

**Beverages: Tea and  
Coffee**

**Narcotics: Opium,  
Cannabis and Tobacco|  
Economic Botany**

# 1. Tea (Hindi – Cha or Chaye):

**Botanical Name:** *Camellia sinensis* (L). (Syn. *Thea sinensis* L.)

**Family:** Theaceae

## **Distribution**

- It is obtained from the dried leaves of *Camellia sinensis*, a native of Assam or China.
- Tea plants are growing wild in Assam, Today India is the largest tea producing country and Asia is the largest tea producing continent.
- Chief consumer of tea is Great Britain and great tea market is London.

# Tea producing regions in India and World

## Major tea producing regions in India:

- Brahmaputra and Surma valleys of Assam and the Darjeeling and Jalpaiguri districts of Bengal, Nilgiris, Dehradun and Kumaon are the main tea-producing regions in India.
- These regions account for nearly 75% of the total tea production in India, In South India, the tea production is confined to Nilgiris, Malabar, Mysore and Travancore areas which account for about 20% of the total production.

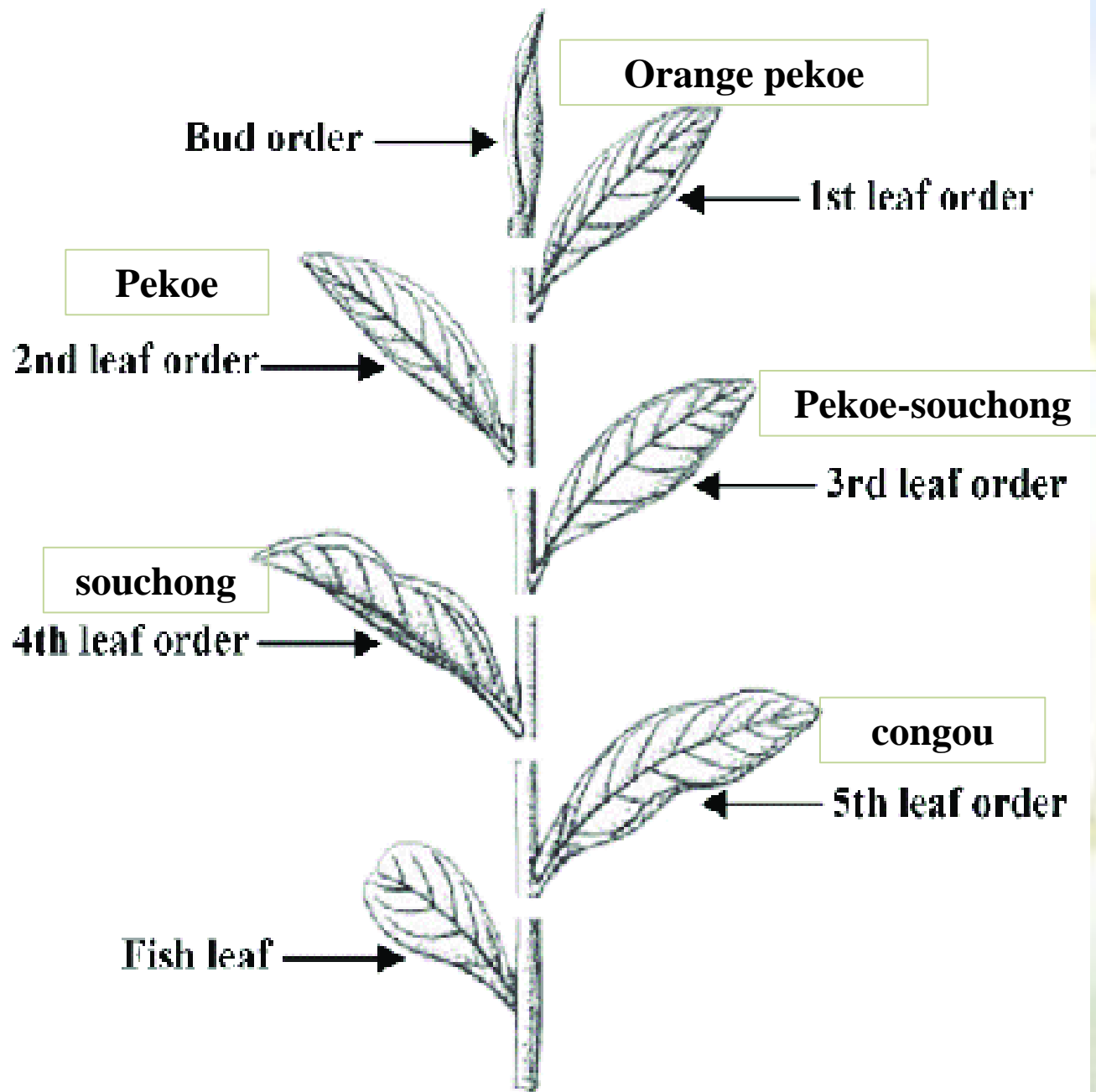
## The major tea producing countries are:

