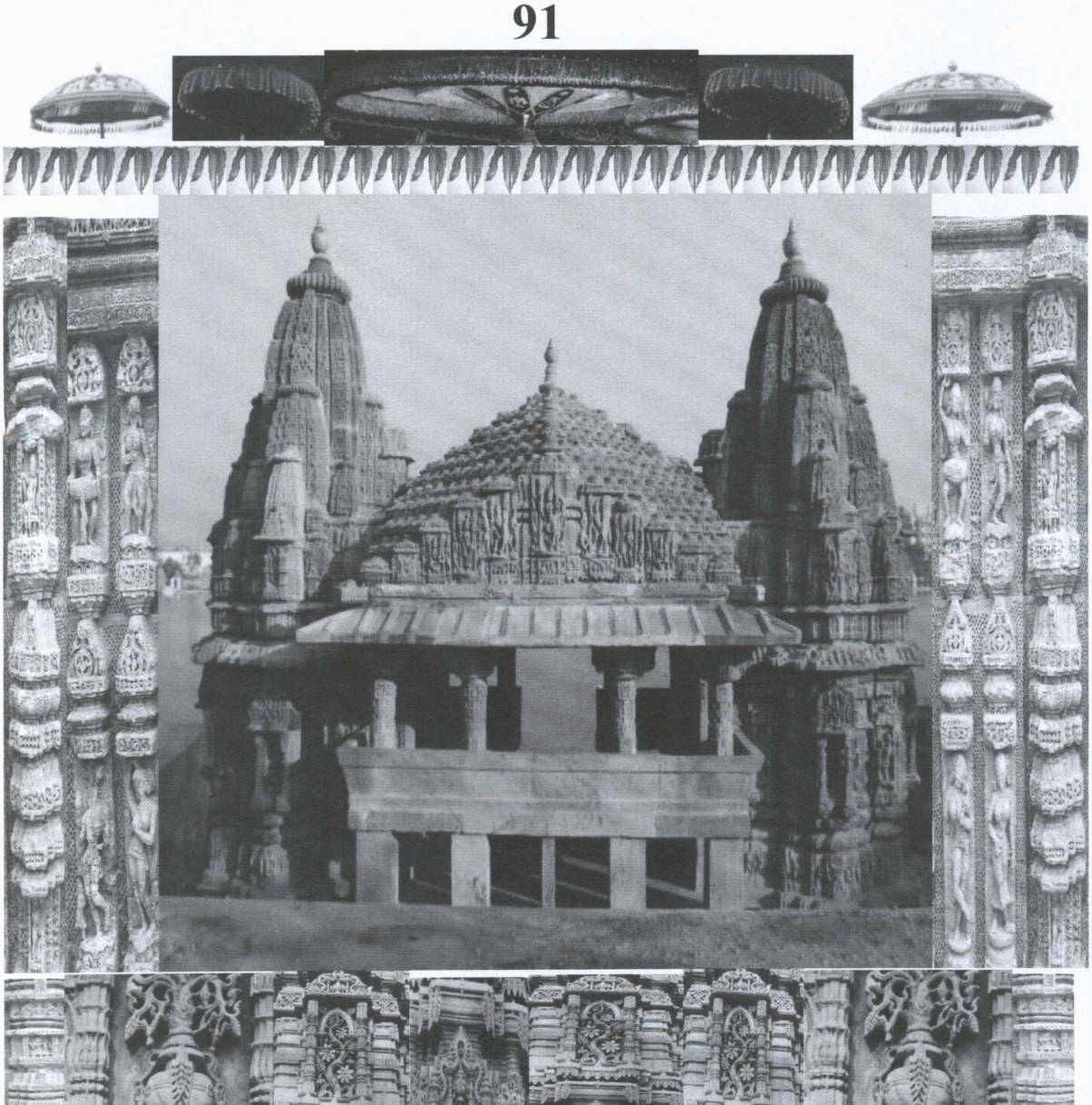
# Path to Dharma

## தர்மநெறி (Dharma Neri)

## 91



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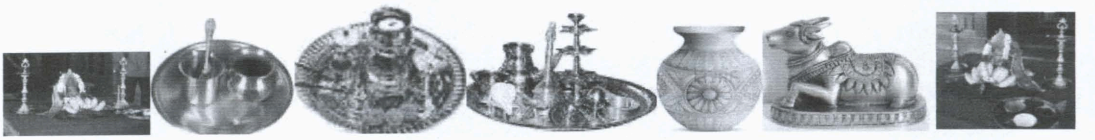
**June 2015 ஜூன் (வைகாசி/ ஆனி)**

**Editorial.**

**The monthly publication 'Path to Darma', by KshethraVinayakaTemple, Sri Munneswaram, Chilaw, Sri Lanka, is presenting the 91st number this month. The main imperative endeavor of this monthly magazine is to pass on the vision associated to Hindu dharma basically by replies to the issues put forward by the anxious readers. The comments and analysis of the readers are appreciated.**

