

## MEDICO-HISTORICAL REVIEW OF *TILA*

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### ABSTRACT

*Tila* / Sesame (*Sesamum indicum* D.C Pedaliaceae) is one of the oldest cultivated plants in the world. It is cultivating in India since about 2000 B.C., several scholars considered that the Abyssinian region of Africa as the origin of sesame in their wild forms. The Sanskrit word *Taila* (oil) is derived from *Tila*. This may be the first oil extracted from oil-seeds by the ancient Indians. The great Swedish botanist, Linnaeus, gave the botanical name *Sesamum indicum* to it about 200 years ago, which has turned out to be an accurate choice. The botanical name of *sesame* - *Sesamum indicum* indicates that it was indigenous to India. It is an essential item in Hindu religious ceremonies mainly used in funeral rituals from very early times. *Tila* is very much significant for its oil and consider as the best among the oils mentioned in *Ayurveda*. It can be used in the manufacture of soap, cosmetics, perfumes, insecticides and pharmaceutical products. The main producers of sesame are India and China and the world production of sesame is an estimated 2 to 5 million tons.

### Introduction

*Sesamum indicum* is one of the oldest cultivated plants in the world. It was a highly prized oil crop of Babylon and Assyria at least 4000 years ago. Today India and China are the world's largest producers of sesame, followed by Myanmar, Sudan, Mexico, Nigeria, Venezuela, Turkey, Uganda, and Ethiopia. In India it was a symbol of immortality and a commercial commodity, traders exported it to Europe via the Red Sea. Records show that the Egyptians prescribed the sesame as medicine about 1500 BC and used the oil as ceremonial purification. The Babylonians also used the oil for cooking, sesame in cakes and medicine. Sesame seeds date back more than 5,000 years and believed to be one of the first condiments as well as one of the first plants to be used for extraction of edible oil. The earliest recorded use of a spice - sesame seed - comes from an Assyrian myth which claims that the Gods drank sesame wine in the night before they created the earth. Usage dates back to 3000 B.C. Over 5,000 years ago, the Chinese burned sesame oil not only as a light source but also to make soot for their ink-blocks. Through the

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ages, the seeds have been a source of food and oil. Sesame seed oil is still the main source of fat used in cooking. Scheherazade was the first person to give the sesame superhuman powers when she held her Arabian caliph spellbound for one thousand and one nights with her tales of intrigue and adventure. Because sesame pods readily burst open at the slightest touch when they are ripe, Scheherazade provided Ali Baba with the magic words, "Open Sesame" to instantly open the cave, a robber's den, in her exciting story about "Ali Baba and the Forty Thieves."

*Sesamum* comes from *Sesamon*, a name given by Hippocrates, after the Arabic word *Sesam* meaning herbs. *Tila* / Sesame in Sanskrit, means a small particle. In proverbial language a grain of *sesamum* signifies the least quantity of anything - "*Tila cōra sō bajjara cōra*, who steal grains, will steal a sack"; *Tila tila kā hisāba*, "to exact the uttermost farthing". A worthless person is compared to wild Sesamum, which yield no oil - *Ina tilōm mēm taila nahīm*, "there is no good in him." Dutt remarks "The word *Taila*, the Sanskrit term for oil is derived from *Tila*. It would therefore seem that Sesamum oil is one of the first or otherwise the first oil manufactured from oilseeds by the ancient Indians. The charred lump of sesame seeds are found in the excavations of Mohenjodaro Harappa suggests that it was cultivated in the Indus Valley dated at about 2000 B.C. For a long time, there was much speculation among botanists whether the sesame plant was indigenous to India or not? Today all these speculations have been set at rest, since many are of the belief that the plant might definitely had its first appearance in India as wild plant and now cultivated quite commonly in various parts of the country. The sesame went out of India very long time ago to various parts of the Middle East, being referred to as 'se-gis-i' in the clay tablets of the Sumerian civilization of about 3000 B.C.

The grounded *Tila* mixed with sugar is also used in traditional sweetmeat. *Sesamum* oil is used as the base for most of the fragrant or scented oils used by natives for inunctions before bathing. In Arabic it is known as *Simsim*, in Africa as *Juljulan* and in Persia *Kunjad*. The bakers use to sprinkle the seeds upon their bread, the confectioners mix them in sweets. The following hawker-calls heard on the streets of Delhi indicate the properties attributed to sweat made of *Tila*.

