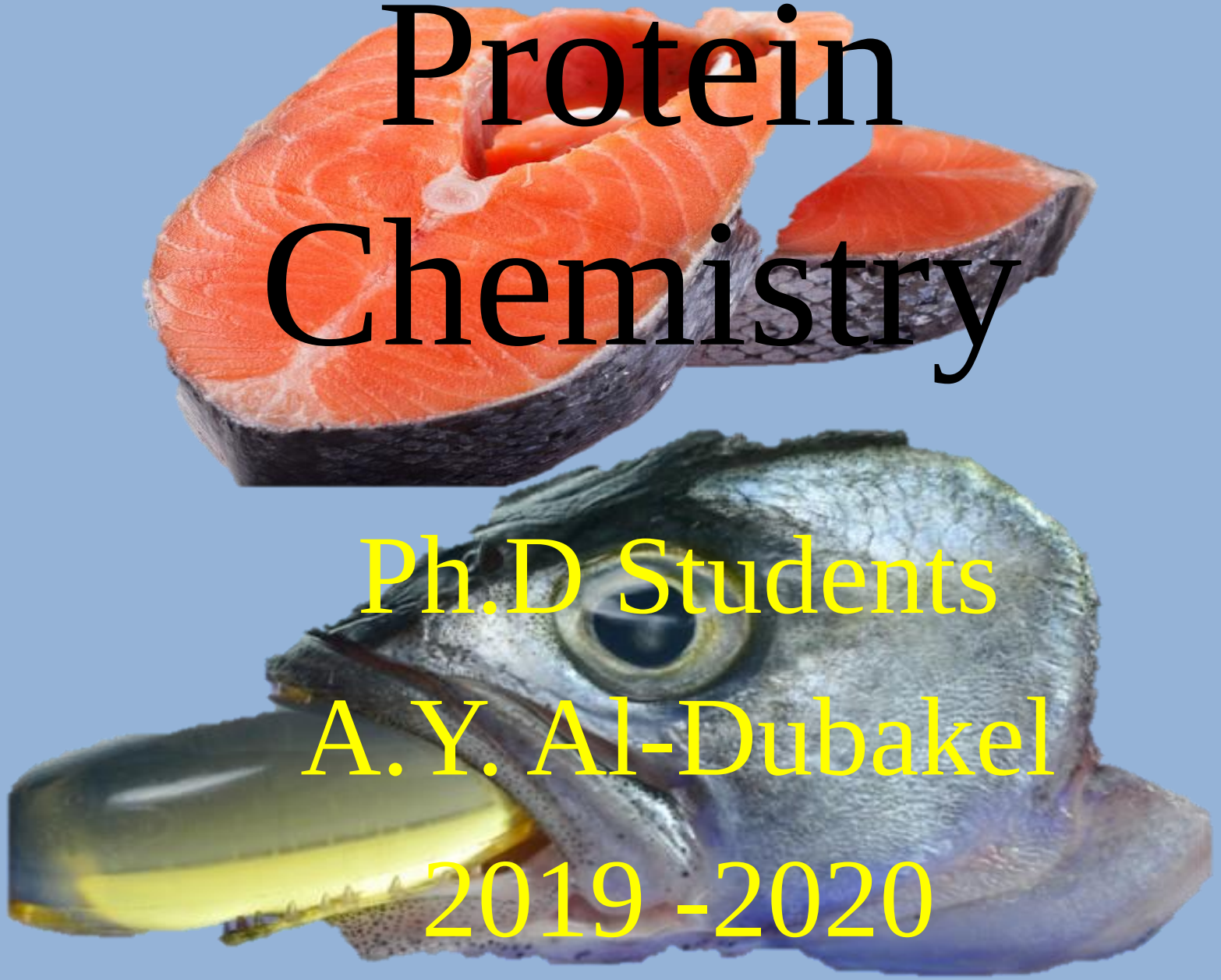
Protein Chemistry



Ph.D Students

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Fish Protein chemistry

1- Introduction
2- Nature of proteins
3- Protein Chemistry
4- Classification of Amino Acids.
4- Structure of Amino Acids.
5- Properties of Amino Acids
6- Levels of Protein Structure.
7- Fish protein
8- Protein composition of fish
9- Functional properties of protein
10- Structure of skeletal muscle of fish

Refs.

Protein Composition and Structure, Chapter 2, in Biochemistry, 6th Ed., Berg JM, Tymoczko JL and Stryer L. (Eds) (2007).

- Handbook on Ingredients for Aquaculture feeds by Joachiom.W.hertrampt
- Fish nutrition and feed technology – S.Aathithan, N.Felix, N.Venkatasamy
- Fish nutrition
- Handbook of aquaculture
- www.ebi.ac.uk
- www.tuscany.diet.net
- www.cuchd.in

- Reference-

1. Fish processing technology and product development (A.S.Ninawe and K.Rathnakumar.(
2. Textbook of fish processing technology (K.Gopakumar.(
3. Principle of biochemistry(Lehniger.(

Lecture 1

INTRODUCTION

- A protein is a polymer consisting of several amino acids(a polypeptide.(
- Each amino acid can be thought of a single carbon atom(the α carbon) to which there is attached one **carboxyl group**, one **amino group**, and a side chain denote **R**.
- The side chains are generally carbon chains or rings to which various functional groups are attached.
- There are mainly 20 different amino acids present in nature.

