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INTRODUCTION

Āyurveda, the knowledge of life, is the ancient system of medicine which came into existence 1000’s of years ago with an objective of maintaining health of the people and treating diseases. The materials found in our surrounding like plants, minerals, animal products have maximum contribution to be established and refined as an ayurvedic drug. Quite often these indigenous drugs have better social acceptability than the modern.

People in the primitive days used to reside in the vicinity of nature. So they studied the plants and their actions and uses for developing Materia Medica. Plants were given many names according to their morphological characters and actions. Besides Ayurveda many other medicinal systems like Siddha, Unani, Homeopathy, Naturopathy, Allopathy utilizes plants to cure diseases. So the proper knowledge regarding identification, and proper uses of medicinal plants has become important.

_Syzygium aromaticum_ (Cloves) are the aromatic dried flower buds of a tree in the family Myrtaceae. Cloves are native to the Maluku islands in Indonesia and used as a spice in cuisines all over the world. Cloves are harvested primarily in Indonesia, India, Madagascar, Zanzibar, Pakistan, and Sri Lanka.

The clove tree is an evergreen that grows to a height ranging from 8–12 m, having large leaves and sanguine flowers in numerous groups of terminal clusters. The flower buds are at first of a pale color and gradually become green, after which they develop into a bright red, when they are ready for collecting. Cloves are harvested when 1.5–2 cm long, and consist of a long calyx, terminating in four spreading sepals, and four unopened petals which form a small ball in the center.

Cloves are highly valuable medicinal plant used to treat Paittik rogas, cough, hiccup, prameha, piles, jwor, mukhadurgandha, anorexia, hoarseness, salivation, sore throat, and other diseases related with mouth, teeth and throat etc. Eugenol is the compound responsible for most of the characteristic aroma of the cloves.

The detail description of the Lavanga (Clove) as per the different texts are compiled in the coming sections.
Some abbreviation of books and their sthanas:

AH- Ashtānga Hridaya
AS- Ashtanga Samgraha
AP- Āyurveda Prakāsha
BPN – Bhava Prakash Nighantu
BR –Bhaisajya Ratnavali
CD-Chakra Datta
CS- Caraka Samhitā
Ci.S: Chākītsa sthana
GN- Gada Nigraha
K.S: Kalpa sthana
Ka.S: Kasyap Samhita
Ma.Kha.: Madhyam Khandā
NN-Nepali Nighantu
RN- Rāja Nighantu
SS –Sushruta Samhītā
Sa.S-Śārangdhar Samhīta
Sa.N- Sankar Nighantu
Su.S: Sutra sthana
Sa.S: Sarīra Sthana
U.S: Uttara Sthana
**Monograph of Syzygium aromaticum**

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**Lavanga in Charak Samhita (1000 B.C.):**

On desiring clarity, relish and fragrance, should keep in mouth the fruits of Jati, Katuka, puga and Lavanga; leaves of betel, exudate of camphor and fruit of lesser cardamom. *Cha.S.su.s.5.76-77*

Lavanga is included as an ingredient of Khadiradi tail, Khadiradi gutika. These are useful in loose teeth, tooth decay, Mukhapaka, stiffness of mouth, mukhadurgandha, anorexia, hoarseness, salivation, sore throat and other diseases related with mouth, teeth and throat. *C.S.ci.26.(206-214)*

Lavanga is included as an ingredient in preparing Bala Tail as a kalka dravya. This oil is useful in conditions like cough, cold, Hiccup, fever, vomiting, gulma, chest injury, TB, spleen disease, shosa, epilepsy, and removes ugliness of body. It is best Vatanasak oil. *C.S.ci.28.(149-156)*

---

**Lavanga in Susrut Samhita (1000 B.C.):**

Lavanga, javitri, etc. are pungent, bitter and are kaphanaasak. *Su.S.su.s.46.202*

It is said that Intelligent persons by using kasaya, katu, Tikta dravyas like Lavanga, kankola, supari etc along with other mouth cleaning aromatic substances pacifies the vitiated kapha. *Su.S.su.s.46.484*
Lavanga is added in making Paan which is good for mouth cleaning, good smell of mouth, for problems of tooth, heart and throat. It also increases the glow of face. 