*"Tila tikhura tīsī dhāna*  
*Ghī śakkara mēm sāna*  
*Khāyē budhḍhā hōē javāna"*

It means that eating of the “*Sesamum*, *Tikhura* and linseed, Ghee, sugar and poppy seeds will makes old men active like young men.”

The *Sesamum* oil, which is called in Arabic *Duhn-el.hal*, is used for the same purpose as olive oil is used in Europe. *Sesamum* is considered fattening, emollient and laxative. In decoction it is said to be emmenagogue, the same preparation sweetened with linseed is used as an aphrodisiac. The plaster made of the ground seeds is applied to burns, scalds and lotion made from the leaves is used as a hair-wash, which is supposed to promote growth of hair and make it black, A powder made from the roasted and decorticated seed is called *Rahishi* in Arabic and *Arwah-i-Kunjad* in Persian, it is used as an emollient, both externally and internally. *Sesamum* is frequently mentioned by Greek and Latin authors, Lucian (*Pisc*, 41) speaks of a preparation, this was probably similar to the *Tila kã Ladđu* of India. *Sesamum* oil was an export from Sindh to Europe, by way of the Red Sea, in the days of Pliny. In the middle ages the plant was known as Suseman or Sempsen, an altered form of the Arabic Simsin or Samsim. It is now called by Europeans. Both in India and Europe, *Jinjili*, *Jugeoline*, *Gigeri-Gengeli* or *Gingelly*, which appear to be altered forms of Juljulan. The oil is one of the most valuable vegetable oils in India and if kept for a long time with out becoming rancid. It is produced in large quantities in almost every part of the Peninsula. The following mode of preparation is described in the Jury reports of the Madras Exhibition:- “The method sometimes adopted is that of throwing the fresh seeds, without any cleansing process, into the common mill, and expressing in the usual way. The oil thus becomes mixed with a large portion of the coloring matter of the epidermis of the seed, and is neither so pleasant to the eye nor so agreeable to the taste as that obtained by first repeatedly washing the seeds in cold water, or by boiling them for a short time, until the whole of the reddish-brown coloring matter is removed and the seeds have become perfectly white. They are then dried in the sun, and the oil expressed as usual. The process yields from 40 to 44% of very pale straw coloured sweet-smelling oil, an excellent substitute for olive oil”. Hydraulic presses are now in use in the more civilized parts of India for extracting the oil, but have as yet by no means superseded the native oil mill”.

*Sesamum* oil is also used for plaster making. However, it takes more oxide of lead than groundnut oil, and does not make the plaster so light-colored or so hard. After a prolonged trial at the Government Medical Store Department in Bombay, its use was abandoned on the basis of following reasons:

The rolls of Sesame oil plaster soften in hot weather. The plaster has a disagreeable

odor, it darkens in color when stored. For the liniments and ointments except the Ung, Hydr, Nitratis, it appears to be a perfectly satisfactory substitute for Olive oil. F.H. Alcock recommends its use in making Lin. Ammoniao B.P. Sesame or Benne leaves, preferably in the fresh state, are much used in America as demulcent in disorders of the bowels, they yield abundant mucilage.

*Sesamum* is one of the most ancient cultivated crops of India. The *Sesamum* seed is considered as an essential grain in Hindu religious ceremonies and has been referred to as *Hōmadhānya* and *Pitṛtarpaṇa* in ancient scripts. Some are also of the belief that the earliest human migrants perhaps introduced *Sesamum* into India from Africa. Charred fossils of sesame at Harappa excavation (c.3600-1750 B.C.) indicate that sesame was cultivated during the Indus Valley Civilization. Widespread cultivation of sesame in both, Asia and Africa since ancient times has rendered it difficult to ascertain its original home.

The authors attributed different opinions on the origin of sesame as the Abyssinian region of Africa as the primary centre of origin of sesame in their wild forms and whereas the primary centre for cultivated form was Central India, Assam and Burma. The central and eastern mountainous regions of China are considered as a secondary centre of origin of the cultivated forms, mainly dwarf types. Apart from this the other centers of origin are Punjab, Kashmir, Pakistan and Afghanistan region and the Asia Minor region of Iran and Turkey (where the sub-species *S. bicarpellatum* is predominantly cultivated). From these primary and secondary centers further progress of sesame took place along two lines: towards the east through China and Indochina to Japan and towards the west, to the Mediterranean countries.

