AMINO ACID

**Amino acids** is an Organic Acid, In which one or more of the Hydrogen (H2) ions are being replace by (NH2) Amino group. They are the end products of PROTEIN hydrolysis and from which our body can resynthesize our own Protein. **Amino Acid** are the building block of **protein.**

**Protein** plays a crucial role in almost all biological process of our body and **Amino acids** are the building blocks of it. A large numbers of our cell, tissue and muscle are made up of AMINO ACIDS means they carried out many important body function such as giving cell their structure. **20% of our body is made up of protein.**

**There are about more than 500 amino acids are exist but out of that only 20 Amino Acids are used by our all life form.**

**Amino acids are two types (1) Essential amino acid & (2) Nonessential amino acid:-**

**Essential amino acids** is very much essential for our almost all physiological process BUT our body unable to produce, those are

1. Leucine
2. Isoleucine
3. Valine
4. Histidine
5. Lysine
6. Methionine
7. Phenyl amine
8. Threonine and
9. Tryptophan

**Nonessential amino acid**: - An amino acid that can be made by humans and so is not essential to the human diet. There are 11 nonessential amino acids:-

(1)alanine, (2) arginine,(3) asparagine,(4) aspartic acid,(5) cysteine,(6) glutamic acid,(7) glutamine,(8) glycine,(19) proline,(10) serine, and (11)tyrosine

Out of these essential amino acids **1) Leucine (2) Isoleucine** and **(3) Valine** has **a Branch molecular structure** so they are known as a **BRANCH CHAIN AMINO ACID (BCAA) .**

These BRANCH CHAIN AMINO ACIDs are primarily breakdown in MUSCLES and others six amino acids are breakdown at LIVER.

* BCAA are widely used in liver diseases.
* BCAA prevent and restore muscle’s muss as well as improves Hepatic Encephalopathy (HE)
* BCAA improves nutritional status prognosis, illness, and improves quality of life after liver disease.

**BCAA deficiencies causes: -**

1. Breakdown tissues.
2. Muscles become fatigues
3. Stops protein synthesis (by muscles) because approximately 1/3 (one third) of muscles protein are being make-up y BCAA.

**BRANCH CHAIN AMINO ACID (BCAA) PROVIDE SEVERAL METABOLIC AND PHYSIOLOGICAL ROLE :-**

**Metabolically – BCAA** promote protein synthesis and metabolism of glucose turnover.

**Physiologically –BCAA** take role in immune system and synthesis of neurotransmitters and energy production.

**AROMATIC AMINO ACIDS (AAA):-**

Among 20 standard amino acids: are amino acids that include an aromatic ring , for Example

Phenylalanine.

Tryptophan.

Tyrosine.

Histidine.

Aromatic amino acids are able to absorb light due to their conjugated double bonds. This characteristic of aromatic amino acids is used to quantify the concentration of proteins in an unknown sample. These amino acids are able to absorb light which excites its electron to the excited state. When the electron falls back to its ground state, it will either emit light or release energy. If the molecule is able to emit light it is known as a fluorescent molecule. Tryptophan is widely used as a fluorescent molecule.[2]

Out of 20 amino acids some are conditional amino acids are there because they may or may not be require by our body,

**Conditional amino acids are usually not essential, except in times of illness and stress. Conditional amino acids include: arginine, cysteine, glutamine, tyrosine, glycine, ornithine, proline, and serine.**

**HEPAWIN (LOLA)**

**In cirrhosis of liver LOLA convert the disturb BCAA / AAA ratio and**

**In Hepatic Encephalopathy LOLA has been shown to reduce ammonia and improve the Phychocromatic function in patients with Hepatic Encephalopathy (HE)**

**Protein:-**

Protein is a highly complex nitrogenous compounds found in all animal and vegetable tissue. They are buildup of amino acids, essential for body growth and repair. Animal source of protein has higher biological values as they contain essential amino acid. Protein are hydrolyzed in the liver and produce amino acid and from which our body produce its own protein (new) for buildup and growth.

**1 gr. Protein gives us 4.05 calories energy.**

**CARBOHYDRATE:-**

Its an organic compounds containing Carbon, Hydrogen and Oxygen found in nature by photosynthesis in plant. Carbohydrates are heat producing. They includes starch ( glucose) sugar and cellulose.

**1 gr. carbohydrate gives us 3.8 calories energy.**

**FAT:**-

An ester of glycerol with fatty acids which may be animal r vegetable origin and may be either solid or liquid. Vitamin ADE & K fat soluble. It is reserve supplier of energy and smooth out body contours.

**1 gr. Fat gives us 9 calories energy.**

**LACTIC ACID:-**

A simple sugar that form in the cell as the end products of glucose metabolism in the absence of Oxygen is Lactic acid.

**NITROGEN:-**

Nitrogen is an important constituents of living cell that is PROTEIN.

The main supplier of Nitrogen is Atmosphere but our body unable to utilize directly, however some organism o soil and some roots of the herbs and trees are having the capacity of Nitrogen Fixation.

The essential constituents of Protein is Nitrogen.

**URIC ACID:-**

Breakdown of **Nucleoprotein** (purine) In the tissue .It’s an end products of **Nucleoprotein** metabolism. Uric acid I insoluble and excreted through uine. Excess causes GOUT. Store in Infant causes mental retardation and self destruction.