

SUMMARY OF PRODUCT CHARACTERISTICS

ESSENTIAL-10

1. Name of the medicinal product

Essential-10 (Amino acids and Vitamins syrup)

2. Qualitative and quantitative composition

Each 15 ml contains

L-Arginine Hydrochloride USP	13.28 mg
L-Histidine Hydrochloride Monohydrate BP	3.71 mg
L-Isoleucine USP	5.9 mg
L-Leucine USP	18.3 mg
L-Lysine Hydrochloride USP	25 mg
L-Methionine USP	9.2 mg
L-Phenylalanine USP	5 mg
L-Threonine USP	4.2 mg
L-Tryptophan USP	5 mg
L-Valine USP	6.7 mg
Vitamin A Concentrate (Oily form) BP	2500 I.U
Cholecalciferol BP	200 I.U
Tocopheryl Acetate BP	7.5 I.U
Thiamine Hydrochloride BP	5 mg
Riboflavin (as Riboflavine Sodium Phosphate) BP	3 mg
Nicotinamide BP	25 mg
Calcium Pantothenate BP	5 mg
Pyridoxine Hydrochloride BP	1.5 mg
Cyanocobalamin BP	2.5 mcg
Ascorbic acid BP	40 mg
Folic acid BP	0.75 mg
Flavoured syrupy base	q.s.
Colour : Caramel	

3. Pharmaceutical form

Syrup

4. Clinical particulars

4.1 Therapeutic indications

Essential-10 is used in patients who have deficiencies of essential amino acids and vitamins.

As a nutritional supplement in malnourished patients.

4.2 Posology and method of administration

15 ml (One tablespoonful) to be taken twice a day or as directed by the physician.

4.3 Contraindications

Hypersensitivity to any of the component of this formulation

4.4 Special warnings and precautions for use

- Before using this medication, tell your doctor your medical history, especially of certain blood disorders (e.g., megaloblastic anaemia, vitamin B12 deficiency), any allergies.
- Do not take Essential-10 on an empty stomach. Do not exceed the stated dose. Keep out of the reach of children. If symptoms persist, consult your doctor.
- The prescribed dose should not be exceeded since it may lead to various undesirable actions

4.5 Interaction with other medicinal products and other forms of interaction

Do not take large doses of vitamins while you use multivitamins, Folic Acid with amino acids unless your doctor tells you to. Folic acid can reduce the plasma concentration of phenytoin.

4.6 Fertility, pregnancy and lactation

Physician should carefully consider the potential risks and benefits for each specific patient before administering Essential-10 in pregnancy and lactation.

4.7 Effects on ability to drive and use machines

None anticipated.

4.8 Undesirable effects

The commonly reported undesirable effects are nausea, stomach upset or unpleasant taste may occur. If any of these effects persist or worsen contact your physician immediately.

4.9 Overdose

There is no specific antidote for overdose. Emergency procedures should include appropriate corrective measures.

Treatment :

The following steps are recommended to minimise or prevent further absorption of the medication:

1. Administer an emetic.
2. Gastric lavage may be necessary to remove drug already released into the stomach. This should be undertaken using desferrioxamine solution (2 g/l). Desferrioxamine 5 g in 50 - 100 ml water should be introduced into the stomach following gastric emptying. Keep the patient under constant surveillance to detect possible aspiration of vomitus; maintain suction apparatus and standby emergency oxygen in case of need.
3. A drink of mannitol or sorbitol should be given to induce small bowel emptying.
4. Any fluid or electrolyte imbalance should be corrected.

5. Pharmacological properties

5.1 Pharmacodynamic properties

Essential-10 syrup contains following Essential Amino Acids and Vitamins:

L-Arginine Hydrochloride:

Studies have shown that it has improved immune responses to bacteria, viruses and tumour cells; promotes wound healing and regeneration of the liver; causes the release of growth hormones; considered crucial for optimal muscle growth and tissue repair.

L-Methionine :

Methionine is one of nine essential amino acids in humans Methionine is required for growth and tissue repair.

L-Histidine Hydrochloride Monohydrate:

Histidine is a semi-essential amino acid (children should obtain it from food) needed in humans for growth and tissue repair, Histidine is important for maintenance of myelin sheaths that protect nerve cells and is metabolized to the neurotransmitter histamine.

L-Isoleucine :

Isoleucine is one of nine essential amino acids in humans (present in dietary proteins), Isoleucine has diverse physiological functions, such as assisting wound healing,

detoxification of nitrogenous wastes, stimulating immune function, and promoting secretion of several hormones. Necessary for haemoglobin formation and regulating blood sugar and energy levels, isoleucine is concentrated in muscle tissues in humans.