### **Veda & Purāna**

It is said to have been originate from *Viṣṇu's* sweat drops that fell on Earth. In the Veda the nose is often called *Tila Puṣpa* or blossom of the *Tila* plant. The *Atharvavēda* mentions Sesame as a tree and field manure crop. The sesame seeds were in use as far back as 3000 B.C. when the plant was a major source of food, wine and oil, and was guarded by royalty. During the Vedic ages, it was the only seed used for extraction of oil by the Aryans. The plant *Tila* mentioned in the *Atharvavēda* (II.8,3; VI.140,2; XVIII. 3,69; 4,32.) and later (*Taittirīya Saṁhitā*, VI.3,2; *Vājasenēyī Saṁhitā*, XVIII.12; *Śatapatha Brāhmaṇa* IX.1,1,3 etc.) as the sesame plant and particularly its grains, from which a rich oil (*Taila*) was extracted. It is often (*Av.*VI.140,2; *Vājasenēyī Saṁhitā loc.cit.*; *Bṛhadāraṇyaka Upaniṣad*, VI.3,22; *Chāndōgya Upaniṣad*, V.10.6, etc.) mentioned in connection with *Māṣa* 'Kidney

bean'. The *Taittirīya Saṁhitā* attributes the bean and the *sesamum* to the winter (*Hēmanta*) and the cold (*Śísira*) seasons. The stalk of the *sesamum* plant (*Tilapiñjī*-Av.II.8,3, *Tilapiñja*-Av.XII.2,54.) was used for fuel, and the seeds were boiled in the form of porridge (*Tilaudana*-*Bṛhadāraṇyaka Upaniṣad*, VI.4,16; *Sāṁkhyāyana Āraṇyaka*, XXI.8) for food.

In the first act of the *Śakuntalā*, who is in love with King *Duṣyanta*, alludes to anchorite's daughter and companions that, if they do not give their assistance, they will soon have to offer her *Tila-añjali* (the ritual of offering water and Sesamum to mark the respect to the departed soul of the dead in the rituals of Hindu religion) to convey her intention to kill herself, if they do not extend their assistance.

*Tila* is used in rituals of the dead from very early times in Hindu religion. This is more evident from the Great epic *Mahābhārata* - when *Bhīṣma* elucidating to a query raised by *Yudhiṣṭhira* in respect of the objects to be dedicated to *Pitr* that become inexhaustible, explains " *Pitr* remain gratified for a month if *Tila* seeds, rice, barley, *Māṣa* (Black gram), *Jala* (water), roots and various fruits are offered at *Śrāddha*. Further, according to *Manu*, *Śrāddha* performed with a copious offering of *Tila* seeds, become inexhaustible. Out of all kinds of food grains, *Tila* seeds are regarded as prominent and *Tila* offered along with fish at *Śrāddha*, *Pitr* remain gratified for a period of two months. *Tila* offered with mutton, they remain gratified for three months and with the flesh of hare for four. With the flesh of Goat, they remain gratified for five months, with bacon for six months and with the flesh of birds, for seven months. With venison called *Pr̥ṣat*, for eight months and with that obtained from *Ruru*, for nine months and with the meat of cow for ten months; with the meat of a buffalo, for eleven months; *Tila* presented with beef at *Śrāddha*, their gratification lasts for a full one year. *Pāyasa* mixed with ghee is as acceptable to the *Pitr* as beef; with the flesh of *Vadrināra* (probably a bull), for twelve years. Flesh of a rhinoceros gratifies them limitlessly. Herb *Kālaśāka*, petals of *Kāñcana*, and meat of a goat offered together, their gratification is inexhaustible." Offerings of *Tila* seeds are effective in removing sins.

