



## Multipro-18

Fish protein (Multipro 18) is protein isolated from prawn shells the protein is having 15 amino acids (3 more in traces) in different percentage. We mfg protein in various forms such as

1. Crude powder
2. Hydrolysate liquid
3. Spray dried powder ( crude or Hydrolysate)

Protein is essential body building block. Protein is sourced from plant origin such as soy protein, peanut protein, leguminous protein etc. Animal origin is meat, egg, milk etc.

A comparative amino acid content of these proteins is as under

Sr No	Name	Soy Protein	Whey protein	Multipro-18
1	Aspartic acid	-	-	13
2	Threonine	7.6	3.41	6.37
3	Serine	-	4.65	6.40
4	Glutamic acid	-	10.40	16.15
5	Proline	-	0.83	1.43
6	Glycine	-	2.15	8.15
7	Allanine	-	3.83	7.80
8	Valine	10	4.5	6.58
9	Methionine	5.2	2.4	2.15
10	Isolucine	9.8	6.2	6.03
11	Lucine	16.4	10.71	5.0
12	Phenylalanine	18	5.14	4.6
13	Histidine	5.2	1.05	4.92
14	Lysine	12.6	8.77	4.60
15	Arginine	-	-	6.63

From above chart it is clear that Aspartic acid and Arginine are absent in both proteins as compared with multipro-18, These amino acids have following advantages.

Multipro-18 also contains various minerals such as calcium, magnesium, copper, iron, manganese, zinc, phosphorous etc.

Being compatible we thought Multipro-18 can be used as feed supplement. In India, Pet food business is very small but major market is that of Poultry feed. We have conducted trials in large poultry farms. The average trial size was that of 10,000 birds. The protein was fed to birds as dry feed mix or liquid in drinking water. The conclusions are as under.



1. There was overall improvement in body weight, Food conversion ratio(FCR), deduction in mortality rate
2. Average body weight per bird is found to be 60 gram excess than in control.
3. The gain of FCR is 0.06
4. With expenditure of 0.525 Cents per bird there was a gain of 4.11 Cents per bird

We have also conducted trials in agriculture, mushroom growing, aquaculture feed and got very encouraging results. Multipro-18 can also be used for human consumption.

The detailed Uses of each of above amino acid is given below.

### **Aspartic acid:-**

1. In plants and microorganisms, aspartic acid is the precursor to several amino acids, including four that are essential methionine, threonine, isoleucine, and lysine
2. Aspartic acid aids in the expulsion of harmful ammonia from the body.
3. Although Aspartic Acid is considered a non-essential amino acid, it plays a paramount role in metabolism during construction of other amino acids and biochemicals in the citric acid cycle.

### **Threonine**

1. It is required to help maintain the proper protein balance in the body, as well as assist in the formation of collagen and elastin in the skin.
2. It is further involved in liver functioning (including fighting fatty liver), lipotropic functions when combined with aspartic acid and methionine as well as assisting the immune system by helping the production of antibodies and promotes thymus growth and activity.

### **Serine**

1. Serine is required for the metabolism of fat, tissue growth and the immune system as it assists in the production of immunoglobulins and antibodies. Some derivatives (e.g. ethanolamine) are also important components of the phospholipids found in biological membranes.
2. It is a constituent of brain proteins and nerve coverings and is also important in the formation of cell membranes, involved in the metabolism of purines and pyrimidines, and muscle synthesis. It is also used in cosmetics as a skin moisturizer.



## **Glutamic acid**

1. It is an important excitatory neurotransmitter, and glutamic acid is also important in the metabolism of sugars and fats.
2. It helps with the transportation of potassium across the blood-brain barrier, although itself does not pass this barrier that easily. It also shows promise in the future treatment of neurological conditions, ulcers, hypoglycemic coma, muscular dystrophy, epilepsy, Parkinson's, and mental retardation.
3. Glutamic acid can be used as fuel in the brain, and can attach itself to nitrogen atoms in the process of forming glutamine, and this action also detoxifies the body of ammonia. This action is the only way in which the brain can be detoxified from ammonia.

## **Proline**

1. Proline improves skin texture and aids collagen formation and helps contain the loss of collagen during aging. Collagen in the skin contains hydroxyproline and hydroxylysine, which is formed from proline and lysine, in which ascorbic acid seems to be important in this conversion. Collagen contains about 15 % proline. It is also thought to be important in the maintenance of muscles, joints and tendons.

## **Glycine**

1. It is required to build protein in the body and synthesis of nucleic acids, the construction of RNA as well as DNA, bile acids and other amino acids in the body. It is further found to be useful in aiding the absorption of calcium in the body.
2. It helps in retarding degeneration of muscles since it helps to supply extra creatine in the body.
3. It is also found in fairly large amounts in the prostate fluid and may for this reason be important in prostate health.
4. The glycine amino acid is also used by the nervous system and its function as an inhibitory neurotransmitter makes it important to help prevent epileptic seizures and it is also used in the treatment of manic depression and hyperactivity.