- India, China, Sri Lanka, Japan, Indonesia, Taiwan, Kenya, Turkey, Former USSR, Argentina, Iran, Malawi, Bangladesh and Vietnam

# How to prepare tea?

The correct way of tea preparation is as follows:

- Take boiling water from the kettle, pour a little boiling water into the tea pot to warm it.
- Rinse the tea pot and then throw this water.
- Now put in the tea leaves.
- One teaspoon for each cup and one for the pot.
- Pour the boiling water into the tea pot.
- Cover the pot with a tea cosy and wait for 3 minutes.
- The tea is now prepared.
- Add sugar and milk according to your taste



# Botanical Description

- Tea plants are evergreen small trees or shrub which reach upto the height of 30-50 ft. but the plants growing in tea gardens are not allowed to grow beyond 2-4 ft.
- The leathery elliptical leaves have a serrated margin and numerous oil glands. The flowers are white or pinkish in colour and are produced in the axil of the leaves.
- The fruits are 1-4 celled capsule.
- Constant pruning promotes vigorous growth of clusters of lateral shoots.
- These short shoots, or "**flushes**", as they are known are the source of the commercial product.

- A volatile oil, tannin (13 to 18%), and an alkaloid theine (2-5%), are present in tea.
- Tea leaves, when infused in hot water, dissolve their alkaloid and oil, and the beverage thus resulted has a stimulating effect.
- If boiled for a longer period, tannin dissolves making the beverage less beneficial.

For preparing green tea, the leaves are steamed and dried without fermenting, while for black tea the leaves are withered, rolled, fermented and dried.

- Tannins of tea waste are used in plywood industry.

# Cultivation and Harvesting

- Tea plantation requires well-drained, deep friable loam or forest land rich in organic humus. The crop grows best under slight shade, under an average temperature of 24 to 30°C and an annual rain fall 100-150 cm.
- The tea plants are propagated through seeds or seedlings.
- Propagation through grafting, budding and layering are also successful. The plants are perennial and grow for several years.
- A plant growing for two centuries has been recorded in Japan.
- The longevity of plants requires a proper care, manuring and irrigation Normally the crops are grown on steep slopes which is regularly protected from erosion.



# Cultivation and Harvesting

**Pruning:** The proper shape and size of the tea plant is maintained by regular pruning. When the young plant is one year old its main stem is cut a few inches above the ground. The stump develops lateral branches which are again cut at regular intervals. The whole process is called **centering**. The plants are ready for plucking when they reach a height of 18-24 inches (nearly 5 years old).

**Plucking:** The tea leaves are picked by hand or with scissors. The youngest bud, also known as golden tips, consisting of 5 young leaves is gathered. The leaves are in **orange pekoe** the smallest leaf. in **pekoe** the second leaf **pekoe-souchong** the third leaf, **in souchong** the fourth leaf and in **congou** the 5th and 6<sup>th</sup> the largest leaf

# Processing of Tea:

Following is the method of preparing tea from the fresh leaves

## 1) Withering:

- The plucked leaves are exposed to sun by spreading them over withering racks or heated until they become soft and pliable.

## 2) Rolling:

- Withered leaves then rolled, by hand or by machine to curl the leaves and remove the sap.
- During this process the enzymes and polyphenols come out through ruptured cells.
- These extracts spread over the surface of leaves. The rolled leaves are completely dried in the sun, over fires, or in a current of hot air, These green coloured, unfermented dried leaves having even texture and quality make the **green tea**.

# Processing of Tea:

## 3) Fermentation:

- The green tea has dull green coloured leaves. It is then converted to black tea by the process of fermentation. During this process the rolled leaves are spread in thin layers, covered, and then kept in warm places.
- This causes them to lose their green colour, turn black and develop the characteristic flavour. The shorter is the duration of fermentation more pungent is the liquor and longer is the duration of fermentation the softer is the liquor and deeper the colour.

**4) Drying:** Fermentation is followed by drying of the tea during which hot dry air in steel oven is given to the leaves.