Su.S. ci.24.21

**Lavanga in Aastanga samgraha (6th Century A.D.)**

Lavanga is added in making of Tambula, which gives good taste, cleanliness, and good smell of mouth and is good for heart. **AS. su.3.35**

Lavanga, Jatiphala, Kankola are easily digestible, relieves thirst, good for heart and removes the bad smell of the mouth. **AS. su.12.77**

**Lavanga in Kasyap Samhita (6th Century A.D.)**

It is indicated as an ingredient of oil preparation along with Laksha, Nagarmotha, Haridra, Daruharidra, Vacha, Devdaru etc. and indicated for external application for massage of the diseased. **Ka.s.11.134**

Here also indicated as an ingredient of oil preparation, useful for application in Kaphaj Jwor along with its general treatment. **Ka.s.11.136**

**Lavanga in Astanga Hridaya (7th Century A.D.)**

Lavanga is an ingredient of Arsanasak aausad in which it is used in an amount of 1 pal and this formulation is useful in conditions like haemorrhoids, Gulma, and also stimulates Jatharagni. **AH. ci.8.149**
Lavanga is an ingredient of Khadiradi Gutika in which it is used in an amount of 4 tola and this formulation is useful in diseases of mouth. It is also used in oil preparation along with same aforementioned dravyas and when the oil is taken hold in mouth is said to cure mouth disease and loose teeth. AH. U.22.93

Lavanga in Harihar Samhita

Lavanga is used as an ingredient of Netranjana useful in eye irritation, watery eyes, pain and redness of eyes.

Lavanga in Chakradatta (11th Century A.D.)

Lavangadya churna

Lavanga is used as an ingredient in it. It is useful in Paittik rogas, cough, hiccups, prameha, piles, jwor, is appetizer, Tridoshanasak, balabardhak.

Lavanga in Gada Nigraha (12th Century A.D.)

1) Lavangadyam churnam

Lavanga is used as an ingredient in Lavangadya Churna in 3rd Chapter of the book. This preparation is useful in anorexia, constipation, Grahani, Tamakswasa, Diarrhoea, Prameha, gulma, Raktakshaya.

2) Lavangadya Gutika

As an ingredient in it and is useful in Haemorroids, anaemia, heart diseases and parsva sula. It is also taken in cough, gulma, hiccups, jworatisaar, and tandra.

3) Lavangashav for dhatukshaya

Lavanga as an ingredient of Lavangashav. Cures difficultly curable urinary diseases, and dhatukshaya.
### Lavanga in Sarangadhar Samhita (13th Century A.D.)

<table>
<thead>
<tr>
<th>Yoga</th>
<th>Reference</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Sudarshana Churna</td>
<td>Ma.Kha.6.30</td>
<td>All types of Fever, Moha, Tanda, Vhrama, Swasa, Kamala, Joint pain</td>
</tr>
<tr>
<td>2) Lavangadi Churna</td>
<td>Ma.Kha.6.65</td>
<td>Dipana, Vrisya, Tridoshagna, Hridroga, Kantharoga, Prameha, Aruchi, Gulma, Grahani</td>
</tr>
<tr>
<td>3) Jatiphaladi Churna</td>
<td>Ma.Kha.6.70</td>
<td>Grahani, Kasa, Swasa, Aruchi, Kshaya, Pratishyaya</td>
</tr>
<tr>
<td>4) Eladi Churna</td>
<td>Ma.Kha.6.145</td>
<td>Relieves Vomiting arising from all 3 doshas.</td>
</tr>
<tr>
<td>5) Akarakarabadi churna</td>
<td>Ma.Kha.6.163</td>
<td>Stops premature ejaculation and ↑ Sexual power</td>
</tr>
<tr>
<td>6) Irimedadi oil</td>
<td>Ma.Kha.9.164</td>
<td>In diseases of mouth.</td>
</tr>
<tr>
<td>7) Chandanadi oil</td>
<td>Ma.Kha.9.192</td>
<td>↑ strength, Tuberculosis, Raktapitta, Epilepsy, Fever,</td>
</tr>
<tr>
<td>8) Kumaryasava</td>
<td>Ma.Kha.10.20</td>
<td>Pain of indigestion, Udara roga, Prameha, Apasmara, Sukradosha, Raktapitta</td>
</tr>
<tr>
<td>9) Pippalyasava</td>
<td>Ma.Kha.10.29</td>
<td>Grahani, Gulma, Kshaya, Pandu</td>
</tr>
<tr>
<td>10) Mrdwikarista</td>
<td>Ma.Kha.10.40</td>
<td>Grahani, Arshas, Udavarta, Gulma, Krimi, Kustha, Vranas, Eye diseases, Shiroroga</td>
</tr>
<tr>
<td>11) Khadirarista</td>
<td>Ma.Kha.10.63</td>
<td>Leprosy, Heart Disease, Anaemia, Cancer, Abdominal tumor, Krimi, Plihodara</td>
</tr>
<tr>
<td>12) Babbularista</td>
<td>Ma.Kha.10.68</td>
<td>Kshya, Kustha, Atisara, Prameha, Swasa &amp; Kasa</td>
</tr>
<tr>
<td>13) Dasmularista</td>
<td>Ma.Kha.10.87</td>
<td>Grahani, Aruchi, Swasa, Bhagandar, chardi, Kamala, Kustha, arsha, meha, asmari, emaciation</td>
</tr>
<tr>
<td>14) Swayamagnir rasas</td>
<td>Ma.Kha.12.160</td>
<td>Cures ksaya, Kasa</td>
</tr>
<tr>
<td>16) Kandarpasundarasamaha</td>
<td>Ma.Kha.12.272</td>
<td>↑ sexual power</td>
</tr>
</tbody>
</table>
Lavanga in Rasendra Sara Samgraha (16\textsuperscript{th} Century A.D.)

