

## STRUCTURE AND PROPERTIES OF PROTEINS

### Introduction :-

Proteins are macromolecules made up of monomers called amino acids. Amino acids are the building block of all proteins.

Protein, highly complex substance that is present in all living organisms.

Proteins are of great nutritional value and are directly involved in the chemical processes that are essential for the life.

The importance of proteins was recognized by Swedish chemist "Berzelius" in 1838, who coined the term protein.

There are about 20 different amino acids that occur naturally in proteins.

### Structure :-

Proteins are linear polymers made up of small units of amino acids called monomers. The general formula of an  $\alpha$ -amino acid is shown in

shown in figure : (1)

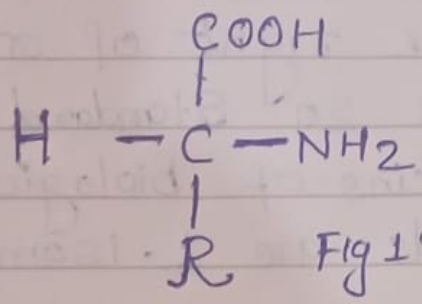
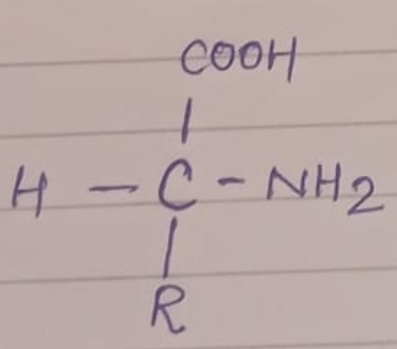


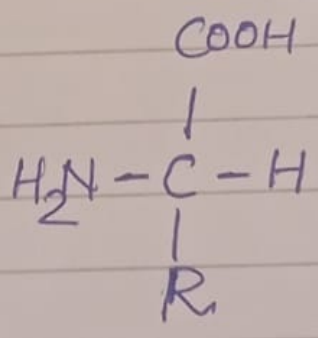
Fig 1: General formula of an amino acid.

The central carbon atom is called  $\alpha$ -carbon which is linked to four different groups:  $-\text{COOH}$  group,  $-\text{NH}_2$  group,  $-\text{H}$  group and  $-\text{R}$  group called side chain.

Because of binding with four different groups,  $\alpha$ -carbon of amino acids is asymmetric. Because of this asymmetric  $\alpha$ -carbon amino acids are present in two optically active forms or mirror image forms: L-isomers and the D-isomers.



(Fig. 2.) D-amino acid



L-amino acid

In L-isomers ( $-NH_2$ ) group is present to the left and in D-isomers ( $-NH_2$ ) group is present to the right of  $\alpha$ -carbon.

There are 20 standard amino acids present in proteins of biological system. These amino acids are L-isomers.