# Composition:

- The tea contains about 2 to 5% theine, an alkaloid identical to caffeine and 13-18% volatile oil.
- Besides, there are some 20 kinds of amino acids, 30 types of polyphenols and 6 types of organic acids.
- When the tea is mixed with boiled water, the alkaloid and oil dissolve out so that the resulting beverage gets a stimulating effect and a characteristic taste and aroma.

# Uses:

1. Tea is one of the most popular and refreshing drinks. If prepared in a correct method.
2. It relieves fatigue and headache and gives a feeling of comfort and maintains wakefulness because of its alkaloid content.
3. Tea has a great medicinal and cosmetic quality. A cup of chilled lemon tea taken in sips works as an astringent and controls diarrhoea.
4. A strong tea cup is good hair conditioner.

## 2. Coffee (Hindi – Kafi)

### Botanical Names:

- ✓ *Coffea arabica* (Arabian Coffee);
- ✓ *C. robusta* (Congo Coffee);
- ✓ *C. liberica* (Liberian Coffee).

**Family:** Rubiaceae

Coffee is obtained by roasting and grinding the seeds of *Coffea* sp.

### Distribution

- ✓ The word coffee from "Kuffa, a district situated in Shoa, South-west Ethiopia (Formerly Abyssinia) where the plant was first discovered From Ethiopia it was carried to Arabia about 600 year ago.
- ✓ Coffee became a **national beverage of Arabia**. From there coffee spread across the Persian gulf Egypt and finally to the rest of the world.



# Coffee producing regions in India and World

## Major tea producing regions in India:

- ✓ In India coffee was brought in 17th Century by Baba Badan, a Muslim pilgrims who brought the plant from Mecca and planted in Chandragiri hills near Chickmaglur (Karnataka).
- ✓ Today, almost the whole of the coffee growing area lies in the southern part of the country-Karnataka, Tamil Nadu and Kerala

## The major tea producing countries are:

- ✓ **Today, Brazil is the largest coffee producer in the world.**
- ✓ The other important countries are **Colombia, Indonesia, Mexico and Vietnam.**

# Botanical Description

The genus *Coffea* includes about 25 species, out of which only three are commercially important; *C. arabica*; *C. robusta* and *C. liberica*.

- ✓ The coffee plants are perennial small trees or shrubs reaching upto the height of 15-30 ft.
- ✓ The leaves are evergreen, smooth and borne in opposite manner. Flowers are borne in clusters in the axil of leaves.
- ✓ They are fragrant, star-like and white in colour.
- ✓ The fruits are called "cherries". They are yellow to red or crimson in colour.
- ✓ Each fruit encloses two greenish-grey seeds which are covered with a thin membrane the silver skin, and are enclosed in a dry husk-like parchment.
- ✓ Sometimes there is only one seed in a fruit Such fruits command a high price. They are called "pea berry".



## Cultivation and Harvesting

Coffee plants require tropical, humid climate and grow best in places where there is high humus content in the soil, temperature ranging from 55" to 90°F and rain fall is about 80 inches or over.

- ✓ They thrive best at the higher elevations.
- ✓ Plants are propagated by seeds or seedling.
- ✓ They are transplanted at 6 ft. intervals.
- ✓ Constant weeding and shading is needed for proper growth.
- ✓ The plants mature in three ears and star bearing berries.
- ✓ The harvesting period begins from the fifth year and continues for about 30 years. The berries are usually picked individually by hand.



# Preparation of Coffee

Preparation of coffee from berries is done by two methods-

(1) Dry method

(2) Wet method.

- ✓ **The dry method** involves spreading of berries directly on drying floors open in the sun.
- ✓ They are stirred constantly for uniform drying.
- ✓ The dry skin and pulp are cleaned off by machines.
- ✓ The parchment is removed by mechanical method or by pounding them in a mortar.

# Wet method

- ✓ The wet method involves a pulping machine.
- ✓ The berries are subjected to remove the skin and part of the pulp in pulping machine.
- ✓ Then, they are put in vats where the remainder of the pulp ferments and washed off. The seeds are Then allowed to dry as usual by the sun or by artificial heat
- ✓ The dry and depulped coffee berries are then taken to curing works where moisture content is reduced to not more than ten percent.
- ✓ During the process the brittle parchment is cracked and removed by hulling machines. Finally the silver skin is rubbed off in polishing machines.
- ✓ At this stage the seeds are graded and packed for transportation or export.
- ✓ Before the marketing of coffee the seeds are roasted and ground .
- ✓ The process of roasting is done by experts because each variety needs a specific temperature and duration.
- ✓ During roasting a lot of changes occur in seeds.
- ✓ They increase in volume but lose weight.
- ✓ Several physiological changes occur which develop special aroma, flavour and coffee colour. Finally the trade coffee of different blends is prepared by grinding and sieving the powered coffee

