1. Name of medicinal product

Emvite Multivitamin syrup

2. Qualitative and quantitative composition

Each 5 ml contains:

- Vitamin A 1mg
- Thiamine HCL BP (Vitamin B1) 1.5 mg
- Riboflavin (Vitamin B2) 1.5mg
- Vitamin B12 BP 2.5mg
- Nicotinamide BP 10 mg
- Ascorbic Acid (Vitamin C) 40.0 mg
- Vitamin D 0.005mg

For the full list of excipients, see section 6.1

3. Pharmaceutical form

Liquid Syrup

4. Clinical particulars

4.1 Therapeutic Indications

Emvite Multivitamin Syrup is indicated for the prevention of vitamin deficiencies and for the maintenance of normal growth and health during the early years of infancy and childhood; multivitamin supplement.

4.2 Posology and Method of administration

Method of administration:

Oral

Posology

Adults:

One tablespoonful (15 mL) to be taken twice daily or as directed by the physician.

Children:

One teaspoonful (5 mL) to be taken 2-3 times daily or as directed by the physician.

Not recommended for children below 1 year.

4.3 Contraindications

Hypersensitivity to any of the ingredients. Pantothenol is contra-indicated in hemophiliacs and in patients with ileus due to mechanical obstruction.

Emvite Multivitamin Syrup is contra-indicated in those with the rare inborn errors of metabolism like Maple Syrup Urine Disease.

4.4 Special warnings and precautions for use

When prescribing Emvite Multivitamin Syrup, as with all multi-vitamin preparations, allowance should be made for vitamins obtained from other sources.

While children are taking Multivitamin Syrup no other vitamin supplement containing vitamins A and D should be taken unless under medical supervision.

This multivitamin supplement should not be given to babies who are receiving more than 500mls of formula milk per day to avoid exceeding the safe upper limit of Vitamin A.

Excessive dosage of vitamin A and D may lead to hypervitaminoses. Due allowance should always be made for intake of these vitamins from other sources.

Patients with rare hereditary problems of fructose intolerance, glucose-galactose malabsorption or sucrase-isomaltase insufficiency should not take this medicine.

4.5 Interaction with other medicinal products and other forms of interact.

None

4.6 Fertility, Pregnancy and Lactation

Not Indicated

4.7 Effects on ability to drive and use machines

None known

4.8 Undesirable effects

Vitamin A: Absorption of vitamin A from the gastro-intestinal tract may be reduced by the presence of neomycin, cholestyramine, or liquid paraffin; absorption may also be impaired in cholestatic jaundice and fat-malabsorption conditions.

Vitamin B6: Reduces the effects of levodopa.

Vitamin C: Large doses may cause diarrhea and other gastro-intestinal disturbances and are associated with the formation of renal calcium oxalate calculi. Vitamin C should be given with care to patients with hyperoxaluria. Tolerance may be induced with prolonged use of large doses.

Vitamin D: Should not be administered to patients with hypercalcemia, and be given with caution to infants, as they may have increased sensitivity to its effects. The effects of Vitamin D may be reduced in patients taking barbiturates or anticonvulsants.

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via EFDA yellow Card Scheme, online at https://primaryreporting.who-umc.org/ET or toll-free call 8482 to Ethiopian food and drug authority (EFDA).

4.9 Overdose

Symptoms and signs

Emvite Multivitamin Syrup contains levels of vitamins which present little risk in overdose.

Vitamin A palmitate

Acute administration of high doses of vitamin A can cause headache, nausea, vomiting and irritability. In infants acute toxicity can lead to transient hydrocephalus. All these effects disappear within 24 hours of taking retinol.

Ergocalciferol (Vitamin D2)

Excessive doses of vitamin D, 60 000 units per day, can result in hypercalcaemia and hypercalciuria. Adverse effects of hypercalcaemia may include muscle weakness, apathy, headache, anorexia, nausea and vomiting, hypertension and cardiac arrhythmias.

Thiamine hydrochloride (Vitamin B1)

When taken orally, thiamine is non-toxic. If large doses are ingested, they are not stored by the body but excreted unchanged by the kidneys.

Riboflavin (Vitamin B2)

Riboflavin has been found to be practically non-toxic.

Pyridoxine hydrochloride (Vitamin B6)

Acute doses less than 500mg per day appear to be safe. Excessive doses may lower serum folate concentrations. Sensory neuropathy has been described with chronic dosing of 200 mg daily.

Nicotinamide

A single large overdose of nicotinamide is unlikely to have serious ill effects, though transient abnormalities of liver function might occur.

Ascorbic acid (Vitamin C)

Ascorbic acid is not stored to a great extent by the body, any excess amounts are eliminated in the urine. Ascorbic acid is thought to become toxic at chronic doses in excess of 6 g.

Treatment

Treatment should be supportive and symptomatic

5. Pharmacological properties

5.1 Pharmacodynamic Properties

Vitamin A palmitate

Vitamin A plays an essential role in the function of the retina, the growth and function of epithelial tissue, bone growth, reproduction and embryonic development.

Ergocalciferol (Vitamin D2)

Vitamin D is a regulator of both calcium and phosphate homeostasis.

Thiamine hydrochloride (Vitamin B1)

Vitamin B1 is essential for proper carbohydrate metabolism and plays an essential role in the decarboxylation of alpha keto acids.

Riboflavin (Vitamin B2)

Riboflavin is essential for the utilization of energy from food. It is a component of co-enzymes which play an essential role in oxidative/ reductive metabolic reactions. Riboflavin is also necessary for the functioning of pyridoxine and nicotinic acid.

Pyridoxine hydrochloride (Vitamin B6)

Vitamin B6 is a constituent of the co-enzymes, pyridoxal pyrophosphate and pyridoxamine phosphate, both of which play an important role in protein metabolism.