**B.S.ivaramakrishnaSarma,**
**KshethraVinayakaTemple,SriMunneswaram, Chilaw, Sri Lanka. .July, 2015**



Dear Sarma
Greetings and wishes. I had time to go through the 'Path of Darma, monthly magazine No. 90. First of all, congratulations to you and team for your sincere and constructive efforts to bring these wealth of information through out these 90 editions.
What a great achievement and I am sure almighty God's blessings are with you always to give you good health and strength to bring the Path of Darma to everyone and to go past many more 100s.
Pradosha Viradham and related information are much searched by many people and you rightly brought them at this very important time period. Thanks for the information. Your detailed information on various aspects of this Pradosha Poojai and worship rituals along with order of performance are very well explained and presented.
Over all it is a fantastic effort and your service to community through this is highly appreciated.
Looking forward the much prestigious 100th edition and I wish you all the best.
With best regards
SriGowriSanker
3,Gilda Court,Rowville,Victoria-3178,Australia. 02nd June, 2015

Hi Sarma
I had a glance at Kumbabishekam (Brisbane) issue of path to Dharma –number 40. You are doing a great work by publishing the issue on time highlighting the important events in other states.
Keep up the good work.
P.Sivananthan, 6, Holden Street, Toongabbie, NSW-2146, Australia. 05th June, 2015

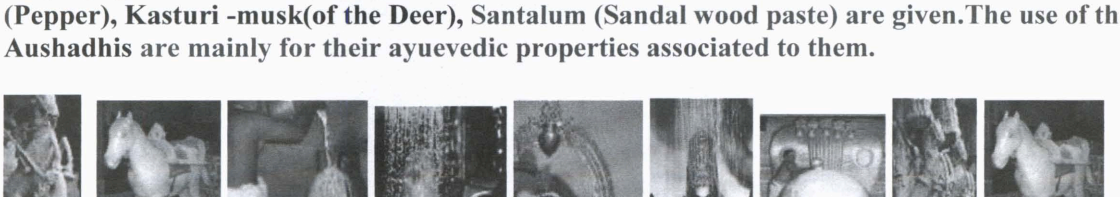
Dear Sarma,
The Path to Dharma, magazine –number 90 of May issue is excellent with the necessary information regarding 'Pradosha Viradham' and related information. The detailed explanations regarding different aspects of the Pradosha Pooja and the rituals of worship together with other performance are well enlightened. I sent you several questions regarding Hindu concepts. Hope the explanations soon in the coming issues of 'Path to Dharma', magazine.With kind regards
K.Sinnathamby,Canada 06th June,2015

Dear Mr.Sarma,
The May issue of 'Path to Dharma', magazine (Vol- 90) is very useful because it explains the important aspects of 'Pradosha Viradham'. I have forwarded a few doubts regarding important temple rituals to you .Please enlighten the readers on those questions.
Thanking you,
M.N Sivasothy, Denmark. 9th June,2015

Dear Mr.Sarma,
The information regarding 'Pradosha Viradham', which is an important ritual in Siva temples is very informative that is explained in the May issue of 'Path to Dharma', magazine (Vol- 90).
Thanks a lot
S.P.Kulasingam,
30,Jackman Street,Preston,Victoria-3072,Australia 12th June,2015

**1.Give the significance of using Cardamom seeds, Chrysopogon zizanioides roots (Vetiver), Cloves,Gmelina arborea, (Gamhar), Cardamomum fruit (Pepper), Kasturi -musk(of the Deer), Santalum (Sandal wood paste) and Nutmeg and mace in abisheka water in Hindu temples? Are there any other spices used in this way for abisheka?**

There are number of medicinal herbs and spices ( The Aushadhis ) made use in temple rituals for 'abisheka'(holy bathing the idol) are placed in a kalasa (a pot) or in a conch,the shanka immersed in water , 'homa'(fire rituals).The following is a list of these Aushadhis obtained form an ancient temples copied from the 'Paththathi' ( the script describing the relevant rituals) . The details of **Cardamom seeds, *Chrysopogon zizanioides* roots (Vetiver), Cloves, *Gmelina arborea*, (Gamhar), Cardamomum fruit (Pepper), Kasturi -musk(of the Deer), Santalum (Sandal wood paste) are given.The use of these Aushadhis are mainly for their ayuevedic properties associated to them.**

