

SUMMARY OF PRODUCT CHARACTERISTICS

1. COMPOSITION

Each 10 ml Ampoule contains:

Vitamin A (Palmitate),USP.....	10,000I.U
Vitamin B ₁ (Thiamine Mononitrate),USP.....	50mg
Riboflavin-5-Phosphate Sodium, USP.....	10mg
Vitamin B ₆ (Pyridoxine Hydrochloride),USP.....	15mg
Nicotinamide ,USP.....	100mg
Dexpanthenol. USP.....	25mg
Vitamin C (Ascorbic Acid), USP.....	500mg
Vitamin E (dl- Alpha Tocopheryl Acetate), USP.....	5mg

2. DESCRIPTION

Multibionta Injection is a combination of Vitamin A, Vitamin B₁, B₂, B₃, B₅, B₆, Vitamin C and Vitamin E.

3. THERAPEUTIC INDICATIONS

Multibionta Injection for Infusion has extremely wide field of indications.

- ✚ To promote the recovery after severe illness, severe vomiting, post-operative restrictions of oral nutrition's, in burns and many other conditions where parenteral nutrition is required.
- ✚ In the treatment of complex vitamin deficiencies.
- ✚ To augment glucose therapy.
- ✚ To improve mental functions.
- ✚ To prevent and control the side effects of sulphonamide antibiotics and tuberculosis.

4. DOSAGE AND ADMINISTRATION

One 10 ml ampoule daily by infusion or as prescribed by the physician.

Immediately before use, the contents of the ampoule must be added to a full infusion bottle containing not less than 250 ml of infusion solution. To avoid frothing, the mixture should be inverted gently. It should not be shaken.

A mixture should be discarded if visible turbidity or crystallization appears in the infusion solution. In order to minimize possible loss of active substance in a mixture (masked incompatibility), it is recommended that solution to which this product is added should be used within 8 hours.

5. CONTRAINDICATIONS

Multibionta Injection is contraindicated in patients known to be hypersensitive to any of its components.

6. WARNINGS AND PRECAUTIONS

Caution should be exercised when dosing ascorbic acid in patients with chronic renal failure and in patients receiving acetylsalicylic acid.

Allergic Reactions to Thiamine

Allergic reactions such as urticaria, periorbital and digital edema, have been reported following intravenous administration of thiamine. There have been rare reports of anaphylaxis following intravenous doses of thiamine. No fatal anaphylaxis reactions have been reported.

Hypervitaminosis A

Hypervitaminosis A, manifested by nausea, vomiting, headache, dizziness, blurred vision, has been reported in patients with renal failure receiving 1.5 mg/day retinol and in patients with liver disease. Therefore, supplementation of renal failure patients and patients with liver diseases with vitamin A, Blood levels of Vitamin A should be monitored periodically.

Potential to Develop Vitamin Deficiencies or Excesses

In patients receiving parenteral multivitamins, blood vitamin concentrations should be periodically monitored to determine if vitamin deficiencies or excesses are developing.

Interference with Urine Glucose Testing

Vitamin C which is also known as ascorbic acid, in the urine may cause false negative urine glucose determinations.

7. ADVERSE EFFECTS

Allergic reactions, including rash, pruritus, erythema and anaphylaxis have been reported with Vitamin use. Components of this product have been associated with gastrointestinal effects such as heartburn, eructation, abdominal pain and cramps, diarrhea, vomiting, nausea, and anorexia. Hepatic dysfunction with abnormal liver function tests, including hyperbilirubinemia has been noted. Deterioration of acneiform vulgaris, or eruption of acneiform exanthema, has been noted with several components. Bright yellow urine discoloration has been reported with riboflavin usage. Niacinamide has strong vasodilator effects, most often characterized by flushing, dizziness, or faintness. Peripheral sensory neuropathies have been noted with the use of pyridoxine. With ascorbic acid usage, stone formation, crystalluria, and oxalosis have been reported in the literature.