In Hindu Mythology Sesamum seed is a symbolic of immortality. According to the *Brahmapurāṇam*, *Tila* was created by *Yama*, the "King of death", after prolonged penance. The *Gṛhyasūtra* of *Āśvalāyana* describes that in funeral rites in honor of the dead, Sesamum seeds be placed in the three sacrificial vessels containing *Kuśa* grass and holy water, with the following prayer " *Ō Tila*, sacred to *Sōma*, created by gods during the *Gōśava* (the cow sacrifice), used by the ancients in sacrifice, gladden the dead, these worlds and us!". Sesamum seeds with rice and honey are used in preparing the funeral cakes called *Pinḍa*,

which are offered to the Manes in the *Śrāddha* ceremony by the *Sapiṇḍa* “or relations” of the deceased. On certain festivals six acts are performed with *Sesamum* seeds, as an expiratory ceremony of great efficacy, by which the Hindus hope to obtain delivery from sin, poverty, and other evils, and secure a place in Indra’s heaven. These acts are,

*Tilōdvartī*- bathing in the water containing the seeds.

*Tilasnāyī*- anointing the body with the pounded seeds.

*Tilahōmī*- making a burnt offering of the seeds.

*Tilaprada*- offering the seeds to the dead.

*Tilabhujā*- eating the seeds.

*Tilavapī*- throwing out the *Tila* seeds.

### **Āyurvēda**

*Tila* is very much significant in *Āyurvēda* for its oil consider as the best among the oils mentioned in *Āyurvēda*. Two varieties of *Tila* viz., white - *Śvēta* and black - *Kṛṣṇa* are mentioned in Ayurvedic texts for their specific uses, where only *Taila* (oil) is mentioned without specifying the source, it implies *Tila Taila* only. In *Dhānya* (grains) *varga* *Tila* is mentioned under *Śimbī Dhānya* (Legume/pulses) *varga*. *Caraka* mentioned that consuming *Tila* along with milk and jaggery leads to *Krimirōga* (worm infestation).

*Tila* is mentioned in the following Ayurvedic classical texts.

### **S.No. Ayurvedic Text**

### **Gaṇa**

1	<i>Carakasamhitā</i>	<i>Svēdōpaga daśēmāni</i> (Group of ten drugs, which help in sudation), <i>Puriṣavirajaniya daśēmāni</i> (Group of ten drugs which help in maintaining colour of the stool).
2	<i>Suśrutasaṁhitā</i>	<i>Māśādi varga</i> ( <i>Annadravya</i> ), <i>Tila Taila</i> in <i>Taila varga</i> ( <i>Dravadravya</i> ).
3	<i>Aṣṭāṅgahrdaya</i>	<i>Śimbī dhānya</i> (Legume/pulses) <i>varga</i>
4	<i>Bhāvaprakāśa nighaṇṭu</i>	<i>Śimbī dhānya</i> (Legume/pulses) <i>varga</i>
5	<i>Rājanighaṇṭu</i>	<i>Śālyādi varga</i>
6	<i>Kaiyadēva nighaṇṭu</i>	<i>Dhānya varga</i>
7	<i>Śōḍhala nighaṇṭu</i>	<i>Dhānya varga</i> , <i>Tila Taila</i> in <i>Pāṇiyadi varga</i>
8	<i>Dhanvantari nighaṇṭu</i>	<i>Suvarṇādi varga</i> , <i>Tila Taila</i> in <i>Dravadravya</i>
9	<i>Madanapāla nighaṇṭu</i>	<i>Dhānya varga</i> , <i>Tila Taila</i> in <i>Pāṇiyadi varga</i>

### **Paryāyapada (Synonyms)**

1. *Tila*, 2. *Hōmadhānya*, 3. *Pavitra*, 4. *Pitṛtarpaṇa*, 5. *Pāpaghna*, 6. *Pūtadhānya*, 7. *Jaṭilā*, 8. *Vanōdbhava*, 9. *Snēhaphala*, 10. *Pūraphala*, 11. *Tailaphala*

The *Bhāvaprakāśa* describes three varieties of *Tila* seeds such as black, white and red, out of which, black variety is regarded as the best suited for medicinal use and also yields the largest quantity of oil. *Tila* of red or other colors is said to be inferior and unfit for medicinal use. Sesamum seeds are used as a condiment item in diet. According to *Āyurvēda* in total the varieties are five, they

1. *Kṛṣṇa* (black variety)    2. *Sita* (white variety)    3. *Rakta* (red variety)
4. *Vanya* (wild variety)    5. *Alpa* (small variety)

In terms of quality, the renowned *Vaidya* opinion is - *Kṛṣṇa* (Black) as the best of all and the white as medium, red and others as inferior.