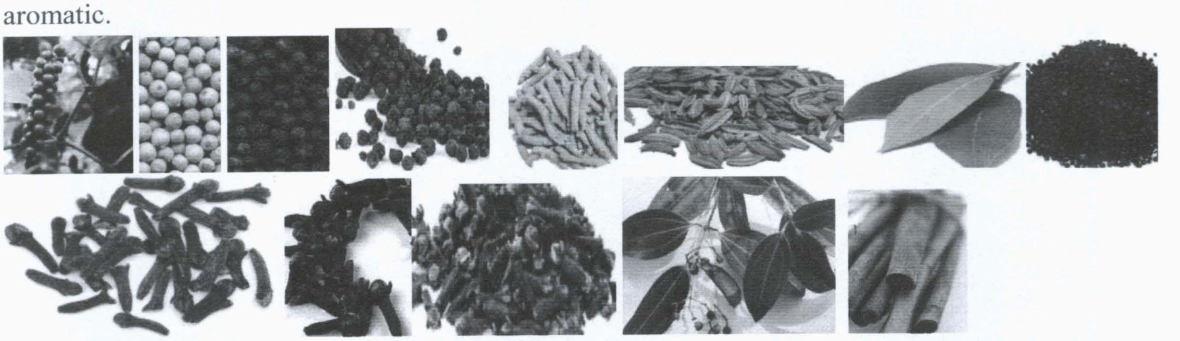


1.Arabian Costus Elettaria cardamomum (seed)
2.Aquila
3.Cinnamomum camphora
4.Santalum album (stem)
5.European Saffron (stamen)
6.Korochana
7.Musk of the 'musk deer'
8.Nelumbium nuciferum petal
9.Cynodon dactylon
10.Sinapisniger
11.Eugenia caryophyllata
12.Poolan yam
13.Michelia champaca (flower bud)
14.Oryza sativa (grain)
15.Sesamum indicum (seed)
16.Aegle marmelos (leaf)
17.Cyperus juncifolius
18.Cicer arietinum (seed)
19.Mesua ferrea
20.Calyptranthes jambaeana
21.Guilandina bonduc
22.Andropogon muricatum (root)
23.Curcuma domestica
24.Emblica offcianalis
25.Vernonia cinera (leaf)
26.Punica granatum (fruit)
27.Flacourtia cataphracta
28.Evolulus alsinodes
29.Gmeline tomentosa
30. Myristica fragrans
31.Cinnamomum zeylanicum
32. Saraca indica (flower bud)
33. Cinnamomum cassia (bark)

34. Piper nigrum (dried fruit)
35. Ocimum sanctum(leaf)

**Cardamom** is used as an abisheka substance for its medicinal value. It is immersed in water for a night in conch or in pot (kalasa) and sacred hymns are chanted during the rituals before the abisheka rituals.

The taxonomy of **Cardamomum** ;
**Botanical Name:** Elettaria Cardamomum
**Kingdom:** Plantae
**Division:** Magnoliophyta
**Class:** Liliopsida
**Order:** Zingiberales
**Family:** Zingiberaceae
**Genus:** Elettaria
**Species:** Elettaria cardamomum
**Parts Used:** Seed
Cardamom is an evergreen, perennial ginger-like (underground stem) plant, with thick rhizomes and erect stems, bearing pointed leaves. White flowers with a pink to violet striped lip are seen in a loose spike, 3-celled capsules (pods), and bearing 15-20 aromatic seeds. The small, brown-black sticky seeds are contained in three double rows, with normally six seeds in each row. The seeds are pungent, warm and aromatic.



**Plant Chemicals found in the seeds of Cardamom**
The volatile oil of the seeds of Cardamom contains the following chemicals: a-pinene, b-pinene, sabinene, myrcene, a-phellandrene, limonene, 1,8-cineole, y-terpinene, p-cymene, terpinolene, linalool, linalyl acetate, terpinen-4-oil, a-terpineol, a-terpineol acetate, citronellol, nerol, geraniol, methyl eugenol and trans-nerolidol.

**Medicinal uses of Cardamom**

i. Cardamom is used internally for indigestion, nausea, vomiting and pulmonary disease with copious phlegm.
ii. It can be used with a laxative to prevent stomach pain, griping, as well as flatulence.
iii. Cardamom seeds are also used as a spice in cooking and as a flavoring in other medicines.
iv. The oil of cardamom seeds is used facilitate digestive system. It functions as a laxative and soothes colic, wind, dyspepsia and nausea.
v. Cardamom seeds are extensively used to treat infections in teeth and gums.
vi. Cardamom seeds are used to prevent throat troubles, congestion of the lungs, pulmonary tuberculosis and inflammation of eyelids.
vii. Cardamom seeds are supposed to remove kidney stones and gall stones in aurvedic medicine.

**Health benefits of Cardamom:**

- Analgestic
- Anti Cancer
- Antispasmodic
- Aphroidisiac
- Carminative
- Diuric

There are two main types of cardamom:

- Green Cardamom-True Cardamom (or, when bleached, white cardamom) comes from the species Elettaria Cardamomum
- Black Cardamomum also known as brown cardamom, comes from two species, Amomum costatum, and Amomun subulatum.

***Chrysopogon zizanioides*** (Vetiver)

***Chrysopogon zizanioides***, commonly known as **vetiver** (derived from the Tamil: □□□□□□□□□□ *vettiver*) is a perennial branch- grass of the Poaceae family.

*Chrysopogon zizanioides* (Vetiver) perennial branch- grass normally grows up to 1.5 metres high and form clumps as wide. The stems are tall with long leaves,which are thin, and rigid. The flowers are purplish- brown. The root system, of *Chrysopogon zizanioides* (Vetiver) grow 2–4 m in depth.

*Chrysopogon zizanioides* (Vetiver) grows in tufts. The shoots growing from the underground crown make the plant grows up to 1.5 metres high and form clumps. The leaf blades grow up to 120–150 cm long and 0.8 cm wide. The panicle grows upto 15–30 centimeters long. The spikelets are in pairs, and there are three stamens.*Chrysopogon zizanioides* (Vetiver) has no stolons norrhizomes.This plant is highly tolerant to drought

Oil is extracted from the roots , and used for aromatherapy. The oil is used for its antiseptic properties to treat acne and sores. Vetiver is mainly cultivated for the fragrant essential oil distilled from its roots.

