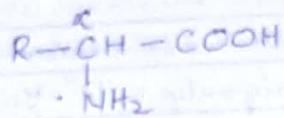
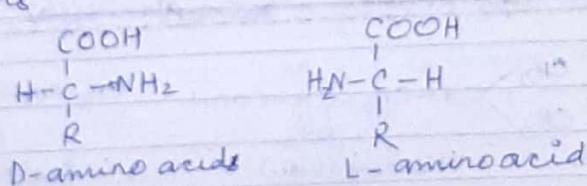


AMINO ACIDS

Any consideration of the chemistry of protein must begin with concise description of the monomeric units, the alpha amino acids when proteins are subjected to complete hydrolysis, amino acids are obtained. The amino acids are therefore, regarded as "building block of proteins". The general structure of amino acids are as follows:



Each amino acid is a nitrogenous compound having both an acidic carboxyl (-COOH) and a basic amino (-NH₂) group. R is stand for the side chain that are different in each amino acids. The first carbon is the part of carboxyl group. The second carbon to which is attached the amino group is called the α -carbon. The α -carbon of most amino acids is joined by the covalent bonds to 4 different groups. Thus, the α -carbon in all the amino acids is asymmetric except in glycine where α is symmetric. Because of asymmetry, the amino acids exist in two optically active forms. Those which are having -NH₂ group to the right side are designated as D-forms, those having -NH₂ group to the left as L-forms.



Amino acids found in the protein is ^{belong to} L-Series (L-amino acids).

Regarding their physical characteristic, amino acids are colourless crystalline substances. The crystal form may vary from slender needles (lysine) to thick hexagonal plates (cystine).

They may be either tasteless (tyrosine), sweet (glycine and alanine) and bitter (arginine). They have high melting point and often result in decomposition.

CLASSIFICATION:-

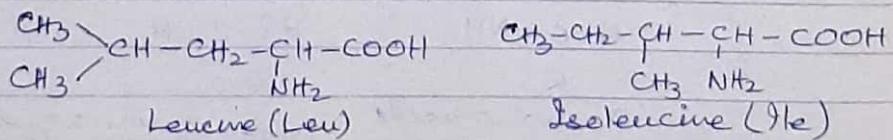
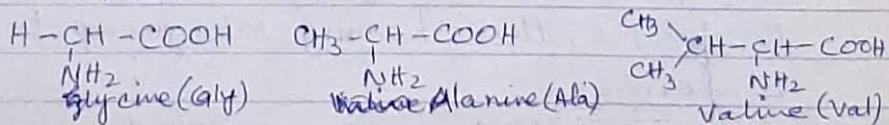
Although there are about 200 amino acids in nature but only 20 amino acids (*L-isomers*) are found in protein. The almost universal use of these 20 amino acids for the synthesis of various protein molecules is "one of nature's enigmatic rule". These have therefore rightly been called as the "magic 20".

Three system of amino acid are adopted to classify them.

(A) On the basis of the Composition of the side chain or R-group:-

All the 20 amino acids possess a side chain which is the only variable feature in their molecule. Based on composition of side chain, the twenty amino acids may be grouped into following 8 categories (Fairly and Kilgour 1966):

(B) Simple amino acids - These have no functional group in their side chain e.g. glycine, alanine, valine, leucine, isoleucine.



(C) Hydroxy amino acids → Having hydroxyl group in their side chain, e.g. Serine and threonine