In this text Lavanga is used as a herbal ingredient in following Rasa yogas.

<table>
<thead>
<tr>
<th>Yoga</th>
<th>Reference</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vatakulantak Rasa</td>
<td>2\textsuperscript{nd} Chapter,(9-12)</td>
<td>Apasmara, Syncope</td>
</tr>
<tr>
<td>Rambana Rasa</td>
<td>2\textsuperscript{nd} Chapter,(29-31)</td>
<td>Improves appetite, eradicates Dyspepsia, Atisara, Sangrahani, Rheumatism.</td>
</tr>
<tr>
<td>Laxmivilasa Rasa</td>
<td>2\textsuperscript{nd} Chapter,(17-23)</td>
<td>Cough, TB, Asthma, Pyrexia, Malarial fever, Cholestatic jaundice, Anaemia, Pain, Piles, Urinary disorder.</td>
</tr>
</tbody>
</table>

Lavanga in Bhaisajya Ratnavali (18\textsuperscript{th} Century A.D.)

<table>
<thead>
<tr>
<th>Yoga</th>
<th>Source</th>
<th>Reference</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lavangadi Churnam</td>
<td>Chakradatta</td>
<td>14\textsuperscript{th} chapter,(23-25)</td>
<td>Rajyaksma, coughs, anorexia, hiccup, rhinitis, prameha, gulma</td>
</tr>
<tr>
<td>Lavangadi vati(vrihat)</td>
<td>Rasendra Sara Samgraha</td>
<td>10\textsuperscript{th} chapter,(103-106)</td>
<td>Grahani, indigestion, fever, Kushta, amlapitta, Mandagni, kosthagata vata</td>
</tr>
<tr>
<td>Lavangadi vati(vai.ji.)</td>
<td>Vaidya Jivan</td>
<td>15,35</td>
<td>Sucking as per the requirements.</td>
</tr>
<tr>
<td>Lavangayam modakam</td>
<td>Propounded by Aswinikumaras</td>
<td>10,(245-250)</td>
<td>Amlapitta, indigestion, Anaemia, Jaundice</td>
</tr>
</tbody>
</table>
### Lavangadya churnam (mahat)

- **Propounded by** Aswinikumara ras
- **References** 8,(75-82)
- **Uses** Appetite, Diarrhoea, sprue, colic pain, constipation, dysentery, jaundice, anaemia, halimaka, and cough

### Irimedadya Tailam

- **Propounded by** Chakradatta
- **References** 61,(136-140)
- **Uses** Dantavidradhi, dantaharsha, krimi danta, loosening of tooth

### Eladi Churnam

- **Propounded by** Yoga Ratnakara
- **References** 14,34
- **Uses** -

### Jatiphaladi Churnam

- **Propounded by** -
- **References** 8,(104-107)
- **Uses** Consumption, cough, cold, anorexia

### Pipalyadaasava

- **Propounded by** Sarangadhar Samhita
- **References** 8,(611-616)
- **Uses** Kshya, gulma, GI problems, piles, Paandu

### Babbulyadya Aarista

- **Propounded by** Sarangadhar Samhita
- **References** 7,(171-173)
- **Uses** Consumption, Kustha, diarrhea, prameha, kaasa, bronchitis

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**Lavanga in Aamarkosha**

लवंगा देवकुसुम श्री संजय जायक्षम्। अमरकोशः।

Only three synonyms viz. Lavanga, devkusuma, srisangyaka are mentioned in it.

**Lavanga in Madanpal nighantu (14th Century A.D.)**

लवंगा शिखर दित्यं लवं चन्दनपुष्पकम्।
श्रीपूष्ण देकुसुम भृजारं वारिसमवम्।
लवंगा लघुकवार्ष्यं ह्रद्य दीपपाचनम्।
शूलनाहकामधुसकामनचदनपुष्पकम्।

**Synonyms** = devkusum, vringar, sikhar, sripuspa, varisambahav, divya, chandnapuspak, Lava; these are the synonyms of Lavanga.
Gunakarma = lavanga is light. It is good for heart, eyes; is appetizer, digestive, and removes troubles like abdominal distention, pain, flatulence, swasa, cough, vaman, TB, kapaha.

Lavanga in Raaj Nighantu (15th Century A.D.)