Vetiver oil consisting over 100 identified components, the main chemical components are:

i. Benzoic acid
ii. Furforol
iii. Vetivene
iv. Vetvenyl vetvenate
v. Terpinen-4-ol
vi. 5-epiprezizane
vii. Khusimene
viii. Alpha-muurolene
ix. Khusimone
x. Calacorene
xi. Beta-humulene
xii. Alpha-longipinene
xiii. Gama-longipine
xiv. Delta-selinene
xv. Delta-Cadinene
xvi. Valencene
xvii. Calarene-gurjunene
xviii. Alpha-amorphene
xix. epizizanal
xx. beta-epizizanol
xxi. Khusimol
xxii. Iso-khusimol
xxiii. Valerenol
xxiv. Beta-vetivone
xxv. Vetivazulene

**Cloves (Eugenia)**

**Cloves** that are commonly used are the aromatic buds of the flower of a tree belonging to the family Myrtaceae, ***Syzygium aromaticum***. They are commonly used as a spice. Cloves are commercially grown mainly in Tanzania,India,Madagascar,Pakistan,Srilanka and Zanzibar.

***Syzygium aromaticum*** (the clove tree) is an evergreen tree which grows up to 8–12 metre high. It bears, h large leaves and flowers grouped in clusters at the terminal. The flower buds initially have a pale hue, which in turn green. The transition stage to a bright red indicates that it is ready for harvest. Cloves are harvested at 1.5–2.0 cm long, and consist of a long *calyx* that terminates in four spreading *sepals,* and four unopened *petals* that form a small central ball. Cloves are used to flavor to meats, curries, and marinades. The bioactive chemicals of Clove are used as an ant repellant.

A major component of clove taste is imparted by the chemical eugenol.

**medicinal uses of Cloves**

In Ayurvedic medicine, the essential oil used as an anodyne (painkiller) for dental emergencies. The oil is applied to a cavity in a decayed tooth, it also relieves toothache. Cloves are used as a carminative, to increase hydrochloric acid (H Cl) in the stomach and to improve peristalsis. Cloves are also said to be a natural anathematic. The essential oil is used in aromatherapy when stimulation and warming are needed, especially for digestive problems. Topical application over the stomach or abdomen are said to warm the digestive tract.

Clove is considered acrid, warm, and aromatic, entering the kidney, spleen and stomach meridians, and is notable in their ability to warm the middle part of the stomach.

Clove is taken internally as a tea and topically as oil for hypotonic muscles, and also for multiple sclerosis.

The stalks of the clove are slender stems of the inflorescence (a collection of flowers) axis, that show opposite decussate branching. They are brownish, rough, and irregularly wrinkled longitudinally with short fracture and dry, woody in texture.

i. **Mother cloves (anthophylli)** are the ripe fruits of cloves that are ovoid, brown berries, unilocular and one-seeded. This can be detected by the presence of much starch in their seeds.
ii. **Brown cloves** are expanded flowers from which both corollae and stamens have been detached.
iii. **Exhausted cloves** are the ones where all the oil removed by distillation. They yield no oil and hence darker in color

Eugenol comprises 72-90% of the total essential oil extracted from cloves.This compound is responsible for the characteristic aroma of the clove http://en.wikipedia.org/wiki/Clove_-_cite_note-eugenol-3#cite_note-eugenol-3 Other important essential oil constituents of clove oil include Acetyl eugenol, Beta-caryophyllene,Vanillin and Crategolic acid,Tannins such as bicomin.gallotannic acid,methyl salicylate, the flavonoids, eugenin,kaempferol,rhamnetin

***Gmelina arborea***, **(Gamhar)**, is a fast-growing deciduous tree, occurring naturally throughout greater part of India,Myanmar,Thailand,Laos,Cambodia,Vietnam,Malaysia,China,Srilanka,Nigeria

The *Gmelina arborea* tree attains moderate to large height up to 30 m with girth of 1.2 to 4 a chlorophyll layer just under the outer bark, pale yellow white inside.

The root and bark of *Gmelina arborea* are claimed to be stomachic, galactagogue laxative and anthelmintic; improve appetite, useful in hallucination, piles, abdominal pains, burning sensations, fevers, 'tridosha' and urinary discharge. Leaf paste is applied to relieve headache and juice is used as wash for ulcers.

Flowers of ***Gmelina arborea***, **(Gamhar)**, are sweet, cooling, bitter, acrid and astringent. They are useful in leprosy and blood diseases.*Gmelina arborea*, Gamhar fruit in Ayurveda, is used for its medicinal properties. The fruit is acrid, sour, bitter, sweet, cooling, diuretic tonic, aphrodisiac, alternative astringent to the bowels, promote growth of hairs, useful in 'vata', thirst, anaemia, leprosy, ulcers and vaginal discharge.

The plant is recommended in combination with other drugs for the treatment of snakebite and scorpion sting. In snakebite a decoction of the root and bark is given internally.

**Chemicals components present in Gmelina arborea, (Gamhar) are as follows;**

Lignans such as 6-bromo-isoarboreol,
4-hydroxysesamin,
4,8-dihydroxysesamin
1,4-dihydroxysesamin (gummadiol)
2-piperonyl -3-hydroxymethyl
4-hydroxytetrahydrofuran
4-O-glucoside

## Cardamomum

**Pepper** (*Piper nigrum*) is a flowering vine, cultivated for its fruits, which is usually dried and used as a spice. The fruit, is termed peppercorn when dried, is approximately 5 millimeters in diameter. Black pepper fruit (drupes) **is** dark red at maturity, contains a single seed. Pepper derived from them, is called **black pepper** (cooked and dried unripe fruit), **green pepper** (dried unripe fruit) and **white pepper** (ripe fruit seeds).

