chances of developing stress and
migraine (triggered by spasms in blood vessels), reduce the spasms in asthma patients and regularize sleep patterns, especially menopause induced sleep disturbances.

Calcium and zinc present in black sesame seeds can help nourish the bones thereby preventing osteoporosis. The black sesame seeds are rich in B vitamins and iron, deficiencies of which can lead to the premature graying of hair, loss of memory and hearing impairment.

**Few researches on black sesame**

a. A randomized, placebo-controlled human study of chemical weapons injured patients found that boiled water extracts of black sesame seed reduced respiratory symptoms, chest wheezing, and pulmonary function test values, as well as reduced the need for drug treatment.

b. Animal research has found that black sesame seed oil has significant inhibitory effects against colon cancer in rats, without observable side effects.

c. A study, in human subjects, found that boiled water extracts of black sesame seed have relatively potent antiasthmatic effect on asthmatic airways.

d. A study on 35 opiate addicts found black sesame seed as an effective therapy in long-term treatment of opioid dependence.

**Dosage:-**

The typical dosage of black sesame seeds is 9-30 grams per day, ground into a powder and taken alone or in combination with other herbs.
AYURVEDIC REVIEW:-

The classical texts of Ayurveda have described medicinal properties of sesame. It is known as “tila” in Sanskrit, “til” in hindi. Ayurveda classics describe three varieties of sesame based on colour of seeds. They are “Raktha (red), Kruṣṇa (black) and shweta (white)”. Kruṣṇa Tila or black sesame seeds are considered to have excellent medicinal properties and are recommended in Ayurveda for treatment purpose and as a rejuvenating drug.

**Qualities of Kruṣṇa Tila (black sesame)**

<table>
<thead>
<tr>
<th>Rasa</th>
<th>- Madhura, Katu, Tikta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guna</td>
<td>- Guru, Snigdha</td>
</tr>
<tr>
<td>Veerya</td>
<td>- Ushna</td>
</tr>
<tr>
<td>Vipaka</td>
<td>- Madhura</td>
</tr>
</tbody>
</table>

**Properties:**

Acharya Charak has mentioned properties of Tila as which promotes longevity and preserves youth; strengthens the body and boosts its resistance.

Acharya Sushruta has highlighted Tila taila (sesame oil) as one of the best amongst all herbal oils and described it as Brmhana – bulk promoting, Suksma (subtle), Prinana (endows satiety), Vrishya (aphrodisiac), Tvakprasadana (skin tonic), Medhya (enhances retention power).
As per Bhavaprakash Nighantu the chief properties of tila oil are a hair tonic, galactogogue, an appetizer general tonic, digestant and it is used in skin diseases, wounds, anorexia and dental diseases.

In Vagbhata Samhita (Ashtanga Samgraha & Ashtanga hridaya), use of Krushna Tila (black sesame seeds) has been indicated for the purpose of Rasayana. Under the description of various Rasayana dravyas (drugs), Acharya vagbhata mentions about the use of Kruṣṇa Tila i.e. black sesame seeds as rejuvenating drug, regular use of which along with water helps in nourishing the body and thereby strengthening the teeth’s.

दिनेदने कृष्णतिल्प्रकृतिम समश्रतां शीतजलानुपानम्।
पोषः शरीरस्य भवत्नलयोद्धुभवन्त्यामरणांशुद्धताः॥

अष्टाङ्गहदये (उत्तरस्थानम्) ३९/१५८
Evaluation Of The Rasāyana Effect Of Kruṣṇa Tila (Semen Sesami Nigrum)-A Clinical Study
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