

**WELCOME**  
**TO**



**Pharmacy**

Learn and Educate



**Bachelor of Pharmacy  
Medicinal Chemistry  
I  
NOTES**

- ✓ Unit 1
  - ✓ Unit 2
  - ✓ Unit 3
  - ✓ Unit 4
  - ✓ Unit 5
- All Unit  
in  
One PDF**

Visit our Website  
[WWW.fdpharmacy.in](http://WWW.fdpharmacy.in)



**Bachelor of Pharmacy  
Pharmaceutical Organic  
Chemistry III  
NOTES**

- ✓ Unit 1
  - ✓ Unit 2
  - ✓ Unit 3
  - ✓ Unit 4
  - ✓ Unit 5
- All Unit  
in  
One PDF**

Visit our Website  
[WWW.fdpharmacy.in](http://WWW.fdpharmacy.in)



**Bachelor of Pharmacy  
Pharmacognosy and  
Phytochemistry I  
NOTES**

- ✓ Unit 1
  - ✓ Unit 2
  - ✓ Unit 3
  - ✓ Unit 4
  - ✓ Unit 5
- All Unit  
in  
One PDF**

Visit our Website  
[WWW.fdpharmacy.in](http://WWW.fdpharmacy.in)



**Bachelor of Pharmacy  
Pharmacology I  
NOTES**

- ✓ Unit 1
  - ✓ Unit 2
  - ✓ Unit 3
  - ✓ Unit 4
  - ✓ Unit 5
- All Unit  
in  
One PDF**

Visit our Website  
[WWW.fdpharmacy.in](http://WWW.fdpharmacy.in)



**Bachelor of Pharmacy  
Physical Pharmaceutics  
II  
NOTES**

- ✓ Unit 1
  - ✓ Unit 2
  - ✓ Unit 3
  - ✓ Unit 4
  - ✓ Unit 5
- All Unit  
in  
One PDF**

Visit our Website  
[WWW.fdpharmacy.in](http://WWW.fdpharmacy.in)





# FD Pharmacy

.....

## D.Pharma B.Pharma



- 👉 PDF Notes
- 👉 Practical Manual
- 👉 Important Questions
- 👉 Assignment etc

 Download Now



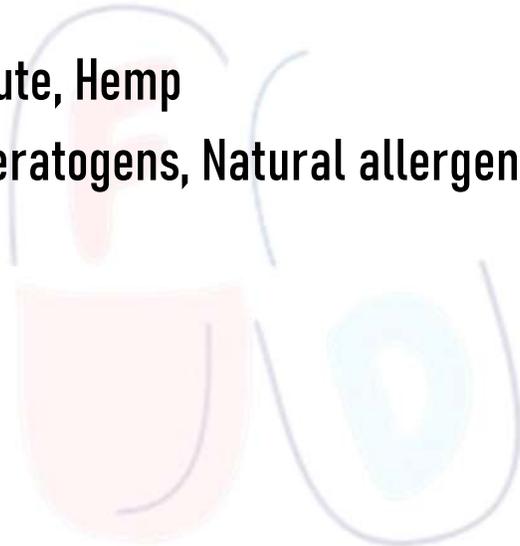
[www.fdp pharmacy.in](http://www.fdp pharmacy.in)

# PHARMACOGNOSY AND PHYTOCHEMISTRY – I

## UNIT 5

TOPIC :

- **Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs**
- **Plant Products :**  
Fibers- Cotton, Jute, Hemp  
Hallucinogens, Teratogens, Natural allergens



**Pharmacy**  
Learn and Educate

## Fibers

Fibers are long, thin, flexible, thread-like structures.

- Made from natural or synthetic materials.
- Mainly used to make fabrics, ropes, papers, and other industrial or medicinal products.



### Classification of Fibers

#### A. Natural Fibers

- Obtained from plants or animals.
- **Examples:** Cotton, Jute, Hemp (plant fibers), Silk, Wool (animal fibers).

#### B. Synthetic Fibers

- Chemically synthesized fibers.
- **Examples:** Nylon, Polyester, Acrylic.

### Uses of Fibers

1. **Clothing** – Used to make shirts, pants, dresses, etc.
2. **Home textiles** – Bedsheets, curtains, towels.
3. **Ropes and nets** – For fishing, climbing, and tying things.
4. **Bags and sacks** – Jute, cotton, and synthetic fibers used in making bags.
5. **Carpets and mats** – Made from wool, nylon, or coir fibers.
6. **Medical use** – Stitches (sutures), bandages, masks.

## Cotton

### Biological Source

- Cotton is obtained from epidermal hairs (seed hairs) of the seeds of the plant.
- **Genus:** *Gossypium*
- **Family:** Malvaceae
- **Common Species:**
  - *Gossypium hirsutum*
  - *Gossypium barbadense*
  - *Gossypium arboreum*



### Chemical Nature

- Cotton is composed mainly of cellulose (90–95%).
  - Cellulose: A polysaccharide made up of glucose units.
- Also contains small amounts of wax, proteins, and pectins.

### Uses

1. **Textile Industry:**
  - Manufacturing of clothes, bed sheets, towels.
2. **Medical & Surgical Applications:**
  - Absorbent cotton, bandages, cotton swabs.
3. **Paper Industry:**
  - Production of high-quality paper.