The taxonomy of Cardamomum plant is ;
**Botanical Name:** Elettaria Cardamomum
**Kingdom:** Plantae
**Class:** Magnoliids

**Order:** Piperales
**Family:** Piperaceae
**Genus:** Piper
**Species:** Piper nigrum
**Parts Used:** Seed

Dried ground pepper is used for both its flavors for its character as a spice and as a ayurvedic medicine. The spiciness of black pepper is due to the chemical piperine. Black pepper is produced from the still-green unripe drupes of the pepper plant. The drupes boiled in hot water, to clean and to dry. The heat ruptures walls of the cells of the pepper seeds, accelerating the action of browining enzymes. The drupes are dried in the sun or by machine where the external parts around the seed shrink and darken. This spice is called black peppercorn.

**White pepper** consists of the seed of the pepper where the skin of the pepper fruit removed.Here fully ripe pepper berries are soaked in water for about a week, during which the flesh of the pepper softens and decomposes.

**Green pepper** is made from the unripe drupes. Dried green pepper corns are treated with sulphur dioxide(SO2),canning or freeze drying that retains the green colour.

**Orange pepper (red pepper)** is made from ripe red pepper drupes by preserving in brine and vinegar.

**Medicinal value of black pepper**

i. Peppercorns contain chemical compounds that prevent diseasesand health promoting properties.
ii. Pepper is used for its anti-inflammatory, carminative, anti-flatulent properties.
iii. Pepper seeds contains essential oils such as **piperine**, an amine - alkaloid, which gives strong spicy pungent character to the pepper. It also contains numerous monoterpenes hydrocarbons such as *sabinene, pinene, terpenene, limonene, mercen.*.
iv. Pepper increases the gut (alimentary cannal) motility as well as the digestive power by increasing the secretions of gastro-intestinal enzyme.
v. Piperine increases the absorption of selenium, B-complex vitamins, beta-carotene, and other nutrients from the food.
vi. Black peppercorns contain minerals as potassium(K), calcium(Ca),Iron(Fe), zinc(Zn), manganese(Mn), iron, and magnesium(Mg). Potassium helps controlling heart rate and blood pressure. Manganese is acts as a co-factor for the antioxidant enzyme, *superoxide dismutase*. Iron is essential for cellular respiration and blood cell production.
vii. Pepper seed is asource of many vital B-complex groups of vitamins such as Pyridoxine, riboflavin, thiamin and niacin.
viii. Peppercorns contains many anti-oxidant vitamins such as vitamin-C and vitamin-A. It contains large amount of flavonoid polyphenolic anti-oxidants like carotenes, cryptoxanthin, zea-xanthin and lycopene. These compounds help the body to remove harmful free radicals and help protect from cancers and diseases.
ix. Peppers have been used therapeutically in dentistry as an antiseptic for tooth-decay and gum swellings.
x. Peppercorns are also being used as traditional medicines in treating flatulence and indigestion, however, there is little or no data to support these claims in modern medicine.

**Vitamins present in black pepper**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| i. | Choline | 11.3 mg | 2% | x. | Vitamin K | 163.7 mcg | 136% |
| ii. | Folic acid | 10 mcg | 2.5% | xi. | Carotene-α | 0 mcg | -- |
| iii. | Niacin | 1.142 mg | 7% | xii. | Carotene-β | 156 mcg | -- |
| iv. | Pyridoxine | 0.340 mg | 26% | xiii. | Crypto-xanthin-β | 48 mcg | -- |
| v. | Riboflavin | 0.240 mg | 18% | xiv. | Lutein-zeaxanthin | 205 mcg | -- |
| vi. | Thiamin | 0.109 mg | 9% | xv. | Lycopene | 6 mcg | |
| vii. | Vitamin A | 299 IU | 10% | | | | |
| viii. | Vitamin C | 21 mg | 35% | | | | |
| ix. | Vitamin E | 4.56 mg | 30% | | | | |

**Elements present in black pepper**

| | | | |
|---|---|---|---|
| **i.** | Sodium | 44 mg | 3% |
| ii. | Calcium | 437 mg | 44% |
| iii. | Copper | 1.127 mg | 122% |
| iv. | Iron | 28.86 mg | 360% |
| v. | Magnesium | 194 mg | 48.5% |
| vi. | Manganese | 5.625 mg | 244.5% |
| vii. | Phosphorus | 173 mg | 25% |
| viii. | Zinc | 1.42 mg | 13% |

**Musk (of the Deer)**

Deer musk is a material with a persistent odor, obtained from a gland of the male musk deer situated in its back/rectal area. The name originates from the Sanskrit word muṣká meaning "testicle".The substance has been extensively used as a perfume substance, and medicine. It was and still is one of the most expensive animal products.

In Ayurvedic medicine, musk has been used in various cardiac, mental and neurological disorders for centuries. The other name of musk in most of the Indian languages is 'Kasturi'.