### Properties

*Āyurvēda* considers the following as the general properties of drugs.

**Rasa** (taste) - *Madhura* (sweet)

**Anurasa** (secondary tastes) - *Kaṣāya*, *Tikta*, *Kaṭu* (astringent, bitter, pungent)

**Guṇa** (properties) - *Guru* (not easily digestible), *Vikāsi* (dilatation of smaller vessels), *Viśada* (viscid), *Sūkṣma* (penetrate into minute channels), *Hima sparṣa* (cold to touch), *Vyavāyī* (spreads quickly), *Snigdha* (unctuous).

**Vīrya** (potency) - *Uṣṇa* (hot)

**Vipāka** (Transformation) - *Madhura* (sweet)/ *Kaṭu* (pungent)

### Karma (actions)

*Sthairyabalavarṇakara* (bestows stability, strength and color), *Sara* (laxative), *Vṛṣya* (Aphrodisiac), mitigate *Vāta*, *Kapha* & *Pitta*, *Bṛmhaṇa* (nourishing), aggravates *Rakta* & *Pitta*, *Lēkhana* (making thin/ reducing corpulency), *Baddhaviṇmūtra* (holds urine & faces), *Alpamūtrakṛt* (reduces the amount of urine), *Grāhī* (absorbs fecal moisture), *Garbhāśaya viśōdhana* (expels morbid uterus), *Stanya* (improves breastmilk), *Dīpana* (increases digestive fire), *Buddhidam*, *Mēdhya* (improves wisdom & intelligence) *Vraṇa* & *Pramēhanut* (mitigate ulcer & diabetes), *Srōtra*, *Yōni*, *Śiraḥ sūlanāśana* (checks the pain of the ear, vagina and head), *Laghutākara* (causing easiness or relief makes light), *Dantya* (good for teeth), *Tvacya*, *Kēśya*, *Caḡsuṣya abhyaṅgē* (good for skin, hairs and eyes when massaged), *Bhōjanē anyathā* (not good as staple food), it is especially useful in *Chinna*, *Bhinna*, *Cyut*, *Utpiṣṭa*, *Mathita*, *Kṣata*, *Piccita*, *Bhagna*, *Sphuṭita* and *Viddha* kinds of *Bhagna* (fractures), *Agnidagdha* (burns), the skin torn (from the assault by wild animals), therapies like *Vasti*, *Snēhapāna*, *Annamaskāra* (food processing), *Nasya*, *Karṇa* & *Akṣi pūraṇa* (filling of ears & eyes), *Sēka*, *Abhyaṅga* and *Avagāha*.

**Rōgaghnatā** - *Vātaśūla*, *Āmavāta*, *Sūryāvarta*, *Indralupta*, *Nētrarōga*, *Mastiṣkadaurbalya*, *Dantadaurbalya*, *Atisāra*, *Raktātisara*, *Agnimāndya*, *Tṛṣṇā*, *Grahaṇī*, *Arśa*, *Raktārśa*,

*Raktasrāva, Pravāhikā, Vātarakta, Hikkā, Śvāsa, Pramēha, Pūyamēha, Mūtrarōdha, Rajōrōdha, Kaṣṭārtava, Stanyālpātā, Daurbalya, Vraṇa.*

**Doses** - Seed powder- 3-6 gm; Oil- 10-20 ml.

**Tilanāla (stem of Sesame plant) Kṣāra (alkali)**

*Bhāvaprakāśa* mentioned *Tila Kṣāra* in *Kṣārāṣṭaka (Palāśa, Vajrī - Snuhī, Śikharī- Apāmārga, Ciñcā, Arka, Tilanāla, Yavaḥṣāra, Svarjikāḥṣāra)*, which are equated to fire in action and cures abdominal tumors and colic.

**Note** - *Kṣāra* (alkali) in *Āyurvēda* is prepared by burning of medicinal plants etc. It is corrosive in nature and used in the treatment. In ancient times dried stems of Sesame plants were used burns to obtain the ash, which they used to dissolve in water (in 1:6/7 propositions) and decanted/filtered through seven-layered cloth. The filtrate used to boil till the water is completely evaporated and a white colored powder is obtained. This was known as *Kṣāra*, which is the impure for of potassium carbonate.