8. DRUG INTERACTIONS

With concomitant use of niacinamide and alcohol, toxic delirium and lactic acidosis have been noted. Concomitant use of niacinamide and nicotine has been reported to cause increased flushing and dizziness. Since pyridoxine is noted to have effects on dopamine, drug interactions are possible. A drug interaction with Levodopa is noted but can be avoided if Levodopa is given in combination with a decarboxylase inhibitor. Serum phenytoin and phenobarbital levels have been reported to decrease in patients receiving 80 to 200 mg/day of pyridoxine. Use of anticonvulsants and sulfasalazine has been associated with folate deficiency, even when folic acid is supplied orally. Prothrombin times are decreased when ascorbic acid is used concomitantly with anticoagulants.

Thiamine, riboflavin, pyridoxine, niacinamide, and ascorbic acid decrease antibiotic activities of erythromycin, kanamycin, streptomycin, doxycycline, and lincomycin.

Ascorbic acid and riboflavin inactivate bleomycin in vitro, thus the activity of bleomycin may be reduced.

Concomitant administration of hydralazine or isoniazid may increase pyridoxine requirements.

9.0 PREGNANCY AND LACTATION

Not Applicable.

10. SPECIAL POPULATIONS

Not known.

11. CLINICAL PHARMACOLOGY

Vitamin A (Palmitate)

Vitamin A is an essential human nutrient. It exists not as a single compound, but in several forms. In foods of animal origin, the major form of vitamin A is an alcohol (retinol), but can also exist as an aldehyde (retinal), or as an acid (retinoic acid). Precursors to the vitamin (a provitamin) are present in foods of plant origin as some of the members of the carotenoid family of compounds. Retinol, the animal form of Vitamin A, is a yellow, fat-soluble, vitamin with importance in vision and bone growth.

Vitamin B₁ (Thiamine)

Thiamine or thiamin, also known as vitamin B₁ and aneurine hydrochloride, is one of the B vitamins. It is a colorless compound with chemical formula C₁₂H₁₇N₄OS. It is soluble in water and insoluble in alcohol. Thiamine decomposes if heated. Its chemical structure contains a pyrimidine ring and a thiazole ring. Thiamine plays an important role in helping the body metabolize carbohydrates and fat to produce energy. It is essential for normal growth and development and helps to maintain proper functioning of the heart and the nervous and digestive systems. Thiamine is water-soluble and cannot be stored in the body; however, once absorbed, the vitamin is concentrated in muscle tissue.

Vitamin B₂ (Riboflavin)

Riboflavin, also known as vitamin B₂, is an easily absorbed micronutrient with a key role in maintaining health in animals. It is the central component of the cofactors FAD and FMN and is therefore required by all flavoproteins. As such, vitamin B₂ is required for a wide variety of cellular processes. Like the other B vitamins, it plays a key role in energy metabolism, and is required for the metabolism of fats, carbohydrates, and proteins. Large quantities of riboflavin are often included in multi-vitamins; often, the dose is far more than a normal human can use in a day. The excess is excreted in the urine, causing the urine to be colored bright yellow within a few hours of ingestion of the vitamin.

Vitamin B₃ (Nicotinamide)

Nicotinamide, also known as niacinamide, is the amide of niacin (vitamin B₃) which has the chemical formula C₆H₆N₂O. Niacinamide is a derivative of vitamin B₃ can be used for the treatment of arthritis by aiding the body in its production of cartilage. This product is often used for energy drinks. Nicotinamide is a water-soluble component of the vitamin B complex group. In vivo, Nicotinamide is incorporated into nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP). NAD and NADP function as coenzymes in a wide variety of enzymatic oxidation-reduction reactions

essential for tissue respiration, lipid metabolism, and glycogenolysis. Nicotinamide has demonstrated anti-inflammatory actions which may be of benefit in patients with inflammatory acne vulgaris, including but not limited to, suppression of antigen induced-lymphocytic transformation and inhibition of 3'-5' cyclic AMP phosphodiesterase. Nicotinamide has demonstrated the ability to block the inflammatory actions of iodides known to precipitate or exacerbate inflammatory acne.