# Composition

Chemical composition of roasted coffee seeds is :

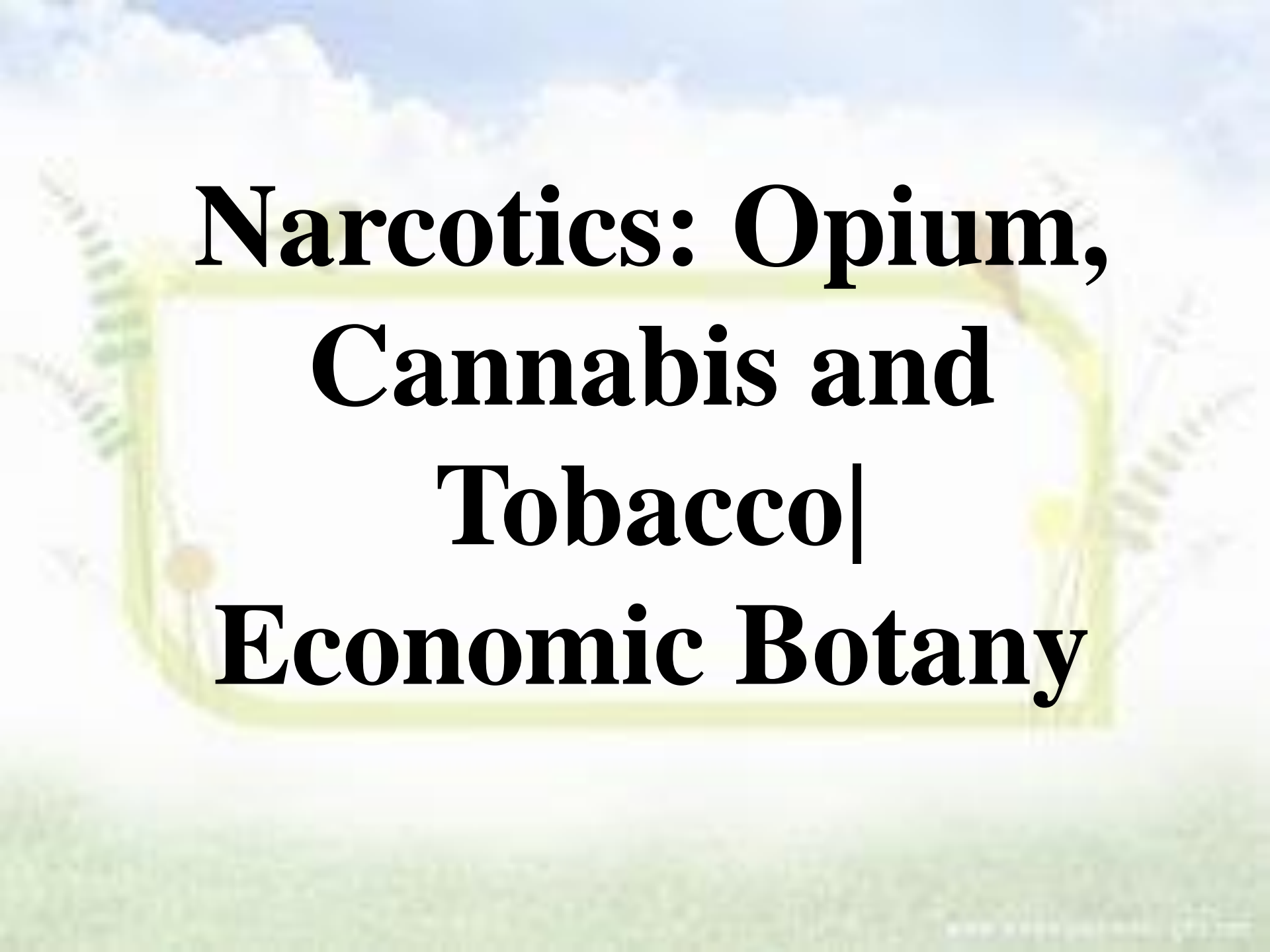
- ✓ 1-0-1-5% caffeine; a volatile oil (responsible for the aroma and flavour);
- ✓ Glucose, dextrine, proteins and fatty oils.