The great Swedish botanist, Linnaeus, gave the botanical name *Sesamum indicum* to it about 200 years ago, which has turned out to be an accurate choice.

**Botanical Classification**

According to modern Botany it belongs to Family Pedaliaceae and the Systematic position is

Division: Phanerogams

Order: Personales

Sub-division: Angiosperms

Family: Pedaliaceae

Class: Dicotyledon

Genus: Sesamum

Series: Bicarpellatae

Species: indicum

**Vernacular Names**

English - *Sesame, Gingelly.*

Hindi - *Tila.*

Bengali - *Sanki Tila, Khasla Tila, Rakta Tila, Tila, Bhadu Tila, Kṣṇa Tila, Kālā Tila.*

Gujarati - *Tal.*

Kannada - *Ellu, Wollelu, Achchellu, Valle-yanne, Yallu.*

Malayalam - *Ellu, Schit-elu, Mimak bijan, Nallenna, Karellu chitrallu, Karuthellu.*

Marathi - *Til, Tila.*

Punjabi - *Til, Tili, Kunjad.*

Tamil - *Ellu, Nal-Jenny, Yellu-cheddie, Nuvvulu, Ellu-cceti.*



Telugu	- Nuvvulu, Nuvvu, Manchi-nune.
Arabic	- Shiraj, Duhn.
Oriya	- Rasi, Khasa.
Persian	- Roghen, Kunjed, Kunjad, Roghane kunjad, Roghaneshirin.
Santhal	- Tilmin, Kat.
Singhalese	- Tun-pattala, Tel-tala, Talla-atta

### Botanical Description

An erect, glandular-pubescent, annual herb branching from the base grows up to height of 95 cm. Leaves grow alternate or lower opposite and often deeply 3 lobed; lobes lanceolate, 3-15 x 1.5-6 cm, serrate, puberulous beneath; upper leaves entire, lanceolate, much smaller, passing into bracts. Flowers are of white or pink with yellow marks with unpleasant odor, auxiliary, solitary, forming a false raceme at the end of branches. Fruits are quadrangular, oblong, compressed and capsules deeply 4 grooved, dehiscent to half way down. Seeds are many, obovoid, compressed, black or white.

### Pharmacognosy of Seed

The seeds are flattened, ovoid, pointed at one end, 3-4 mm long, 2 mm broad and 1 mm thick, buff colored or whitish or black, finely punctate with 4 delicate, longitudinal ridges; hilum is located at pointed end. A thin walled palisade characterizes the epidermis, the anticline walls being more or less wavy; cells contain spherical mass of crystals of calcium oxalate. The remainder of the testa consists of collapsed cells with yellowish membrane on the inside. The endosperm and cotyledons consist of cellulosic, polygonal parenchyma containing fixed oil and small aleurone grains. Starch is absent.

### Chemical Constituents

Neutral lipids, glycolipids and phospholipids (also in flowers), arginine cystine, histidine, isoleucine, leucine, lysine, methionine, phenylalanine threonine, tryptophan, tyrosine, valine,  $\alpha$ - and  $\beta$ -globulins, p-aminobenzoic acid, ascorbic acid, biotin, choline, folic acid, inositol, niacin, nicotinic acid pantothenic acid, pyridoxine, riboflavine, sesamol, thiamine,  $\alpha$ - and  $\beta$ - tocopherols, galactose, glucose, lychnose, plantiose, raffinose, sesamose sucrose and pentosans, 2-acetyl-3-methylfuran, 2-acetylpyrrole acetylpyrazine, 2-ethyl-pyrazine, 2,5-diethylpyrazines, 2,3-dimethyl- and 2,5 dimethylpyrazine, 2-furfuryl alcohol,  $\alpha$ -formylpyrrole, guaiacol hexacosanoate, 4-(5-methyl-2-furyl)-3-buten-2-one, 2,6-(3,4 methylenedioxyphenyl)-cis-2,7-dioxabicyclo-(3,3,0)-octane (sesamin), 2(3,4-methy lenedioxyphenoxy)-6(3,4-methylenedioxypheny I)-cis-3,

