

D.pharm
2nd year
Protein

Biochemistry

(Part-1)

2026-27



Proteins

- Proteins are polypeptide structures consisting of one or more long chains of amino acid residues contain carbon, hydrogen, oxygen, nitrogen, and sulphur.



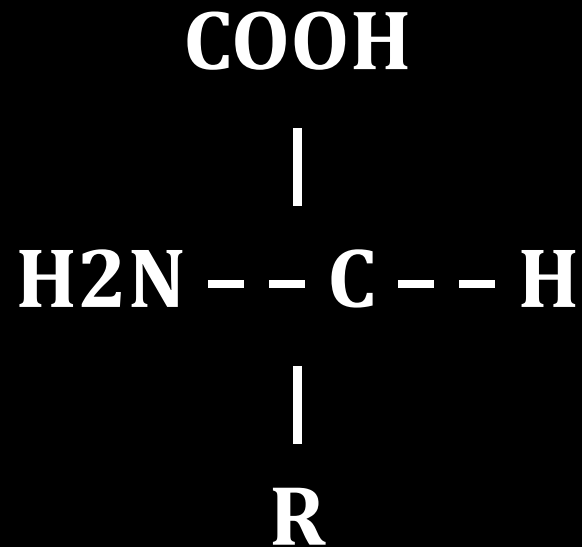
प्रोटीन पॉलीपेप्टाइड संरचनाएं हैं जिनमें अमीनो एसिड अवशेषों की एक या अधिक लंबी श्रृंखलाएं होती हैं जिनमें कार्बन, हाइड्रोजन, ऑक्सीजन, नाइट्रोजन और सल्फर होते हैं।

- They carry out a wide variety of organism functions, including DNA replication, transporting molecules, catalyzing metabolic reactions, and providing structural support to cells.

Amino acids

- Amino acids are organic compounds containing the basic amino groups (-NH₂) and carboxyl groups (-COOH). ↓

अमीनो एसिड कार्बनिक यौगिक होते हैं जिनमें मूल अमीनो समूह (-NH₂) और कार्बोक्सिल समूह (-COOH) होते हैं।



- All amino acids have common structural features –

an amino group ($-\text{NH}_3^+$),

a carboxylate (COO^-) group

hydrogen-bonded to the same carbon atom

- They differ from each other in their side-chain called the R group.



वे अपनी साइड-चेन में एक दूसरे से भिन्न होते हैं जिसे आर समूह कहा जाता है।

Alanine	C₃H₇N₂O₂	Leucine	C₆H₁₃N₂O₂
Aspartic Acid (acidic)	C₄H₇N₂O₄	Lysine (basic)	C₆H₁₄N₂O₂
Asparagine (acidic)	C₄H₈N₂O₃	Methionine (S containing)	C₅H₁₁N₂O₂S
Arginine (basic)	C₆H₁₄N₄O₂	Proline (Imino acid)	C₅H₉N₂O₂
Cytosine	C₄H₅N₃O	Phenylalanine (aromatic)	C₉H₉N₂O₂

Cysteine (S containing)	C3H7N02S	Serine (hydroxyl containing)	C3H7N03
Glycine	C2H5N02	Tyrosine (aromatic)	C9H11N03
Glutamine (acidic)	C5H10N2O3	Threonine (hydroxyl containing)	C4H9N03
Histidine (basic)	C6H9N3O2	Tryptophan (aromatic)	C11H12N2O2
Isoleucine	C6H13N02	Valine (neutral)	C5H11N02

Essential

Histidine
Isoleucine
Leucine
Lysine
Methionine
Phenylalanine
Threonine
Tryptophan
Valine

Non-Essential

Alanine
Arginine
Asparagine
Aspartic acid
Cysteine
Glutamic acid
Glutamine
Glycine
Proline
Selenocysteine
Serine
Tyrosine