Vitamin B₅ (Calcium-D-Pantothenate)

Pantothenic acid is also known as vitamin B₅. It is a component of coenzyme A (CoA), an essential coenzyme in a variety of reactions that sustain life. CoA is required for chemical reactions that generate energy from food (fat, carbohydrates, and proteins). The synthesis of essential fats, cholesterol, and steroid hormones requires CoA, as does the synthesis of the neurotransmitter, acetylcholine, and the hormone, melatonin. Heme, a component of hemoglobin, requires a CoA-containing compound for its synthesis. Metabolism of a number of drugs and toxins by the liver requires CoA. Administration of Pantothenic acid orally and application of Pantothenol ointment to the skin have been shown to accelerate the closure of skin wounds and increase the strength of scar tissue in animals. Adding calcium-D-Pantothenate to cultured human skin cells given an artificial wound increased the number of migrating skin cells and their speed of migration, effects likely to accelerate wound healing.

Vitamin B₆ (Pyridoxine Hydrochloride)

Vitamin B₆ is a water-soluble vitamin. Pyridoxal phosphate (PLP) is the active form and is a cofactor in many reactions of amino acid metabolism, including transamination, deamination, and decarboxylation. PLP also is necessary for the enzymatic reaction governing the release of glucose from glycogen.

Vitamin C (Ascorbic Acid)

Vitamin C or L-ascorbate is an essential nutrient for higher primates, and a small number of other species. The presence of ascorbate is required for a range of essential metabolic reactions in all animals and in plants and is made internally by almost all organisms, humans being one notable exception. It is widely known as the vitamin whose deficiency causes scurvy in humans. It is also widely used as a food additive. The pharmacophore of vitamin C is the ascorbate ion. In living organisms, ascorbate is an antioxidant, as it protects the body against oxidative stress, and is a cofactor in several vital enzymatic reactions. In humans, vitamin C is a highly effective antioxidant, acting to lessen oxidative stress, a substrate for ascorbate peroxidase, as well as an enzyme cofactor for the biosynthesis of many important biochemicals. Vitamin C acts as an electron donor for eight different enzymes.

Vitamin E (dl- Alpha Tocopheryl Acetate)

Vitamin E is the name for all tocol and tocotrienol derivatives qualitatively showing the biological activity of RR-alpha-tocopherol. Tocopherol describes all mono-, di- and trimethyl tocols. Alpha-Tocopherols and their esters, among them tocopheryl acetate, are used in therapy. Inadequate supply in humans may, for example, occur in the following diseases: after gastrectomy, sprue, enterocolitis, chronic pancreatitis, cystic fibrosis, cholestasis, short-bowel syndrome, A-beta-lipoproteinaemia, and after long periods of parenteral nutrition. Vitamin E deficiency becomes manifest particularly in premature infants in the form of radical-induced cell and tissue damage, such as in respiratory distress syndrome, retrolental fibroplasia and haemolytic anaemia. Manifest vitamin E deficiency is

characterised primarily by neuromuscular deficiencies, especially spino-cerebellar degeneration.

12. OVERDOSAGE

No cases of hypervitaminosis have been reported even after several years of high-dose intake.

12.1 Toxicology

Vitamin B1

The toxic intravenous dose varies from 125 mg/kg for the rat to 350 mg/kg for the dog; the toxic oral dose is about 40 times higher. Clinically there have been occasional reports of toxic reactions following parenteral administration, probably due to hypersensitivity.

Vitamin B2

Virtually non-toxic. Oral administration of 10 g/kg to rats and 2 g/kg in dogs showed no toxic effects.

Niacinamide

Nothing specific reported for niacinamide.

Vitamin B6

Large doses in the range of 3 to 4 g/kg produce convulsions and death in animals; lower doses may be administered without obvious effects.

Vitamin C

Essentially non-toxic unless exceptionally high doses (4 to 12 g) are ingested by man, when such doses are taken daily to acidify the urine, as in the management of some chronic urinary tract infections, precipitation of urate and cystine stones in the urinary tract can occur.

Vitamin E

Usually well tolerated, however, large doses have occasionally caused gastrointestinal disturbances, fatigue, and weakness.

13. HOW SUPPLIED

13.1 Presentation

Multibionta[®] Injection for Infusion: Each pack contains 5 x 10 ml ampoules

13.2 Special Precautions for storage

- Store below 30 °C.
- Protect from light and heat.
- Keep all the medications out of the reach of Children.

13.3 Shelf-life

18 Months

13.4 Manufactured by:

MARTIN DOW MARKER LTD
7, Jail Road, Quetta,
Pakistan