7-dioxabicyclo-(3,3,O)-octane (sesamolin), sesamolinol, sesamol, undecadienal 3-methylbutanal, octanal, phenol, 2,4-arachidic, hexadecenoic, linoleic, lignoceric, myristic, oleic, palmitic, phytic and stearic acids, astaxanthin (carotenoid),  $\alpha$ -tocopherol, sitosterol, campesterol,  $\gamma$ -avenasterol and stigmasterol, sesaminol glucosides -sesaminol 2'-O-beta-D-glucopyranoside: sesaminol 2'-O-beta-D-glucopyranosyl (1 to 2)-O-beta-D-glucopyranoside and sesaminol 2'-O-beta-D-glucopyranosyl (1 to 2)-O-{beta-D-glucopyranosyl(1to6)-beta-D-glucopyranoside(seeds); pedaliin(leaves); pinoresinol, tetrahydro-1-methoxy-4-hydroxyphenoxy]-4-[3,4(methylenedioxy) phenyl]-1H, 3H-furo [3,4-C] furan, salicylates (plant).

### Formulations and Preparations

Medicated oils mentioned in Ayurvedic classics are preparing with *Tila* oil in combination with various vegetable drugs. For example

*Tilādi gutīkā, Tilādi lēpa, Tilāsāka, Tilabhallātakādi yōga, Gandha tail*

### Trade and Commerce View Point

The main producers of sesame are India and China, with other big producers in other parts of Asia, Africa, the Americas, and the West Indies. During the 1930, the major vegetable oil used by Americans was sesame oil. At that time the United States was importing 58,000,000 pounds of sesame seeds a year mostly for producing oil. Two events combined to shift the importing of these huge quantities of sesame seeds to a diminished 12 million pounds by the early 1950 and because of the development of inexpensive soybean and cottonseed oils.

World production of sesame is an estimated 2 to 5 million tons, but this number fluctuates due to local economic crop production pressures and weather conditions. In 2002, the Food and Agriculture Organization of the United Nations ranked sesame sixth in world production as an edible oil seed (2,893,114 million tons) and twelfth in overall world production of vegetable oil (754,159 million tons). In 2003, the world trade in sesame seed was 486,000 metric tons. Japan and the U.S. were the largest importers with 24% and 8% of the world imports respectively. Future growth predictions for imports of sesame seed are 6% to 8% per year until the year 2012.

The only criterion for sesamum seed trade is the color of seed coat. The market preference is towards the whiteness of seeds. Lots containing of 85% white seeds are admixed with 15% of colored or black seeds designated as export quality. Different grades are recognized depending upon admixture with black seeds, dust, dirt and period

of storage undergone by seeds. Sesamum seeds are mostly exported to countries like France, Iran, Qatar, Bahrain and U.K. The variation in price of seeds are seasonal, consequently low prices prevail from October to December. The price reaches peak during May to July.

### **Propagation and Cultivation**

Sesame, the earliest plant to be used as a source of edible oil and also seems to make its first appearance here as an agricultural crop. It grows on a light well-drained soil, which is capable of retaining adequate moisture. It thrives best on typical sandy loams. Water logging is highly detrimental to the-crop. It is generally sown broadcast. Sowing in rows is also practiced and this is done by seed drill. The rows are generally 30 cm apart. Row planted crop is thinned 2-3 weeks after germination, so that a distance of 15-20 cm is maintained between plants in rows for rain fed crop, and 30 cm for irrigated crop. Phytophthora blight caused by *Phytophthora parasitica*, root and stem rot caused by *Macrophomia phaseoli*, leaf spot caused by *Cercospora sesami*, wilt by *Fusarium oxysporum*, anthracnose by *Collectotrichum* are some of the fungal diseases which affect the plant. Spraying with Brestan-60, Captan, Blitox-50 and Aureofungin effectively controls the disease. Sesamum is harvested well before the plants are completely dry in order to prevent loss of seeds due to dehiscence of capsules. The average yield of sesamum is reported to be 157 kg/ha.