The musk deer belongs to the family Moschidae and lives in India,Nepal,Pakistan,Seberia,China and Mongolia.Inorder to obtain the musk (Kasturi), the deer is killed and its gland ("musk pod") is detached. Only adult male musk deer have musk glands. It is thought that they use their strong-smelling musk secretion to mark out territories Later it is dried. After drying, the reddish-brown paste turns into a black granular substance known as "musk grain". The aroma of the dye turns more intense during storage. It imparts a pleasant odor on dilution.

**Kasturi (musk) and Kasturi Mriga (musk deer)**

The musk deer, is a solitary terrestrial animal about 80-100 cm in height.

The food consists of grass, lichens, leaves and flowers. On the nape of the neck, there are several horizontal blotches of yellowish hairs. The body slopes forward, as the hind legs are almost one third longer than the forelegs.

The general colour of the coat composed of brittle hairs. As the name suggests, on the chest is a wide vertical whitish-yellow stripe, which extends up the throat to the chin. The ears are tipped with yellow or orange hairs. The ears are large and rounded, lined with whitish fur. Both sexes have well-developed upper canines.

They do not have any antlers. The tail is completely buried in the long hairs of the anal region. The males have a musk gland situated beneath the skin of the abdomen.

*Kasturi (*musk of the deer) is a dark resinous secretion moist or semi liquid in nature, with peculiar aroma collected in a small sac (pod) covered with hair which is made by an infolding of skin situated a short distance behind the navel and in front of preputial orifice of the deer . It is secreted from the preputial follicles in the sac of the adult male musk deer during their breeding season only as a natural measure to attract the female deer with its characteristic fragrance. The ejection of the secretion from the sac takes place through a small canal which is situated on the outer surface of the pod and opens near the preputial orifice[2].

When *Kasturi* is free from moisture and ammonia, it yields a appealing aroma. After being dried, it becomes granular which is soluble in water. Musk of superior quality is dark purplish in colour and has a bitter aromatic taste and smell. The chemical constituents present in the musk of the deer are

i. ammonia
ii. olein
iii. cholesterin
iv. fat
v. wax
vi. gelatinous matter
vii. albuminous substances
viii. sodium

ix. potassium
x. calcium
xi. aromatic volatile oil,
xii. muscone

Five types of *Kasturi*, according to its appearance have been identified:

i.*Kharika* — It is of dust form.
ii.*Tilaka* — Its size is like *Til* seed (*Sesamum indicum* Linn.).
iii.*Kulattha* — Its size is like *Kulattha* seed (*Dolichos biflorus* Linn.).
iv.*Pindika* — Its size is slightly greater than the seed of *Kulattha*.
v.*Nayika* — Its size is slightly greater than that of *Pindika*.

**Medicinal value of Kasturi (musk)**

i. Musk is characterised by Ayurvedic pharmacodynamics as *Laghu* (light), *Tikshna* (pungent) and *Rukshna* (rough).
ii. Its taste is *Tikta* (bitter) and *Katu* (irritant). The taste of musk is changed into *Katu* (pungent) after *Vipaka* (after effect). Its *Virya* (potency) is *Ushna* (hot).
iii. *Kasturi* can change the imbalanced *Kapha* and *Vata*, (two basic humours of Ayurveda) to normal.
iv. It prevents foul odour emitting from the individuals. One can feel warm in winter after intake of medicine prepared from musk (*Shit nashak*).
v. It can increase the volume and tension of weak pulse (*Nadi balya*) and improves the function of brain (*Mashtishka balya*).
vi. It can improve appetite (*Kshudha bardhak*) and function of heart (*Hridya*).
vii. It is used in breathlessness (*Swashara*) especially in bronchial asthma (*Tamak swas*).
viii. It causes sexual stimulation in both sexes as well as increases the quality of spermatozoa in male and quality of ovum in female (*Vajikarak*).
ix. It is used in fever (*Jsaraghna*) and in poisoning (*Vishaghna*).
x. It is used in hemiplegia (*Pakshaghat*), cholera (*Bisuchika*), general debility (*Daurbalya*), tuberculosis (*Rajayakshma*), epilepsy (*Apasmara*) and in obesity (*Sthulya*)[5].
xi. Pure *Kasturi* is bitter in taste, yellowish in colour, yielding a characteristic aroma like *Ketaki* (*Pandanus odoratissimus* Linn. f.) Thalampuu in Tamil language flower.

**Methods to identify unadulterated *Kasturi* are as follows:**

a. Add a few drops of water to sample of *Kasturi,* if the water changes the colour to red or yellow, it is assumed that the *Kasturi* is impure. If there is no change of colour , the *Kasturi* is pure.
b. The unique taste of pure *Kasturi*, remarkable to detect the purity of *Kasturi* musk.
c. When pure *Kasturi* is placed, in a room, the area will be packed with a distinct charismatic aroma. If it is adulterated musk it will yield an unpleasant fragrance.
d. Few grains of *Kasturi* are placed in water, if it remains granular, the musk is genuine and if these grains of *Kasturi* melt, the musk is considered to be adulterated.
e. If pure *Kasturi* is rubbed by hands, the exceptional aroma will persist on the hands for 4-5 hrs. P
f. Pure *Kasturi* will not be burnt onthe fire, it gives way a smell of burning skin.
g. A cotton thread if passed through *Hingu* (*Asafoetida*) or through *Rasuna* (garlic) and again passed through the Kasturi musk pod and if the smell of *Hingu* (*Ferula assafoetida*) or garlic (*Alium sativum* ) remains in the thread, the *Kasturi* is not considered to be pure.
h. *Kasturi* when placed on a paper, leaves yellowish spot (*Pita dag*), and is considered to be pure.
i. Few grains of *Kasturi* are placed on a live piece of charcoal. Pure musk melts and bubbles. If not, it at once becomes hardened and becomes a residue, then it is considered to be impure.
j. *Kasturi* is put inside the soil. If the odour does not change, it is considered to be pure musk.
k. Pure *Kasturi* is soft, while impure one is hard.