## **USES:**

1. The refreshing drink is prepared using coffee powder. Methods of preparation may be different e.g., cold coffee, hot coffee, Espresso coffee, instant coffee, etc. The drink has power of removing drowsiness and of retarding the excess of sleep for some hours.
2. Coffee yields caffeine which is used in the preparation of several drugs to relieve headache, in case of bronchial asthma, etc.

# Characteristics features of coffee

1. It is an important non-alcoholic beverage, like tea.
2. More than 90% coffee is obtained from the berries of *Coffea arabica*.
3. Coffee beans are roasted for developing the aroma, flavour and colour and finally ground before they reach to the consumer.
4. “Beans” contain caffeine (0.75 to 1.5%), a volatile oil, glucose, dextrins, proteins and a fatty oil.
5. Seeds of *C. robusta*, a robust evergreen shrub, are used in making “instant coffee”.



**Narcotics: Opium,  
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# 1. OPIUM

**Botanical Name:** *Papaver sommiferum*

**Family:** Papaveraceae

**Hindi Name:** Afeem

- ✓ Botanical description Opium plants are annual herbs reaching upto the height of 2-4 feet.
- ✓ The flowers are large, white-coloured and showy. The fruits are capsule which are large, globose and stalked.
- ✓ The fruits are filled with a large number of small white or black seeds.
- ✓ In India, the plants are cultivated in UP, Punjab, MP and Rajasthan.





# Drug and its properties :

- ✓ The drug opium is obtained from the latex obtained from fruits.
- ✓ Soon after the petals fall off, the young capsules are incised with a knife.
- ✓ A white-coloured latex exudes out from the incision which hardens in the air.
- ✓ It is allowed to exude overnight and collected in the morning before sunrise.



# Drug and its properties :

- The hard latex is scraped off and shaped into ball or cakes.
- The crude opium contains about 25 alkaloids, the important among them are **morphine, papaverine, narcotine** and **codeine**.
- Opium is used as narcotic and sedative medicine.
- It is used to relieve pain, relax spasm and induce sleep In India, it is smoked as **madak**.

## 2. CANNABIS

**Botanical Name:** *Cannabis sativa*

**Family:** Cannabinaceae

**Hindi Name:** Bhang

**Botanical description:**

- ✓ Cannabis plant is a native of Central and Western Asia Presently, it is cultivated extensively in temperate and tropical regions In India, it is cultivated in U.P. West Bengal. M.P. Maharashtra, Orissa and Tamil Nadu.
- ✓ Plants are annual herbs reaching a height of 5 to 15 ft.
- ✓ It is a dioecious species-male and female plants occur separately: Stems are hollow and leaves are palmate



## **Drug and its properties:**

(1) Different plant parts yield different kinds of narcotics.

These are as follows

(a) **Ganja:** It is produced from young female inflorescence

(b) **Bhang:** (American name- Marijuana): It is obtained from top leaves of wild plants.

(c) **Charas:** It is obtained from resinous secretion of the female inflorescence. It contains **tetrahydro cannabinol (THC)**, which is a highly hallucinogenic compound.

2) **As a drug:** Cannabis is given to relieve pain, mental fatigue and tension. It cures several urinogenital diseases.

3) The drug is taken as stimulant and tonic.

### 3. Tobacco

**Botanical Name:** *Nicotiana tobaccum*

**Family:** Solanaceae

**Hindi Name:** Tobacco

#### **Distribution:**

- ✓ Many species of tobacco are in the genus of herbs *Nicotiana*. It is indigenous to North and South America, Australia, south west Africa and the South Pacific.
- ✓ India's Tobacco Board is headquartered in Guntur in the state of Andhra Pradesh.
- ✓ The Indian government has supported growth in the tobacco industry.
- ✓ India has seven tobacco research centers, located in Tamil Nadu, Andhra Pradesh, Punjab, Bihar, Mysore, and West Bengal houses the core research institute.

# Botanical description:

- ✓ *Nicotiana tabacum*, is an **herbaceous annual or perennial plant in the family Solanaceae grown for its leaves.**
- ✓ The tobacco plant has a thick, hairy stem and large, simple leaves which are oval in shape.



## **Drug and its properties:**

- ✓ Dried tobacco leaves are mainly used for **smoking in cigarettes and cigars, as well as pipes and shishas.**
- ✓ They can also be consumed as snuff, chewing tobacco, dipping tobacco and snus.
- ✓ Tobacco also used for boils, fever, headache, pain, sore throat, and as an insect repellent.
- ✓ Tobacco contains the highly addictive stimulant alkaloid nicotine as well as harmine alkaloids.



**Thank  
you**