## Jute

### Biological Source

- Jute is obtained from the bast fibers of the stem of plants.
- Genus & Species: *Corchorus capsularis*, *Corchorus olitorius*
- Family: Malvaceae
- Widely cultivated in India, Bangladesh, and other tropical countries.



### Chemical Nature

- Composed mainly of cellulose (60–70%) and lignin (12–14%).
- Also contains hemicellulose, pectin, and small amounts of wax.
- The fibers are long, soft, and shiny, making them suitable for textile applications.

### Uses

1. **Textile Industry:**
  - Making ropes, sacks, carpets, mats, and coarse cloth.
2. **Industrial Applications:**
  - Reinforcement in composites, biodegradable materials.
3. **Agricultural Uses:**
  - Mulching mats and soil erosion control mats.

# Hemp

## Biological Source

- Hemp is obtained from the bast fibers of the stem of the plant.
- Genus & Species: *Cannabis sativa*
- Family: Cannabaceae
- Cultivated in India, China, and Europe for fiber, oil, and medicinal use.



## Chemical Nature

- Major component is cellulose (70–75%), with lignin (5–10%) and hemicellulose.
- Also contains resinous substances, waxes, and some proteins.
- Fibers are long, strong, and flexible, suitable for ropes and textiles.

## Uses

1. **Textile Industry:**
  - Making ropes, twines, coarse cloth, and sacks.
2. **Medicinal & Nutritional Uses:**
  - Seeds are used for oil (rich in omega-3 fatty acids).
3. **Industrial Applications:**
  - Biodegradable composites, insulation materials, and paper.

## Hallucinogens

Hallucinogens are substances that affect the central nervous system (CNS) and produce hallucinations, causing a person to see, hear, or feel things that are not real.



### Biological Sources and Examples

Source	Plant/Fungus	Active Compound
Peyote cactus	Lophophora williamsii	Mescaline
Magic mushrooms	Psilocybe species	Psilocybin
Cannabis	Cannabis sativa	THC (Tetrahydrocannabinol)
Fungus on rye	Claviceps purpurea	LSD (from ergot alkaloids)

### Chemical Nature

- Most hallucinogens are nitrogen-containing compounds affecting CNS.
- Types of compounds:
  - Alkaloids: Mescaline, Psilocybin, LSD
  - Cannabinoids: THC

### Uses

- Medical research: Studied in psychiatry for mental health conditions under strict control.
- Ethnobotany/Spiritual: Used in religious or ritualistic practices.
- Therapeutic potential: Limited research in treating depression, PTSD, and anxiety.
- Abuse potential: Recreational use is illegal and harmful.

## Teratogens

Teratogens are substances or agents that **cause abnormal development or birth defects** in a developing embryo or fetus. They **interfere with normal growth** during pregnancy, leading to structural, functional, or biochemical abnormalities.

### Sources, Nature & Effects of Some Teratogens

Example	Biological Source / Type	Chemical Nature	Use / Effect
<b>Thalidomide</b>	Synthetic drug	Phthalimide derivative (organic compound)	Used for leprosy and morning sickness, but causes limb deformities (phocomelia) in fetuses
<b>Alcohol (Ethanol)</b>	Fermentation of sugar by yeast	Organic compound (C <sub>2</sub> H <sub>5</sub> OH)	Causes Fetal Alcohol Syndrome: growth retardation, facial dysmorphism, CNS defects
<b>Retinoic Acid (Vitamin A derivatives)</b>	Fish oils	Fat-soluble retinoid	Teratogenic in high doses: craniofacial, CNS, and cardiovascular defects
<b>Rubella Virus</b>	Viral infection	RNA virus	No medical use in pregnancy; maternal infection causes congenital rubella syndrome (heart defects, cataracts, deafness)
<b>Mercury</b>	Natural element / polluted fish	Heavy metal	Neurotoxic to fetus; causes brain and developmental defects

## Natural Allergens

Natural allergens are substances found in nature that can trigger allergic reactions in sensitive individuals. These reactions occur when the immune system overreacts to normally harmless substances.

### Allergy

An allergy is the body's overreaction to a normal substance. When an allergic person comes into contact with an allergen, chemicals like histamine are released, causing symptoms such as:

- Sneezing
- Runny nose
- Skin rashes
- Itching
- Breathing problems

### Types of Natural Allergens

Type	Source / Description	Symptoms / Effects
<b>Pollen</b>	From flowers, trees, grasses, and weeds	Seasonal allergies or hay fever: sneezing, watery eyes, blocked nose
<b>Dust Mites</b>	Tiny bugs living in dust, beds, and carpets	Triggers asthma, runny nose, sneezing
<b>Animal Dander</b>	Skin flakes, saliva, and urine of animals (cats, dogs)	Sneezing, itchy eyes, coughing
<b>Mold Spores</b>	Fungi growing in damp places (bathrooms, basements)	Coughing, wheezing, asthma
<b>Insect Stings</b>	Bees, wasps, ants	Local reactions, swelling; severe cases → anaphylaxis (life-threatening)