"लबंगं देवकुसुमं शिखरं। चन्दनपुष्पकम्॥
श्रीपुप्यं देवकुसुमं रंगिरं बारिस्मं।॥ ११३३॥
तीक्ष्णपुप्यं तु भूमं गीवंकुसुमं तथा॥
पुष्पकं च दन्नादिर्स्यात् शेषं यथोदशालयम्॥॥ ११३४॥

synonyms = Lavanga, devkusum, vringaar, shekhar, sripuspa, varisambhav, divya, chandanadi, Lava, Tikshnapuspa, Girvarnakusum, Ruchira, Lavangakallika; these are the 13 synonyms of Lavanga.

Gunakarma = lavanga is Tikta in rasa, sheetal. It is good for eyes; is appetizer, destroys vataj, pittaj and kaphaj disease, is tiksna and keeps away the Siroroga.

Other gunas = Lavaga is Tiksna along with ushna, has madhur vipak and sheeta veerya. It cures Raktavikar, cough, TB, and vataj, pittaj and kaphaj diseases.

Lavanga in Kaiyadev Nighantu (15th Century A.D.)

लबंगं देवकुसुमं शिखरं । चन्दनपुष्पकम्॥ (१३३३)
लबंगं कुटकं तितं । शूलानाहकातशयानं॥ (१३३४)

synonyms = devkusum, shringar, sikhar, sripuspa, varij, shravya, divya, chandanpuspak; these are the synonyms of Lavanga.

Gunakarma = lavanga has katu, tikta, rukshya, laghu properties and shita virya. It is good for heart, eyes; is digestive, and removes troubles like abdominal distention, pain, kapaha, pitta, rakta, thirst, incised injury (kshat), cough, cold, poisoning, sinusitis.
Lavanga in Bhavprakash nighantu (16th Century A.D.)

Oil of cloves = clove oil is yellowish when fresh and lateron changes to reddish progressively.

Amount = 1\2 to 3 drops

Uses and effects = It has kapoor like property, when applied for massage changes skin colour to red. It relieves pain, creates space in skin and it has good insecticidal property.

When used internally brings out Kapha, increases appetite. Removes stiffness and vata disorders. It is mixed in massage and hair oil. When applied on skin, repels mosquitoes so is helpful for control of diseases caused by mosquito.

It has good analgesic effect in toothache when applied with the help of a cotton piece. It is also good for abdominal pain when taken with batasha.

Lavanga in Aabhinava nighantu (pandit Dattaram Chaubene, 1850 A.D.)

According to it fresh, long, thick, reddish and blackish lavanga is good for use. It has given different synonyms of Lavanga in different languages as in other nighantus. It is said to be exported to yavadip, balidip, cheena, Europe from here.

Guna = katu, tikta, light, sheetal, dipana, pachana, ruchikari, netraheetkari.

Uses = It removes kapha, vata, raktavikar, thirst, vaman, flatulence, shula, svasa, cough, hiccup, and kshyaroga.

Substitution = Dalchini, Kulinjan, and Jaiphala.

In any side effects of Lavanga, latex of Arabi Babbul should be used.

Lavanga in Shankhar Nighantu (1935 A.D.)

In this nighantu Lavanga is mentioned having teeja taste, not good for kidney. Babbul latex is said to be haninivarak.
Guna= It is pungent, bitter, good for eyes, sheetal, dipana, pachana, thirst, chardi, hiccup, abdominal distension, cough, asthma. Its oil is vatanasak, agni janak, also cures vaman as well as kapha of a pregnant.

**Lavanga in Saligram Nighantubhushan (1988 A.D.)**

लवंग देवकुसुम श्रीसंज्ञा कल्लिकोटमम् ।
भूज्ञां, सुधिरं तीर्थं बारिजं शंकरं लवं ॥ (शालिग्रामनिघष्टुपण)

**Synonyms=** Lavanga, devkusum, vringaar, vringangi, shekhar, Kallikottam, Lava, Tikshna, srisangya, susir, Varija these are the synonyms of Lavanga.

**Properties of Lavanga oil =** Lavanga oil is dipana, Vatanasaak, dantavesta, cures kapha and vamana of pregnant lady.

**Lavanga in Nepali nighatu (Koshanath Devkota, 1968A.D.)**

**synonyms=** Lavanga, devkusum, vringaar, vringangi, shekhar, sripuspa, chandanpuspa, varisambhav, varipuspa, Lava, Tikshnapuspa, Girvarnakusum, srisangya, susir, Lavangakallika; these are the 15 synonyms of Lavanga.

**Properties=** It is tikshna, light; has tikta, katu taste. It is madhura and cold in paakavasta. It does dipana, pachana, and increases the appetite. It is useful in conditions like vaayu, pitta, kapha, raktadosha, trishna, vaman, aadhyaman, shula, kaasa, swasa, hikka, shiroroga, and netraroga.