L-Leucine :

Leucine is one of nine essential amino acids in humans (provided by food), Leucine is important for protein synthesis and many metabolic functions. Leucine contributes to regulation of blood-sugar levels; growth and repair of muscle and bone tissue; growth hormone production; and wound healing.

L-Lysine Hydrochloride:

Lysine is one of nine essential amino acids in humans required for growth and tissue repair, Lysine is supplied by many foods, especially red meats, fish, and dairy products. Lysine seems to be active against herpes simplex viruses and present in many forms of diet supplements.

L-Phenylalanine :

Phenylalanine is an essential aromatic amino acid in humans. Phenylalanine plays a key role in the biosynthesis of other amino acids and is important in the structure and function of many proteins and enzymes. Phenylalanine is converted to tyrosine, used in the biosynthesis of dopamine and norepinephrine neurotransmitters.

L-Threonine

L-Threonine is an essential amino acid that helps to maintain the proper protein balance in the body. It is important for the formation of collagen, elastin, and tooth enamel, and aids liver and lipotropic function when combined with aspartic acid and methionine.

L-Tryptophan :

Tryptophan is critical for the production of the body's proteins, enzymes and muscle tissue. It is also essential for the production of niacin, the synthesis of the neurotransmitter serotonin and melatonin. Tryptophan supplements can be used as natural relaxants to help relieve insomnia. Tryptophan can also reduce anxiety and depression and has been shown to reduce the intensity of migraine headaches.

L-Valine :

Valine is an aliphatic and extremely hydrophobic essential amino acid in humans related to leucine, Valine is found in many proteins, mostly in the interior of globular proteins helping to determine three-dimensional structure. A glycolytic amino acid, valine maintains mental vigour, muscle coordination, and emotional calm. Valine is obtained from soy, cheese, fish, meats and vegetables. Valine supplements are used for muscle growth, tissue repair, and energy.

Vitamin A :

Vitamin A plays an important role in the visual process. It is isomerised to the 11-cis isomer and subsequently bound to the opsin to form the photoreceptor for vision under subdued light. One of the earliest symptoms of deficiency is night blindness which may develop into the more serious condition xerophthalmia. Vitamin A also participates in the formation and maintenance of the integrity of epithelial tissues and mucous membranes. Deficiency may cause skin changes resulting in a dry rough skin with lowered resistance to minor skin infections. Deficiency of Vitamin A, usually accompanied by protein-energy malnutrition, is linked with a frequency of infection and with defective immunological defence mechanisms.

Vitamin D :

Vitamin D is required for the absorption of calcium and phosphate from the gastro-intestinal tract and for their transport. Its involvement in the control of calcium metabolism and hence the normal calcification of bones is well documented. Deficiency of Vitamin D in children may result in the development of rickets.

Vitamin B₁ (Thiamine) :

Thiamine (as the coenzyme, thiamine pyrophosphate) is associated with carbohydrate metabolism. Thiamine pyrophosphate also acts as a co-enzyme in the oxidative pathway of glucose metabolism. In thiamine deficiency, pyruvic and lactic acids accumulate in the tissues. The pyruvate ion is involved in the biosynthesis of acetylcholine via its conversion to acetyl co-enzyme A through a thiamine-dependent process. In thiamine deficiency, therefore, there are effects on the central nervous system due either to the effect on acetylcholine synthesis or to the lactate and pyruvate accumulation. Deficiency of thiamine results in fatigue, anorexia, gastro-intestinal disturbances, tachycardia, irritability and neurological symptoms. Gross deficiency of thiamine (and other Vitamin B group factors) leads to the condition beriberi.

Vitamin B₂ (Riboflavin) :

Riboflavin is phosphorylated to flavine mononucleotide and flavine adenine dinucleotide which act as co-enzymes in the respiratory chain and in oxidative phosphorylation. Riboflavin deficiency presents with ocular symptoms, as well as lesions on the lips and at angles of the mouth.

Vitamin B₁₂ (Cyanocobalamin) :

Vitamin B₁₂ is present in the body mainly as methylcobalamin and as adenosylcobalamin and hydroxocobalamin. These act as co-enzymes in the trans methylation of homocysteine to methionine; in the isomerisation of methylmalonyl co-enzyme to succinyl co-enzyme and with folate in several metabolic pathways respectively. Deficiency of Vitamin B₁₂ interferes with haemopoiesis and produces megaloblastic anaemia.