The biological significance of musk are due to the collective actions of its constituents. Muscone, an essential oil present in the musk of the deer stimulates the olfactory nerve cells due to its specific characteristic odour.
A tiny quantity of *Kasturi* is taken orally to stimulate the sexual urge both physically and mentally in both the sexes. Kasturi is said to be a respiratory stimulant in ayurvedic medicine. Kasturi is used for its effectiveness of musk against snake venom. *Kasturi* possesses β-adrenoreceptor stimulating activity in ayurvedic treatments and it is used as an antispasmodic medicine in native systems of Medicine in India. Kasturi also possesses Anti inflammatory properties.

**Santalum album (Indian sandalwood)** is a tropical tree. The oil of Sandalwood has been widely used in ayurvedic medicine for treatment of common colds, heart ailments, infection of the urinary tract, bronchitis, skin disorders, general weakness, fever, inflammation of the mouth and pharynx, liver and gallbladder complaints and other maladies. Recently, the *in vivo* anti-hyperglycemic and antioxidant potentials of α-santalol and sandalwood oil were demonstrated in Swiss Albino mice. Additionally, different *in vitro* and *in vivo* parts of the plant have been shown to possess antimicrobial and antioxidant properties, possibly attributed to sesquiterpenoids and shikimic acid,

**The taxonomy of Santalum album** plant is ;
**Binomial Name:** Santalum album
**Kingdom:** Plantae
**Division:** Magnoliophyta
**Class:** Magnoliopsida
**Order:** Santalales
**Family:** Santalaceae
**Genus:** Santalum
**Species:** S. album
**Parts Used:** Wood and Oil
**Description**
Sandalwood is the fragrant woods of the trees belonging to the genus Santalum. The stem of the tree grows up to 20 to 30 feet high, is heavy ,straight-grained and varing in color. It is white when young, and yellow and orange in color when old.The leaves are oval in shape covered and the flowers are small varying in color.Sandalwood is incredibly admired for its essential oil.

The main chemicals present in Sandalwood are

i. Santalol (a-santalol, b-santalol)
ii. Hydrocarbons (a santene ,b santenes and nor-tricycloekasantalene)
iii. Alcohols (teresantalol and santenol)
iv. Aldehydes (nor-tricycloekasantalal and isovaleraldehyde)
v. Ketones (santalone and l-santenone)
vi. Acids (teresantalic acid and a-and ß-santalic acids)

**Uses of Sandalwood oil**

i. Oil of Sandalwood is used for the treatment of gastric irritability and any other kind of gastric ailments.
ii. Oil of Sandalwood is used for the treatment of dysentery.
iii. Sandalwood paste is used for the relief of headache and control and maintains the body temperature during fever.
iv. Sandalwood paste is used a remedy for prickly heat and prevents excessive sweating during adverse environmental conditions.
v. Sandalwood paste is used for the treatment of inflamed skin.
vi. Sandalwood paste is used for eruptive and inflammatory skin conditions as erysipelas, itchy eruptions and inflammatory diseases of the face.
vii. Sandalwood oil is used in curing scabies, the removal of pimples.
viii. The oil of sandalwood is used in the treatment of gonorrhea.
ix. Oil of Sandalwood used for treating dysuria and cystitis.

x. Oil of Sandalwood is used for the treatment for the infections by Eberthella typhosa and Escherichia coli.
xi. Sandalwood essential oil helps to moisturize and hydrate ageing, dry or flaky skin as well as to relieve itching and inflammation. Its astringent action balances oily skin conditions.
xii. The oil also helps to clear up a dry cough and boosts the digestive system, especially helpful in diarrhea. It is used to treat general chest complaints as well.

**Medicinal properties of Sandalwood**

i. Anodyne
ii. Antidepressant
iii. Antifungal
iv. Antispasmodic
v. Antiviral
vi. Aphrodisiac
vii. Aromatic
viii. Astringent
ix. Diuretic
x. Expectorant
xi. Insect repellent
xii. Meditation
xiii. Sedative

**Saffron**

Saffron is one of the most expensive spices known for its flavor ,color and medicinal properties. It is the dried "stigma" (threads) of the flower of the *Crocus sativus* plant. It is a bulbous perennial plant that belongs to the family of *Iridaceae,* in the genus, *Crocus,* and botanically known as *Crocus sativus*.

This exotic spice is a native of Southern Europe .It is now widely cultivated in Spain, Italy, France, Greece, Turkey, Iran, and in Indian (Jammu and Kashmir). Saffron is a reddish-golden colored spice derived from the styles and stigmas of the flower of the saffron crocus (Crocus sativus). Saffron also has numerous health benefits that make it one of nature's most powerful herbs.