### **Discussion & Conclusion**

Sesame oil is used for massage and health treatments of the body in the ancient Indian Ayurvedic system with the types of massage called *Abhyāṅga* and *Śirōdhārā*. *Āyurvēda* views sesame oil as the most viscous of the plant oils and believes it may pacify the health problems associated with *Vāta* aggravation. Both, the seeds and the oil are used as demulcents in dysentery and urinary diseases in combination with other medicines of their class. The oil is commonly used as base for many Ayurvedic medicated oils in combination with various vegetable drugs because of its specific characteristic of less liable to become rancid or thick. The oleaginous edible seeds of *Sesamum indicum* are traditionally known for its oil. It is also consider as an important source of protein. *Sesamum* seeds are considered emollient, nourishing, tonic, diuretic, and lactagogue. They are said to be especially serviceable in piles, by regulating the bowels and removing constipation. The two important constituents are *Sesamin* and *Sesamolin*, those are not found in any other vegetable oil was responsible for the synergistic effect on the insecticides and another compound is *sesamol*. Much of its phenolic antioxidant is lost during deodorization. The oil is perhaps the most resistant among vegetable oils for oxidative rancidity, especially after hydrogenation, which leads to the production of a specific

factor that contributes to its stability. Hence it is highly stable and does not go rancid and it is blended with other oils to increase their stability. Sesamum oil is used as substitute to Olive oil and Almond oil. It is also an adulterant of the same, Sesame oil is widely used as an ingredient in confectionery and for making margarine.

The bulk of sesame seeds production is utilized for extraction of oil. Predominantly available in two distinct types white and black. They are also available in an intermediate colored varieties varying from red to rose or brown to gray. There seems to be a correlation between color of the seed coat and oil content. The lighter colored varieties yields more oil than the darker colored ones. Besides, the oil obtained from the lighter colored seeds is cleaner and therefore considered superior. The oil is also used in formulations of antacids, ointments, and hair oils. Oil in trade doesn't follow any specific standards. Oil from *Ghāñī* is believed to have longer shelf life than mills and hence is priced higher, also due to its golden yellow color and pleasant flavor. Oil is also exported to other countries.

It can be used in the manufacture of soap, cosmetics, perfumes, insecticides and pharmaceutical products and also in therapy as a vehicle for fat-soluble substances. The oil is used also insecticide sprays. Sesame cake or meal obtained, as a by-product of the oil milling industry is rich with methione and is used to feed livestock, poultry. India produces quarter of the world production. Besides India, China, Sudan and Mexico are the other major sesame producing countries.

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## सारांश

### तिल की चिकित्सिकीय-ऐतिहासिक समीक्षा

सुभोस वाराणसी एवं अला नारायण

विश्व में कृषि किये जाने वाले प्राचीनतम पादपों में से तिल एक है। भारतवर्ष में इसकी खेती लगभग ईसा पूर्व २००० वर्ष से की जाती है, बहुत से लेखक अफ्रीका के अबीस्सिनिया क्षेत्र को तिल के जंगली प्रकार का उद्गम स्थान मानते हैं। संस्कृत शब्द तैल तिल से व्युत्पन्न हुआ है। संभवतः प्राचीन भारतवासियों द्वारा सर्वप्रथम तिलबीजों से तैल निकाला गया होगा। लगभग २०० वर्ष पूर्व महान् स्वीडिश वनस्पतिशास्त्री लीन्नेयस ने इसका वानस्पतिक नाम सिसेमम इण्डिकम रखा है, जो कि उसका सही चयन है। तिल का वानस्पतिक नाम सिसेमम इण्डिकम भी यह सूचित करता है कि यह भारत देशज था। हिन्दू धार्मिक अनुष्ठानों में यह एक आवश्यक सामग्री है, प्रमुख रूप से अन्त्येष्टि कर्म में यह बहुत प्राचीन समय से प्रयुक्त किया जाता था। तिल अपने तैल के लिए बहुत अधिक महत्त्वपूर्ण है एवं आयुर्वेद में यह तैलों में सर्वश्रेष्ठ तैल माना जाता है। यह साबुन, सौन्दर्य प्रसाधन, इत्र, कीटनाशक और औषधीय उत्पादों के निर्माण में प्रयुक्त किया जा सकता है। विश्व में तिल के प्रमुख उत्पादक भारत और चीन है और तिल का विश्व-उत्पादन लगभग २ से ५ लाख टन है।