Nicotinamide :

The biochemical functions of nicotinamide as NAD and NADP (nicotinamide adenine dinucleotide phosphate) include the degradation and synthesis of fatty acids, carbohydrates and amino acids as well as hydrogen transfer. Deficiency produces pellagra and mental neurological changes.

Vitamin C (Ascorbic Acid) :

Vitamin C cannot be synthesised by man therefore a dietary source is necessary. It acts as a cofactor in numerous biological processes including the hydroxylation of proline to hydroxyproline. In deficiency, the formation of collagen is, therefore, impaired. Ascorbic acid is important in the hydroxylation of dopamine to noradrenaline and in hydroxylation occurring in steroid synthesis in the adrenals. It is a reducing agent in tyrosine metabolism and by acting as an electron donor in the conversion of folic acid to tetrahydrofolic acid is indirectly involved in the synthesis of purine and thymine. Vitamin C is also necessary for the incorporation of iron into ferritin. Vitamin C increases the phagocytic function of leucocytes; it possesses anti-inflammatory activity and it promotes wound healing. Deficiency can produce scurvy. Features include swollen inflamed gums, petechial haemorrhages and subcutaneous bruising. The deficiency of collagen leads to development of thin watery ground substances in which blood vessels are insecurely fixed and readily ruptured. The supportive components of bone and cartilage are also deficient causing bones to fracture easily and teeth to become loose. Anaemia commonly occurs probably due to Vitamin C's role in iron metabolism.

Folic Acid :

Folic acid is reduced in the body to tetrahydrofolate which is a co-enzyme for various metabolic processes, including the synthesis of purine and pyrimidine nucleotides and hence in the synthesis of DNA. It is also involved in some amino acid conversion and in the formation and utilisation of formate. Deficiency of folic acid leads to megaloblastic anaemia.

Vitamin E :

Vitamin E deficiency has been linked to disorders such as cystic fibrosis where fat absorption is impaired. It is essential for the normal function of the muscular system and the blood.

Calcium Pantothenate :

Calcium Pantothenate is the calcium salt of the water-soluble vitamin B5, ubiquitously found in plants and animal tissues with antioxidant property. Pantothenate is a component of coenzyme A (CoA) and a part of the vitamin B2 complex. Vitamin B5 is a growth factor and is essential for various metabolic functions, including the metabolism of carbohydrates, proteins, and fatty acids. This vitamin is also involved in the synthesis of cholesterol, lipids, neurotransmitters, steroid hormones, and hemoglobin.

5.2 Pharmacokinetic properties

L-Arginine Hydrochloride:

Absorbed from the lumen of the small intestine into the enterocytes. Absorption is efficient and occurs by an active transport mechanism.

L-Methionine :

Although the free amino acids dissolved in the body fluids are only a very small proportion of the body's total mass of amino acids, they are very important for the nutritional and metabolic control of the body's proteins.

L-Histidine Hydrochloride Monohydrate:

Absorbed from the small intestine via an active transport mechanism requiring the presence of sodium.

L-Isoleucine, L-Leucine, L-Valine :

The branched - chain amino acids (BCAA) - leucine, isoleucine, and valine - differ from most

other indispensable amino acids in that the enzymes initially responsible for their catabolism are found primarily in extra-hepatic tissues.

L-Lysine Hydrochloride:

Like other amino acids, the metabolism of free lysine follows two principal paths: protein synthesis and oxidative catabolism. It is required for biosynthesis of such substances as carnitine, collagen, and elastin.

L-Phenylalanine :

Pathways of amino acid metabolism- L-phenylalanine; product of oxidative deamination or transamination: phenyl pyruvic acid. Product of decarboxylation: phenyl ethylamine. Phenylalanine to tyrosine.

L-Threonine

The evidence indicates that excess threonine is converted to carbohydrate, liver lipids, and carbon dioxide.

L-Tryptophan :

Tryptophan is readily absorbed from the gastro-intestinal tract. Tryptophan is extensively bound to serum albumin. It is metabolized to serotonin and other metabolites, incl kynurenine derivatives, and excreted in the urine. Pyridoxine and ascorbic acid appear to be concerned in its metabolism.

Vitamin A :

Except when liver function is impaired, Vitamin A is readily absorbed. β -carotene is Provitamin A and is the biological precursor to Vitamin A. It is converted to Vitamin A (Retinol) in the liver; retinol is emulsified by bile salts and phospholipids and absorbed in a micellar form. Part is conjugated with glucuronic acid in the kidney and part is metabolised in the liver and kidney, leaving 30 to 50% of the dose for storage in the liver. It is bound to a globulin in the blood. Metabolites of Vitamin A are excreted in the faeces and the urine.