**Lavanga in Mahaushad Nighantu (Aryadas Kumar Sing, 1971 A.D.)**

लवंग देवकुसुम रणकोटमम् ॥१६॥
लवंग कटुके ॥१७॥ (महाउशद स्निहर्षत)

**Synonyms=** Lavanga, devakusuma, vringaar, shekhar, divya, sripusna Kallikottam, srisangya, susir these are the synonyms of Lavanga.
Properties= Laghu, Katu, Tikshana, has tikta rasa, madhur vipak and ushna veerya. Useful in thirst, vaman, abdominal distention, raktavikar, netra roga, vata, pitta, and kapha disorder, svasa, kaas, hiccup, shula, and aamvata.

Lavanga in Different Modern Texts


Lavanga is said to be the native of Moluccas. As it is mentioned in Brihattrai, it becomes clear that it was known to Indian subcontinent from very old age although it is continually coming from Dwipantar. It has occupied major places in fragrant substances. Previously it was used for clearity of mouth, and for making various oil fragrant. Its medicinal use began lateron.

Lavanga in *’Sthaniya Jadibuti Tatha Khaddyannadwara Svastha Sanrakshena Ra Samanya Rogaharuko Upachaar’* (Dr. Kashiraj Sharma Suvedi, 2006 A.D.)

This text has described the simple plant description of Lavanga. According to it Lavanga is imported in Nepal. It has indicated its use in Amlapitta, in which it is said that Lavanga should be immersed in cold water and the water should be taken morning and evening. For cough and mukha roga (1-2) Lavanga should be taken in mouth.

Lavanga in *’Indian Indigenous Drugs and plants’* (Kaviraj Nagendra Nath Sen Gupta, 1926 A.D.)

Lavanga is a kind of tree said to be the native of New Guinea, Ambuyna and Moluccas. It is now cultivated to a considerable extent in South India. The yield of volatile oil is (16-29)%.
Medicinal uses=Aromatic, Stimulant, Carminative, oil is applied in dental problems. The powder, tincture, infusion and oil are the various forms in which cloves are used.

Lavanga in 'Indian Medicinal Plants; An Illustrated Dictionary' (C.P. Khare _Edition 2008 A.D.)

Syzygium aromaticum (Linn.) Merr. & Perry.


Family = Myrtaceae.

Habitat = Cultivated in Tamil Nadu and Kerala.

English = Clove.

Ayurvedic Name = Lavanga, Devakusum, Devapushpa, Shrisangya, Shriprasunaka.

Unani = Qaranful, Laung.

Siddha/Tamil = Kiraambu, Lavangam.

Action = Carminative, antiinflammatory, antibacterial. Flower buds—antiemetic, stimulant, carminative. Used in dyspepsia, gastric irritation. Oil—employed as a local analgesic for hypersensitive dentlines and carious cavities; internally as a carminative and antispasmodic.

Key application = In inflammatory changes of oral and pharyngeal mucosa; in dentistry; for topical anesthesia. (German Commission E.) Eugenin, triterpene acids, crategolic acid and steroid glucosides afford anti-inflammatory and antiseptic properties to the buds. Eugenol, a major component of the oil, is antibacterial.

Acetone extract of clove, eugenol and acetyleneugenol possess cholagogue activity. The eugenol and acetyleneugenol components of the clove oil inhibit arachidonate-, adrenalin- and collagen-induced platelet aggregation.

Clove terpenes show significant activity as inducers of detoxifying enzyme, glutathione-S-transferase (GST) in mouse liver and intestine and bring about carcinogen detoxification.
Whole cloves might have chemoprotective activity against liver and bone marrow toxicity. (The Review of Natural Products by Facts and Comparisons, 1999.)

Dosage = Dried flower-bud—0.5–2.0 g powder. (API, Vol. I.)

Clove (Syzygium aromaticum); (Source: Wikipedia)

Clove is the aromatic dried flower buds of a tree in the family Myrtaceae, Syzygium aromaticum. Cloves are native to the Maluku islands in Indonesia and used as a spice in cuisines all over the world. Cloves are harvested primarily in Indonesia, India, Madagascar, Zanzibar, Pakistan, and Sri Lanka. They have a numbing effect on mouth tissues.

The clove tree is an evergreen that grows to a height ranging from 8–12 m, having large leaves and sanguine flowers in numerous groups of terminal clusters. The flower buds are at first of a pale color and gradually become green, after which they develop into a bright red, when they are ready for collecting. Cloves are harvested when 1.5–2 cm long, and consist of a long calyx, terminating in four spreading sepals, and four unopened petals which form a small ball in the center.

Taxonomy and Nomenclature

The Scientific name of clove is Syzygium aromaticum. It belongs to the genus Syzygium, tribe Syzygieae, and subfamily Myroideae of the family Myrtaceae. It is classified in the order of Myrtales, which belong to superorder Rosids, under Eudicots of Dicotyledonae. Clove is an Angiospermic plant and belongs to division of Magnoliophyta in the kingdom Plantae.
Scientific Classification

Kingdom : Plantae

Phylum : Angiosperms

Order : Myrtales

Family : Myrtaceae

Genus : Syzygium

Species: S.aromaticum

Binomial name : Syzygium aromaticum

Synonyms : 

Caryophyllus aromaticus L.