## **Alanine**

1. It is required for the metabolism of glucose and tryptophan and beta-alanine is a constituent of vitamin B5 (pantothenic acid) as well as coenzyme A. It has also demonstrated a cholesterol-reducing effect in rats.
2. People suffering from Epstein Barr (also sometimes referred to as glandular fever) as well as chronic fatigue syndrome, have been linked to excessively high levels of alanine while having low levels of tyrosine and phenylalanine.



## Valine

1. It has a stimulating effect and is needed for muscle metabolism, repair and growth of tissue and maintaining the nitrogen balance in the body.
2. Since it is a branched-chain amino acid, it can be used as an energy source in the muscles, and in doing so preserves the use of glucose.
3. Many amino acids become deficient with drug addiction, and here it also plays an important role and there are indications that it may also be beneficial in treating or reversing hepatic encephalopathy, or alcohol related brain damage, as well as degenerative neurological conditions.

## Methionine

1. It assists in the breakdown of fats and thereby prevents the build-up of fat in the arteries, as well as assisting with the digestive system and removing heavy metals from the body since it can be converted to cysteine, which is a precursor to glutathione, which is of prime importance in detoxifying the liver.
2. The amino acid methionine is also a great antioxidant as the sulfur it supplies inactivates free radicals. It may also be used to treat depression, arthritis pain as well as chronic liver disease - although these claims are still under investigation. Some studies have also indicated that methionine might improve memory recall.
3. It is also one of the three amino acids needed by the body to manufacture creatine monohydrate, a compound essential for energy production and muscle building.

## Isoleucine

1. Isoleucine, together with the other two branched-chain-amino-acids promote muscle recovery after physical exercise and on its own it is needed for the formation of hemoglobin as well as assisting with regulation of blood sugar levels as well as energy levels. It is also involved in blood-clot formation.

## Leucine

1. Leucine helps with the regulation of blood-sugar levels, the growth and repair of muscle tissue (such as bones, skin and muscles), growth hormone production, wound healing as well as energy regulation. It can assist to prevent the breakdown of muscle proteins that sometimes occur after trauma or severe stress. It may also be beneficial for individuals with phenylketonuria - a condition in which the body cannot metabolize the amino acid phenylalanine



## Phenylalanine

1. It is used in elevating the mood since it is so closely involved with the nervous system, as well as help with memory and learning and has been used as an appetite suppressant.
2. People suffering from Parkinson's disease It is DLPA (or the D- or L-form alone) is used to treat depression and the D form may also be helpful in the treatment of Parkinson's disease and chronic pain in both osteo-arthritis and rheumatoid arthritis with mixed results Increases blood levels of norepinephrine, epinephrine and dopamine - all three required for neurotransmission.

## Histidine

1. Histidine is also a precursor of histamine, a compound released by immune system cells during an allergic reaction.
2. It is needed for growth and for the repair of tissue, as well as the maintenance of the myelin sheaths that act as protector for nerve cells.
3. It is further required for the manufacture of both red and white blood cells, and helps to protect the body from damage caused by radiation and in removing heavy metals from the body.
4. In the stomach, histidine is also helpful in producing gastric juices, and people with a shortage of gastric juices or suffering from indigestion, may also benefit from this nutrient.

## Lysine

1. It is required for growth and bone development in children, assists in calcium absorption and maintaining the correct nitrogen balance in the body and maintaining lean body mass. Furthermore it is needed to produce antibodies, hormones, enzymes, collagen formation as well as repair of tissue.
2. Since it helps with the building of muscle protein, it is useful for patients recovering from injuries and recovery after operations, and there might be use in lysine to help maintain healthy blood vessels. It also seems to assist in fighting herpes and cold sores.

## Arginine

1. It is extremely useful in enhancing the immune system, and it increases the size and activity of the thymus gland, which is responsible for manufacturing T lymphocytes – the much talked about T-cells, which assist the immune system. For this reason it might be an important nutrient for people suffering from AIDS and other malignant diseases which suppress the immune system.
2. In the pancreas it is used to release insulin and in the pituitary gland it is a component of human growth hormone, and is used in sexual stimulants, as people report longer and more intense orgasms when their intake of arginine is increased.
3. It is also important in liver health and assists in neutralizing ammonia in the liver, while it is also involved in the skin and connective tissue – making it important in healing and repair of tissue as well as the formation of collagen and building of new bone and tendons.
4. Arginine is found in seminal fluid and L-arginine is used in the treatment of male sexual health and has been used in the treatment of sterility.
5. It is required in muscle metabolism – maintaining the nitrogen balance, and helping with weight control since it facilitates the increase of muscle mass, while reducing body fat.