

Biomolecules

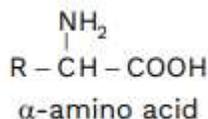
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INTRODUCTION :

Living systems are made up of various complex biomolecules like nucleic acids, carbohydrates, proteins, lipids, etc. Carbohydrates and proteins are essential constituents of our food. In addition, some simple molecules like mineral salts and vitamins also play an important role in the functions of organisms.

PROTEINS Brezeliues introduced the term protein which means first (Proteios = first). They are the most abundant biomolecules of the living system. Chief sources of proteins are cheese, milk, pulses, peanuts, etc. They form the fundamental basis of structure and functions of life. They are present in every part of the body. They are also required for maintenance and growth of body. It is derived from Greek word, "proteios" which means primary or of prime importance. All proteins are polymers of α -amino acids.

Amino acids are carboxylic acids having an -NH_2 group. When the -NH_2 group is at α -position these are called α -amino acids.



Amino acids can be categorized as a, b, g, d and so on, it depends on the relative position of amino group with respect to carboxyl group. Only α -amino acids are obtained on hydrolysis of proteins. They also can contain other functional groups. The property of the compound or its

source are reflected by their trivial names. Glycine is so-called as it has a sweet taste, and tyrosine (in Greek, tyros means cheese) was first obtained from cheese. Amino acids are generally represented by a 3 letter symbol, sometimes 1 letter symbol is also used.

Classification of **Amino Acids** :

On the basis of relative no. of carboxyl and amino groups in their molecule, they are classified as acidic, basic or neutral.

(1) Neutral : Equal number of carboxyl and amino groups makes it neutral

(2) Basic : More number of amino than carboxyl groups makes it basic

(3) Acidic : More carboxyl groups as compared to amino groups makes it acidic.

Non-essential Amino Acids : Non-essential amino acids are defined as the type of amino acids, which can be synthesised in the body.

Essential Amino Acids : Essential amino acids are defined as the type of amino acids, which cannot be synthesized in the body and must be obtained by the diet. Their deficiency causes Kwashiorkor, a disease. Examples of essential amino acids include, valine, leucine, isoleucine, lysine, threonine, phenyl alanine, methionine, tryptophan, histidine and arginine.