Eugenia aromatica (L.) Baill.

Eugenia caryophyllata Thunb.

Eugenia caryophyllus (Spreng.) Bullock & S. G. Harrison

Myrtaceae Family

The Myrtaceae, consisting of trees and shrubs found in the tropics, subtropics, and temperate Australia, comprises about 140 genera and 3,000 species. The leaves are most commonly opposite, and frequently are glandular dotted; stipules are absent or vestigial. The flowers are actinomorphic, commonly with a 4-5-parted calyx and corolla that is frequently reduced and inconspicuous compared to the well-developed androecium of numerous stamens. The gynoecium consists of a single compound pistil of 2-5 carpels, a single style and stigma, and a partly to wholly inferior ovary with 2-5 locules and 2-many axile ovules (or occasionally a single locule with intruded parietal placentation). The fruit is usually a berry or loculicidal capsule.
Floral Formula: * , K 4-5, C 4-5, A_{\infty}, G -2^5- ; berry, capsule

Nutritional Facts of Clove

Amount Per 100 gms
Calories = 274

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<tr>
<th>Nutrient</th>
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<th>%Daily Value</th>
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<tr>
<td>Total Fat</td>
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*Per cent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Source=USDA

**Botanical name**
Syzygium aromaticum (L.) Merrill & Perry

**Synonyms**[1]
Eugenia aromaticus (L.) Baile.
Eugenia caryophyllus (Spreng.) Bullock & S. G. Harrison

**Family**  =  Myrtaceae

**Classical name** = Lavanga

**Sanskrit names** = Lavanga, devakusuma, sripurasuna, Chandanapuspa, Varija.

**Description**
Pyramidal or conical evergreen tree, a large shrub or small tree, beautiful, 9-12 meters high or taller, with smooth grey bark and gland dotted fragrant and lanceolate leaves in pairs.
Leaves obovate or elliptic, narrowed into a short petiole, secondary nerves numerous, joined reticulate veins.
Flower-buds borne in small clusters at the end of branches, greenish, turns pink at the time of maturity, aromatic, buds lastly crimson.
Flowers sessile, in terminal compound, trichotomous cymes, calyx-tube broadly turbinate 1/8 inch long, limb nearly truncate; petals calypirate, flowers in corymbose panicles.

Drupe (mother of clove) fleshy, dark, pink, 2.5 cm long, and 1.5 cm thick. Fruits depressed, globose, black, shining.

**Flowering and Fruiting time**
During January-February or different months depending upon the cropping, harvesting, picking seasons.

**Drug Clove:**
Dried floral buds constitute a major spice of commerce, highly potent drug, and strong aromatic herbal item making clove a highly valuable drug as well as spice. Floral buds in dried state or clove in nail-like spice, reddish brown in colour, 12-19 mm. long, somewhat rough to touch but not wrinkled or shrivelled, with cylindrical base crowned with plum, ball-like and unopened corolla, surmounted by 4-toothed calyx; aromatic odour, a hot and pungent taste. Yields, quality and grades depend on the various factors relating the plant propagation, harvest, picking. Clove stalks are also collected separately and traded.

**Distribution**
Plant is cultivated in south India, Sri Lanka, Mauritius, South east Asian countries like Java, Sumatra, Borneo, Indonesia. Native of Malay Archipelago (Moluccas) as spice corp.

**Chemical composition**
The clove yield a volatile oil from 15%-20% known as clove oil. It contains eugenol 85-92%, Tannins 13%, some fixed oil and resin. Cloves contain Caryophyllin, a phytosterol, and also crude fibre 10 percent.
The compound eugenol, responsible for most of the characteristic aroma of cloves.

Pharmacodynamics

- **Guna** (quality) = Unctuous, light, penetrating
- **Rasa** (taste) = Pungent, bitter
- **Vipaka** (post-digestive effect) = Pungent
- **Virya** (energy) = Cold
- **Dosa Karma** = Kaphapitta saamak

**Karma:**

**Roga:**
Therapeutic Uses

Lavanga is highly potent and reputed drug. It is stimulant, carminative, aromatic, aphrodisiac, Cardiotonic, antisasmodic and antipyretic properties. Drug is externally and internally administered in different forms of powder, infusion, oil and others.

**Parts Used:** Flowering bud

![Image of flowering buds]

**Dose:** Powder 1-3 gm, oil 1-3 drops

**Formulations:**
Lavangadi Churna, Lavangachatuhsama, Devekusumadi Tailam, Lavangadi vati, Avipattikara churna, Lavangodaka, Devakusumarka.