Nature of proteins

Proteins play an important role in biological systems. Proteins are synthesized in ribosomes. After synthesis some amino acids are modified by cytoplasmic enzymes. Proteins that are not modified thus are called homoproteins and that are modifiedor complexed with nonprotein parts are called heteroproteins or conjugated proteins.

Conjugated proteins

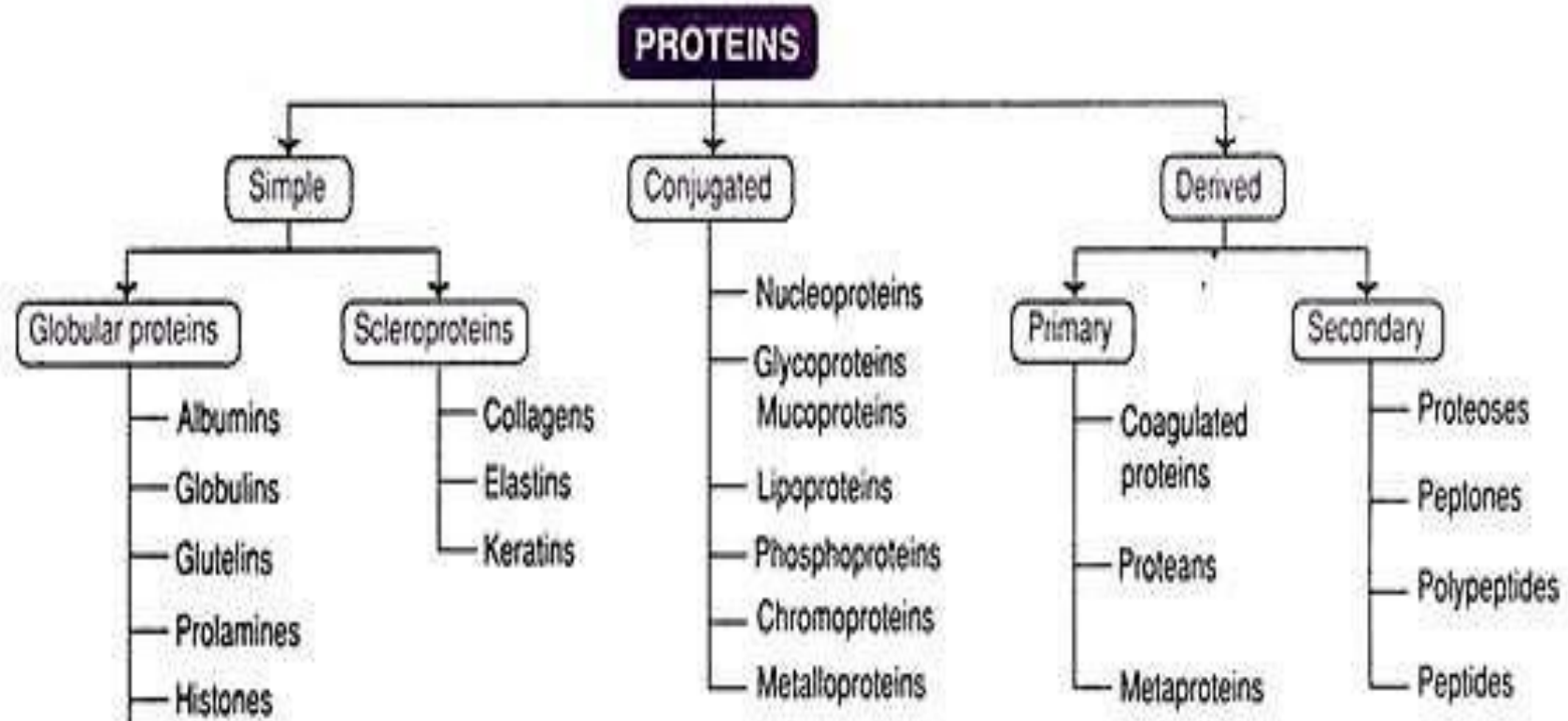
Type	Examples
Nucleoprotein	Ribosomes, Histones
Glycoprotein	Ovalbumin, k-casein
Phosphoproteins	α, and β caseins, phosphorylases
Lipoproteins	Proteins of egg yolk, plasma proteins
Metalloproteins	Hemoglobin, myoglobin and enzymes

Functions of proteins

- As a source of energy
- Required for the formation of hormones and enzymes
- To repair worn or wasted tissue and to rebuild new tissues
- Serve as lubricants and protective agents
- Serve as substrates for CHO and FA synthesis

PROTEIN CLASSIFICATION

TABLE 65.4 Summary of classification of proteins



Protein classification based on chemical composition

On the basis of their chemical composition, proteins may be divided into two classes:

- **simple and**
- **complex**