Sources of amino Acids



Broccoli



Carrots



Cabbage



Onions



Cucumber



Dry fruits

PROTEIN

Composition

Structure

Fibrous

Globular

Intermediate

Simple

Albumin

Globulin

Histone

Scleroproteins

Conjugate

Phosphoprotein

Glycoprotein

nucleoprotein

Chromoprotein

Lipoprotein

Flavoprotein

Derived

Primary

Coagulated

Proteins

Metaproteins

Secondary

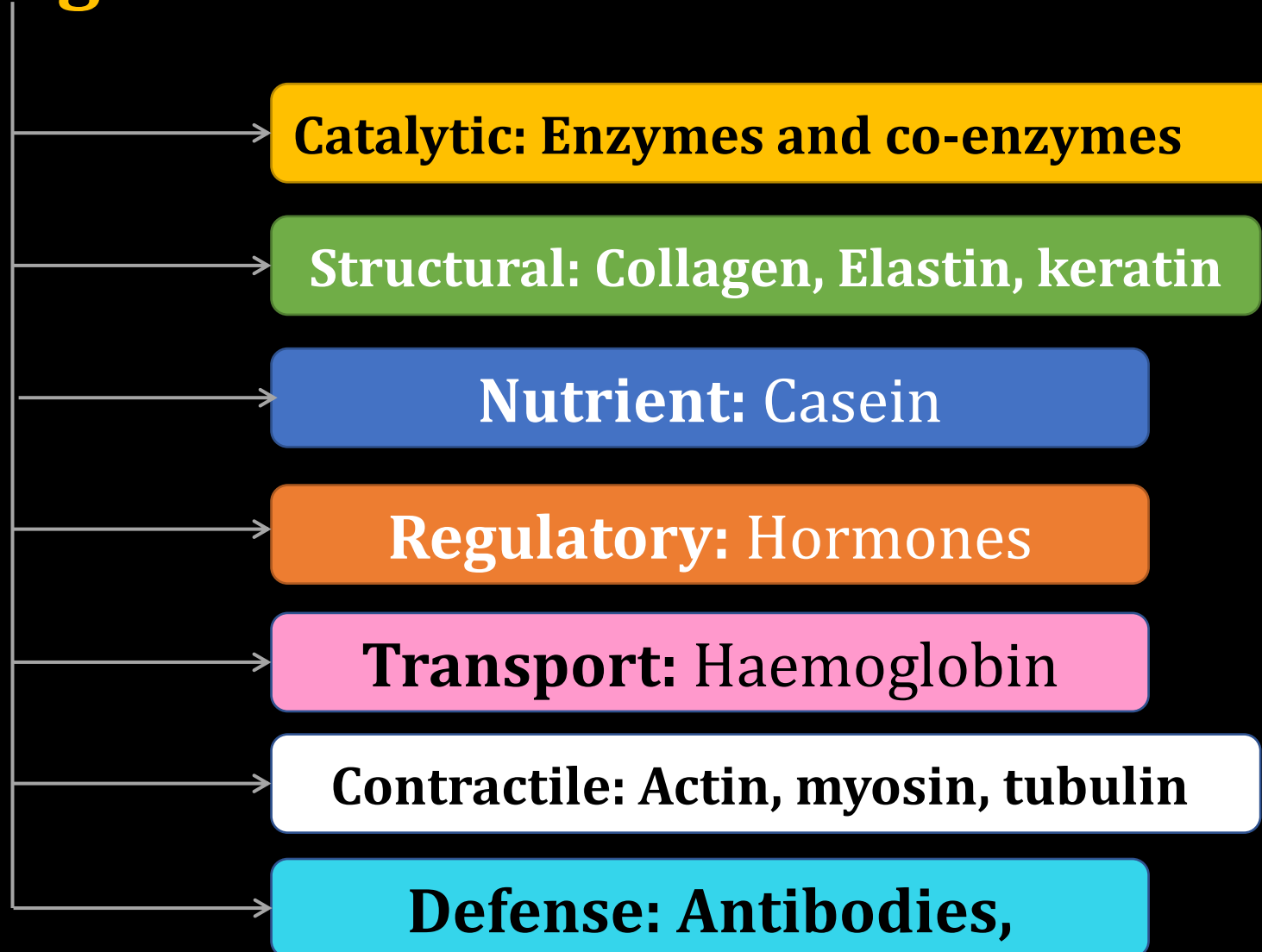
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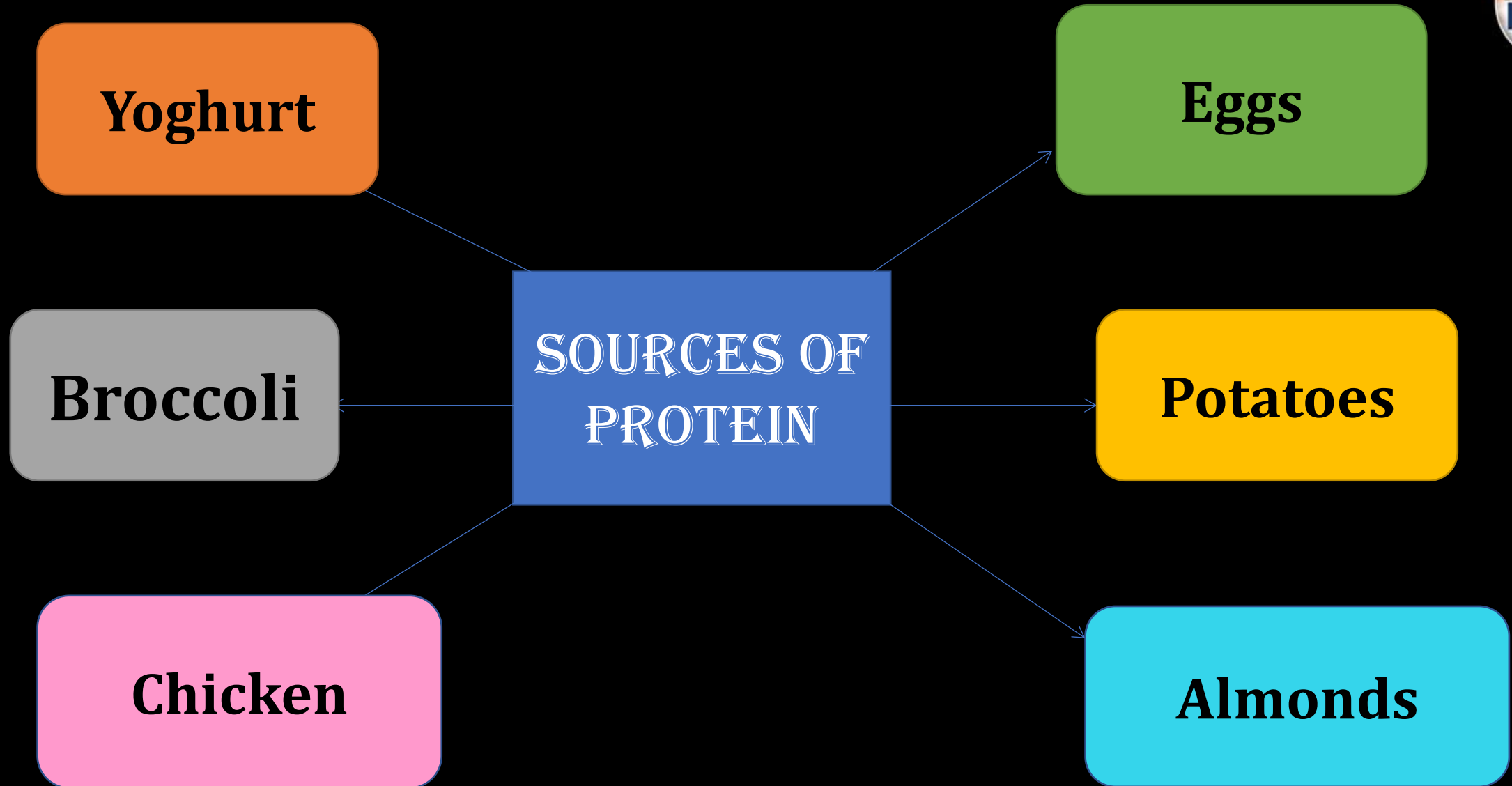
Peptones

Polypeptides

Peptides

Classification of protein on the basis of biological functions:







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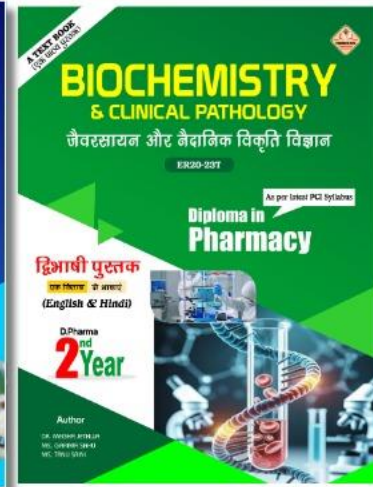
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