**Syzigium aromaticum**

**Synonyms / Common Names / Related Terms**
2-methoxy-4-(2-propenyl)-phenol, Caryophylli atheroleum, Caryophylli Flos, caryophyllum, caryophyllus, *Caryophyllus aromaticus*, cengke, cengkeh, chiodo di garofano (Italian), choji, chor boghbojh, chor poghpch, cinnamon nails, clau, clavos, clou de girofle, Clous de Giroffe (French), clovas de comer, clove bud, clove bud oil, clove cigarettes, clove essential oil, clove leaf, craveiro da india, cravinho, cravo, cravo de olor, cuiroare, ding heung, ding xiang, dinh huong, dok chan, dried clove, *Eugenia aromatic*, *Eugenia* bud, *Eugenia caryophyllata*, *Eugenia*
**Monograph of Syzygium aromaticum**

*caryophyllus*, faranfil, Flores Caryophylli, gahn plu, garifalo, garifallo, garifano, garn ploo, Gewurznelken Nagelien (German), gozdzik, gozdzikow korzenny, graambu, ground clove, gvazdikelia, gvozdika, harilik nelgipuu, hrebicek, iltzekanela, jeonghyang, jeonghyong namu, jonghyang, kabsh qarunfil, kala, kalmpir, kan phou, kan phu, karafuu, karamfil, kariofilla, kariofilo, khan pluu, khlam puu, klabong pako, klinic, klinceky, klincki, krambu, kreteks, krinfud, kruidnagel, krustnaglinas, kryddnejlikor, kryddernellike, kullobu, kurobu, kvapnusis gvazdikmedis, labanga, labango, laung, lavang, lavanga, lavangalu, lavnagamu, lay hnyin, leoung, ley nyim bwint, mikhak, mikhaki, mixaki, moschokarfi, Myrtaceae (family), nageljnove zbice, nagri, negull, neilikka, nejlikor, nelk, nelke, nelliik, nelliike, oil of clove, oleum caryophylli, pentogen (clove oil), qalampir, shriisanjnan, *Syzigium aromaricum* (L) Merr. and Perry., szegfu, szegfuszeg, tropical myrtle, tsiporen.

**Note:** Do not confuse clove with baguacu, black plum, *Eugenia cumini*, *Eugenia edulis*, *Eugenia jambolana*, *Eugenia umbelliflora*, Jamun, java apple, java plum, SCE, *Syzygium cordatum*, *Syzygium cumini*, *Syzygium samarangense*, water apple, or wax apple.

**Mechanism of Action**

**Pharmacology:**

- **Constituents:** Alpha-humulene, benzoates, eugenol (4-alil-2-metoxiphenol), eugenol acetate, ethyl acetate, beta caryophyllene, isoeugenol, phenylpropanoids, dehydrodieugenol, methyleugenol, methyl salicylate, trans-coniferyl aldehyde, and triterpenes (oleanolic acid) are constituents of clove. Eugenol, a volatile oil extracted from clove, is believed to be responsible for many of the therapeutic and toxic actions of clove.

- **Analgesic / anesthetic effects:** One randomized trial found that a homemade clove gel is as effective as an oral anesthetic benzocaine 20% gel. However, the clove component eugenol may inhibit prostaglandin biosynthesis and thereby depress pain sensory receptors. It is unclear whether clove displays an anesthetic or analgesic mechanism of action or both. Additional study is needed to clarify these findings.
• **Antibacterial effects**: Flower extract of clove and ethanol extract were shown to inhibit the growth of *Helicobacter pylori*. Oil of clove showed a germicidal effect against *Klebsiella pneumoniae, Pseudomonas aerogenosa, Clostridium perfringes, Escherichia coli, Proteus vulgaris, Mycobacterium smegmatis, Bacillus subtilis, Salmonella enterica, Listeria monocytogenes, Candida albicans*, and five strains of *Staphylococcus aureus*. Hemolysis due to alpha-toxin produced by *Staphylococcus aureus* was significantly reduced after a culture with clove oil. The oil also significantly decreased the production of enterotoxin A and enterotoxin B, also produced by *S. aureus*. Schapoval et al., however, found no anti-microbial properties when they used extracts of dried and fresh leaves of clove.

• **Anticancer effects**: Eugenol-treated HL-60 cells displayed features of apoptosis including DNA fragmentation and formation of DNA ladders in agarose gel electrophoresis. Eugenol transduced the apoptotic signal via ROS generation, thereby inducing mitochondrial permeability transition (MPT), reducing anti-apoptotic protein bcl-2 levels, inducing cytochrome c release to the cytosol, and subsequent apoptotic cell death.

