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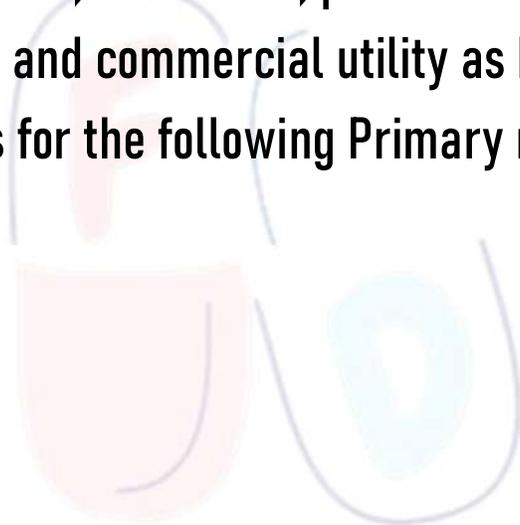
# PHARMACOGNOSY AND PHYTOCHEMISTRY – I

## UNIT 5

TOPIC :

- **Primary metabolites :**

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:



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## Metabolites in Plants

### 1. Primary Metabolites

Primary metabolites are compounds directly involved in normal growth, development, and reproduction of an organism. They are essential for survival.

#### Characteristics:

- **Function:** Essential for growth and metabolism
- **Occurrence:** Found in all living cells
- **Time of Formation:** Produced during the active growth phase
- **Quantity Produced:** Produced in large amounts
- **Examples:** Amino acids, proteins, nucleic acids, carbohydrates, ethanol, organic acids
- **Uses:** Used in food, pharmaceuticals, and fermentation processes

### 2. Secondary Metabolites

Secondary metabolites are compounds not directly involved in growth or reproduction but help the organism interact with its environment (defense, attraction, protection).

#### Characteristics:

- **Function:** Not essential for survival; involved in ecological functions
- **Occurrence:** Found in specific organs or tissues of the plant
- **Time of Formation:** Usually produced in the late or stationary phase of growth
- **Quantity Produced:** Produced in small amounts
- **Examples:** Alkaloids, glycosides, terpenoids, flavonoids, essential oils
- **Uses:** Used in drugs, dyes, perfumes, pesticides, and herbal preparations

## Difference Between Primary and Secondary Metabolites

Feature	Primary Metabolites	Secondary Metabolites
<b>Function</b>	Essential for growth and metabolism	Not essential; ecological functions (defense, attraction)
<b>Occurrence</b>	Found in all living cells	Found in specific organs/tissues
<b>Time of Formation</b>	During growth phase	Usually during late/stationary phase
<b>Quantity Produced</b>	Large amounts	Small amounts
<b>Examples</b>	Amino acids, proteins, ethanol, carbohydrates	Alkaloids, glycosides, terpenoids, flavonoids, essential oils
<b>Uses</b>	Food, pharmaceuticals, fermentation	Drugs, perfumes, dyes, herbal products

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