**Binomial Name:** *Crocus sativus*
**Kingdom:** Plantae
**Division:** Magnoliophyta
**Class:** Liliopsida
**Order:** Asparagales
**Family:** Iridaceae
**Genus:** *Crocus*
**Species:** .C. *sativus*
**Parts Used:** "stigma" (threads) of the flower

**Health benefits of Saffron**

i. Saffron contains chemical compounds with properties that are anti-oxidant, disease preventing, and health promoting.
ii. The flower pistil contains a number of volatile oils,out of which **safranal** gives its characteristic pleasant flavor to saffron. Other volatile oils in saffron are *cineole, phenethenol, pinene, borneol, geraniol, limonene, p-cymene, linalool, terpinen-4-oil, etc.*
iii. Saffron contains several non-volatile active components. The important components of them are a-crocin, a carotenoid compound, which gives pistils their distinctive golden-yellow color. It also contains other carotenoids, as *zea-xanthin, lycopene, a- and ß-carotenes.* These are important antioxidants that help protect the human body from cancers, oxidant-induced stress, infections and acts as immune modulators.
iv. The active components in saffron have therapeutic applications in antiseptic, antidepressant, anti-oxidant, digestive, anti-convulsions.
v. Saffron contains minerals like copper(Cu), potassium(K), calcium(Ca), manganese(Mn), iron(Fe), selenium(Se), zinc(Zn) and magnesium(Mg). Potassium is an important component of cell and body fluids that helps control heart rate and blood pressure. Manganese and copper are used by the human body as co-factors for the antioxidant enzyme, *superoxide dismutase*. Iron is essential for red blood cell production and as a co-factor for *cytochrome oxidases* enzymes.

vi. Saffron contains many important vitamins, as vitamin A, folic acid, riboflavin, niacin, and vitamin-C.
vii. Massaging the gums with saffron helps reduce soreness and inflammation of the mouth and the tongue.
viii. Saffron is used for the treatment of asthma, menstrual discomfort, depression, atherosclerosis, whooping cough, and many other health problems.
ix. The active constituents in saffron are also known to produce positive effects on people with neurodegenerative disorders.
x. Medical studies have shown that saffron helps in enhancing oxygen diffusivity in plasma and other liquids while improving pulmonary oxygenation.
xi. Saffron is applied topically as a paste to relieve dryness and other skin conditions.
xii. Saffron has also been used in combination with other herbs as a remedy for insomnia, coughing, flatulence, indigestion, and baldness
**xiii.** Saffron helps to lower the levels of bad cholesterol and triglycerides.

**Medicinal uses of Saffron**

i. The active components of saffron have many therapeutic uses in ayurvedic medicine as anti-spasmodic, carminative, and diaphoretic.
ii. The volatile oil safranal, present in the spice, has antioxidant, cytotoxic effect on cancer cells, anticonvulsant and antidepressant properties.
iii. The carotenoid known as **Alfa-crocin,** gives the characteristic golden-yellow to the spice. This has anti-oxidant, anti-depressant, and anti-cancer properties.

**Nutmeg and mace**

Nutmeg is the seed of the tree, Myristica fragrans generally egg-shaped and about 20 to 30 mm long and 15 to 18 mm wide, and weighing between 5 and 10 g dried.Mace is the dried "lacy" reddish covering (aril) of the seed.Nutmegs are evergreen trees, native to the rain forest Indonesian Moluccas (*Spice Islands*) Island.Nutmeg seed is pleasingly aromatic kernel of fruit-nutmeg.

**Binomial Name:** *Myristica fragrans*
**Kingdom:** Plantae
**Family:** *Myristicaceae*
**Genus:** *Myristica*
**Species:** . *M . sativus*
**Parts Used:** seed, mace, aromatic kernel of fruit-nutmeg
Health benefits of nutmeg

i. Nutmeg and mace spice contains many chemical compounds that possess anti-oxidant, disease preventing, and health promoting properties.
ii. Nutmeg contains fixed oil *trimyristin* and many essential volatile oils such as which gives a sweet aromatic flavor to nutmeg such as *myristicin, elemicin, eugenol* and *safrole*. The other volatile-oils are *pinene, camphene, dipentene, cineole, linalool, sabinene, safrole, terpeniol*.
iii. The active components of the nutmeg have therapeutic applications in ayurvedic medicines such as anti-fungal, anti-depressant, aphrodisiac, digestive, and carminative functions.
iv. Nutmeg has minerals like copper (Cu), potassium(K), calcium(Ca), manganese(Mn), iron(Fe), zinc(Zn) and magnesium(Mg). Potassium is a vital component of cell and body fluids that helps control heart rate and blood pressure. Iron is indispensable for the production of red blood cell and as a co-factor for cytochrome oxidases enzymes. Manganese and copper acts as co-factors for the antioxidant enzyme, superoxide dismutase.
v. Nutmeg is rich in many vital B-complex vitamins, vitamin C, folic acid, riboflavin, niacin, vitamin A
vi. Nutmeg is rich in anti-oxidants like beta-carotene and cryptoxanthin that are fundamental for better health.