Vitamin D :

The metabolism of ergocalciferol is similar to that of cholecalciferol. Cholecalciferol is

absorbed from the gastro-intestinal tract into the circulation. In the liver, it is hydroxylated to 25-hydroxycholecalciferol, is subject to entero-hepatic circulation and is further hydroxylated to 1,25-dihydroxycholecalciferol in the renal tubule cells. Vitamin D metabolites are bound to specific plasma proteins.

Vitamin B₁ (Thiamine) :

Thiamine is absorbed from the gastro-intestinal tract and is widely distributed to most body tissues. Amounts in excess of the body's requirements are not stored but excreted in the urine as unchanged thiamine or its metabolites.

Vitamin B₂ (Riboflavin) :

Riboflavin is absorbed from the gastro-intestinal tract and in the circulation is bound to plasma proteins. It is widely distributed. Little is stored and excess amounts are excreted in the urine. In the body riboflavin is converted to flavine mononucleotide (FMN) and then to flavine adenine dinucleotide (FAD).

Vitamin B₁₂ (Cyanocobalamin) :

Cyanocobalamin is absorbed from the gastro-intestinal tract and is extensively bound to specific plasma proteins. A study with labelled Vitamin B₁₂ showed it was quickly taken up by the intestinal mucosa and held there for 2 - 3 hours. Peak concentrations in the blood and tissues did not occur until 8 - 12 hours after dosage with maximum concentrations in the liver within 24 hours. Cobalamins are stored in the liver, excreted in the bile and undergo enterohepatic recycling. Part of a dose is excreted in the urine, most of it in the first eight hours.

Vitamin C (Ascorbic Acid) :

Ascorbic acid is readily absorbed from the gastro-intestinal tract and is widely distributed in the body tissues. Ascorbic acid in excess of the body's needs is rapidly eliminated in the urine and this elimination is usually accompanied by a mild diuresis.

Vitamin E :

Vitamin E is absorbed from the gastro-intestinal tract. Most appears in the lymph and is then widely distributed to all tissues. Most of a dose is slowly excreted in the bile and the remainder is eliminated in the urine as glucuronides of tocopheronic acid or other metabolites.

Nicotinamide (Nicotinic Acid Amide) :

Nicotinic acid is absorbed from the gastro-intestinal tract, is widely distributed in the body tissues and has a short half-life.

Calcium Pantothenate :

Pantothenic acid is readily absorbed from the gastro-intestinal tract and is widely distributed in the body tissues. About 70% of pantothenic acid is excreted unchanged in the urine and about 30% in the faeces.

Folic Acid :

Folic acid is absorbed mainly from the proximal part of the small intestine. Folate polyglutamates are considered to be deconjugated to monoglutamates during absorption. Folic acid rapidly appears in the blood where it is extensively bound to plasma proteins. Some folic acid is distributed in body tissues, some is excreted as folate in the urine and some is stored in the liver as folate.

5.3 Preclinical safety data

No data is presented as amino acids are basic and widespread elements in mammalian metabolism. Therefore conventional animal safety testing is not appropriate.

6. Pharmaceutical particulars

6.1 List of excipients :

Liquid Glucose, Sucrose, Sorbitol 70 % Solution, Sodium Methyl Paraben, Sodium Propyl Paraben, Sodium Benzoate, Di Sodium E.D.T.A., Sodium Hydroxide, Sodium Saccharin, Glycerin, B.H.A., Acrysol K-140, Colour Caramel, Fla. Chocolate Eclair M-6626, Fla. Butter Scotch M-5282, Xanthan Gum, Citric Acid, Purified water.

6.2 Incompatibilities :

None known.

6.3 Shelf life :

24 Months (2 Years)

6.4 Special precautions for storage :

Keep in a dry place, below 30°C. Protect from light.

Keep out of reach of children.

Shake well before use.

6.5 Nature and contents of container :

ESSENTIAL-10 syrup is filled in a 200 ml Amber Glass, brute shaped bottle packed in a carton along with leaflet.

6.6 Special precautions for disposal and other handling :

None

7. Marketing authorisation holder

BLISS GVS PHARMA LIMITED,

102, Hyde Park, Saki-Vihar Road

Andheri (East), Mumbai 400 072, INDIA

8. Marketing authorisation number(s)

Not Applicable

9. Date of first authorisation/renewal of the authorisation

Not Applicable