Nicotinamide

Nicotinamide is an essential component of co-enzymes responsible for proper tissue respiration.

Ascorbic acid (Vitamin C)

Ascorbic acid is a water-soluble vitamin and a powerful antioxidant. It is a cofactor in numerous biological processes, such as the metabolism of folic acid, amino acid oxidation and the absorption and transport of iron. It is also required for the formation, maintenance and repair of intercellular cement material. Ascorbic acid is important in the defense against infection, the normal functioning of T-lymphocytes and for the effective phagocytic activity of leucocytes. It also protects cells against oxidation damage to essential molecules.

5.2 Pharmacokinetic properties

Absorption

Vitamins A, B1, B2, B6, C, D2 and nicotinamide are well absorbed from the gastro-intestinal tract.

Distribution

The vitamins present in Emvite Multivitamin Drops are widely distributed to all tissues in the body.

Metabolism and elimination

Vitamin A palmitate

Vitamin A palmitate is hydrolyzed in the intestinal lumen to retinol which is then absorbed. Retinol circulates in the blood bound to retinol binding protein which protects it from glomerular filtration. The complex circulates to target tissues where the vitamin is released, permeates the cell and binds intracellularly to cellular retinol binding protein. Of the absorbed retinol 20 - 50 % is either conjugated or oxidized to various products and excreted over a matter of days in the urine and faeces, while the remainder is stored. This stored retinol is gradually metabolized by the liver and peripheral tissues.

Ergocalciferol (Vitamin D2)

Vitamin D circulates in the blood associated with vitamin D binding protein. It is stored in fat deposits. Ergocalciferol is hydroxylated in the liver and gut to 25-hydroxy cholecalciferol which is then further metabolized in the kidney to the active form 1,25-dihydroxycolecalciferol and other hydroxylated metabolites. Ergocalciferol and its metabolites are excreted largely in bile with eventual elimination in the faeces, with only small amounts of some of the metabolites appearing in the urine.

Thiamine hydrochloride (Vitamin B1)

Thiamine has a plasma half-life of 24 hours and is not stored to any great extent in the body. Excess ingested thiamine is excreted in the urine as either the free vitamin or as the metabolite, pyrimidine.

Riboflavin (Vitamin B2)

Following absorption riboflavin is converted into the co-enzymes: flavin mononucleotide (FMN) and flavin adenine dinucleotide (FAD). Riboflavin is not stored in body tissues to any great extent and amounts in excess of the body's requirements are excreted in the urine largely unchanged.

Pyridoxine hydrochloride (Vitamin B6)

The half-life of pyridoxine ranges from 15 - 20 days. Once absorbed vitamin B6 is converted to its active co-enzyme form pyridoxal 5-phosphate. Muscle is the major storage site for pyridoxal 5-phosphate. It is degraded in the liver to 4-pyridoxic acid which is eliminated by the kidneys.

Nicotinamide

Nicotinamide is readily taken up into tissues and utilized for the synthesis of the co-enzyme forms nicotinamide adenine dinucleotide (NAD) and nicotinamide adenine dinucleotide phosphate (NADP). Nicotinamide is degraded in the liver and other organs to a number of products that are excreted in the urine, the major metabolites being n-methyl-2-pyridone-5-carboxamide and n-methylnicotinamide.

Ascorbic acid (Vitamin C)

Ascorbic acid reaches a maximum plasma concentration 4 hours following oral administration after which there is rapid urinary excretion. Following oral administration 60 % of the dose is excreted in 24 hours either as ascorbic acid or its metabolite dihydroascorbic acid.

Pharmacokinetics in Renal Impairment

There have been no specific studies of Emvite Multivitamin Drops in renal impairment.

Pharmacokinetics in the Elderly

Not appropriate.

5.3 Preclinical safety data

Mutagenicity

There is insufficient information to determine the mutagenic potential of the active ingredients. However very large doses of vitamin C are claimed to be mutagenic.

Carcinogenicity

There is insufficient information to determine the carcinogenic potential of the active ingredients.

Teratogenicity

High doses of vitamin D are known to be teratogenic in experimental animals, but direct evidence for this is lacking in humans. The teratogenicity of vitamin A in animals is well known, both high and low levels of the vitamin result in defects. But the significance of this for humans is in dispute. Synthetic versions of vitamin A (Isotretinoin and Etretinate) have been shown to be powerful teratogens. There is insufficient information to determine the teratogenic potential of the other active ingredients.

Fertility

Not appropriate

6. Pharmaceutical particulars

6.1 List of excipients

- Liquid Sorbitol (Non crystallizing) BP
- Sucrose BP
- Liquid Glucose BP
- Disodium Edetate BP,
- Sodium Methyl Hydroxybenzoate BP
- Sodium Propyl Hydroxybenzoate BP
- Butylated hydroxytoluene BP
- Polysorbate 80 BP
- Thiourea
- Flavor Pineapple (Liquid)
- Color Ponceau 4R Supra
- Color carmosine Supra
- Saccharin Sodium BP
- Propylene Glycol BP
- Purified Water BP.

6.2 Incompatibilities

None reported

6.3 Shelf life

24 Months

6.4 Special precautions for storage

Store at a temperature not exceeding 25°C in a dry place. Protect from light.

6.5 Nature and contents of container

100ml Amber colored PET bottle with ROPP Cap.

6.6 Special precautions for disposal and other handling

None reported

7. Marketing authorization holder

Emzor Pharmaceutical Industries Limited

10, Kolawole Shonibare street, Ajao Estate, Lagos, Nigeria.

8. Marketing authorization number(s)

N/A

9. Date of first authorization/renewal of authorization

N/A

10. Date of revision of text

4/12/2024