• **Antifungal effects**: Hasan et al. found that clove oil may prevent mycotoxin production by *Aspergillus* species. Similarly, another study has found that clove had a high inhibitory effect on dermatophytic fungi. Antifungal activity of eugenol involved alteration of both membrane and cell wall of the yeast. A similar *in vitro* study indicated that eugenol exerted an anticandidal effect by a mechanism implicating an important envelope damage. The fungicidal activity was similar with nystatin used as a reference treatment. Essential oils were tested for activity against common fungi causing spoilage of bakery products, *Eurotium amstelodami, E. herbariorum, E. repens, E. rubrum, Aspergillus flavus, A. niger*, and *Penicillium corylophilum*. Clove essential oil was found to totally inhibit the microorganisms tested. *Saccharomyces cerevisiae* cell lysis was shown by the release of substances absorbing at 260nm. In addition, scanning electron microscopy analyses revealed that the surface of treated cells by clove oil was significantly damaged.
• **Antihistamine properties**: In a rat study, clove, specifically the eugenol in clove, showed antihistamine and antianaphylactic activity.

• **Anti-inflammatory effects**: Substrate dependent enzyme kinetics showed that the inhibitory effect of eugenol on 5-LO is of a non-competitive nature. Eugenol significantly inhibited the formation of LTC(4) in calcium ionophore A23187 and arachidonic acid (AA) stimulated polymorphonuclear leukocytes PMNL cells. These data suggest that eugenol inhibits 5-lipoxygenase (5-LO) by non-competitive mechanism and also inhibits formation of leukotriene C(4)(LTC(4)) in human PMNL cells and thus may have beneficial role in modulating 5-LO pathway in human PMNL cells. Eugenol also suppressed cyclooxygenase-2 expression in lipopolysaccharide stimulated mouse macrophage RAW264.7 cells. Theoretically, clove may inhibit cyclooxygenase and lipoxygenase metabolic pathways, thereby inhibiting prostaglandin and leukotriene biosynthesis.

• **Antimutagenic effects**: Three studies examined the mutagenicity of various herbs and concluded that clove may possess anti-mutagenic properties.

• **Antipyretic effects**: A study found that eugenol possesses greater antipyretic properties than acetaminophen when given intravenously in small doses to rabbits. When clove water extract is applied to rat enterocytes, it can permeate the membrane and inhibit N(+)/K(+) ATPase.

• **Chemoprotective effects**: Clove may have chemoprotective properties against liver and bone marrow toxicity (anecdotal).

• **Hepatic properties**: In a rat study, clove reduced levels of cytochrome P450 enzyme.

• **Insecticidal effects**: Significant correlations among adulticidal, nymphicidal, and ovicidal activities against *Trialeurodes vaporariorum* (greenhouse whitefly) were observed with clove leaf oil.

• **Mitochondrial effects**: ATPases Na+/K+ ATPase, Cu2+-ATPase, and F0F1ATPase are possible intracellular targets for the action of clove spice's components that result in: a decrease in ATP level, defects in proton and
ion transports leading to electrolyte imbalance and derangements in mitochondrial function.

- **Renal effects**: Based on a case report, ingested clove oil may be nephrotoxic.

- **Vasorelaxant effects**: In a rat study, eugenol from clove showed vasorelaxant properties.

**Pharmacodynamics/Kinetics:**
- Rat hepatocytes actively metabolize the clove component eugenol, suggesting liver metabolism of the agent.
- Volunteers were given 12 gingersnaps, which were high in methyleugenol, (a constituent of clove), for breakfast. Blood was drawn immediately before the mean and at 15, 30, 60, and 120 minutes afterward. The mean ± standard deviation fasting level of methyleugenol in serum was 16.2 ± 4.0pg/g wet weight. Peak blood levels were found at 15 minutes (mean ± SD, 53.9 ± 7.3pg/g wet weight), followed by a rapid decline; the half-life of elimination was about 90 minutes.
Conclusion
Lavanga is an important medicinal herb. Lavanga is said to be the native of Moluccas. It is harvested primarily in India, Madagascar, Indonesia, Pakistan, and Sri Lanka. As it is mentioned in Brihattrai, it becomes clear that it was known to the Indian subcontinent from very old age. Owing to its importance, it is called as Devakusuma in Sanskrit; which means it is best among flower and fruits to God. It has been used traditionally as an important part of our Spices. It pacifies the Kapha due to its Tikta, Katu taste and pacifies the Pitta due to its Shita Virya. It has many local and systemic actions. Among them, it is mostly useful in diseases related to mouth, teeth, and gums. It has good insecticidal property so it is useful in skin diseases, in the forms of oil preparations. It is useful in Aama jwor as it digests Aama. In Tuberculosis, it pacifies Cough.

According to the recent research conducted in Miguel Hernander University, Clove is the best antioxidant due to high levels of Phenolic compounds it possess. Research activities on growth inhibitory activity of Clove against oral pathogens, its antifungal property, antibacterial property, antihistaminic property, analgesic property are going on. Besides these, its aromatic oil Eugenol has been found to contain anti-cancer property. Thus Lavanga can be a boon to Medicine if properly explored.
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