Summary of Product Characteristics

For

Bradvite M drop

1. NAME OF THE MEDICINAL PRODUCT

Bradvite M drop

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each 0.6ml contains

Vitamin A	1000 I.U.
Vitamin B_1	1500mcg
Vitamin B_2	1500mcg
Vitamin B_{12}	2500mcg
Vitamin C	40mg

Vitamin D	200 I.U.
Nicotinamide	2.5mg

3 PHARMACEUTICAL FORM

A blackish yellow oral liquid syrup.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Bradvite M is indicated for the prevention of vitamin deficiencies and for the maintenance of normal growth and health; multivitamin supplement in neonates.

4.2 Posology and method of administration

0 – 6 months	0.3ml daily
6months – 2years	0.6ml daily

Hepatic/renal dysfunction

Normal dosage is appropriate

Caution should be exercised when administering BRADVITE to patients with renal/ hepatic disorders

4.3 Contraindications

Bradvite syrup is contraindicated in individuals with known hypersensitivity to the product or any of its components.

4.4 Special Warnings and Precautions for Use

Vision disorders

Cyanocobalamin (vitamin B12) should not be used for Leber's disease or tobacco amblyopia since these optic neuropathies may degenerate further.

Investigations

Large doses of riboflavin (vitamin B2) result in a bright yellow discoloration of the urine that may interfere with certain laboratory tests.

Ascorbic acid, a strong reducing agent, interferes with laboratory tests involving oxidation and reduction reactions. Falsely-elevated or false-negative test results may be obtained from plasma, faeces, or urine samples depending on such factors as the dose of ascorbic acid and specific method used.

Long-term treatment

Long-term use of large doses of pyridoxine (vitamin B6) is associated with the development of severe peripheral neuropathies; the dose at which these occur is not established.

Tolerance

Tolerance may be induced with prolonged use of large doses of vitamin C, resulting in symptoms of deficiency when intake is reduced to normal.

Others

High dose of nicotinamide should be used with caution in patients with peptic ulcer disease, gastritis, liver disease, gall bladder disease, diabetes and gout.

Penicillamine and antituberculous drugs (such as isoniazid) may increase the requirements for folic acid and pyridoxine (vitamin B6).

4.5 Drug Interactions

Antibiotics

Neomycin used orally may reduce the absorption of vitamin B1

Omeprazole

Omeprazole has been reported to impair the bioavailability of vitamin B12 and dietary vitamin C

Vitamin C

As *BRADVITE* contains vitamin C, it may increase the absorption of iron in iron deficiency states

Other

Absorption of vitamin B12 from the gastrointestinal tract may be reduced by aminosalicylic acid, histamine H2-antagonists, and colchicine. Aluminium, and magnesium salts may decrease the absorption of fluoride.

4.6 Pregnancy and lactation

Fertility

There are no relevant data available.

Pregnancy

BRADVITE should be administered to pregnant women only after consultation with a physician.

Lactation

BRADVITE should be administered to breast-feeding mothers only after consultation with a physician.

4.7 Effects on Ability to Drive and Use Machines

There are no clinical data proving that *BRADVITE* may have an influence on the ability to drive or use machines.

4.8 Undesirable Effects

Multivitamins are generally well tolerated when used within the recommended dose. The following adverse events have been reported with use of ingredients of *BRADVITE*. The frequency of these events cannot be estimated from the available data.

Immune system disorders

Not Known: Hypersensitivity reactions and anaphylactic reaction

Gastrointestinal disorders

Not Known: Abdominal pain, nausea, vomiting, diarrhoea, constipation, gastrointestinal disturbances, black faeces.

Psychiatric disorders

Not Known: Sleep disturbances.

Nervous system disorders

Not Known: Headache, dizziness

Skin and subcutaneous tissue disorders

Not Known: Rash, dermatitis acneiform and dermatitis bullous

Metabolic disorders

Very Rare: Diabetogenic effects

4.9 Overdose

BRADVITE 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 D_2)

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 B_1)

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 B_2)

Riboflavin has been found to be practically non-toxic.

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

The treatment consists of its withdrawal and symptomatic treatment, if necessary. Further management should be as clinically indicated

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 D_2)
Vitamin D is a regulator of both calcium and phosphate homeostasis.

Thiamine hydrochloride (Vitamin B_1)
Vitamin B_1 is essential for proper carbohydrate metabolism and plays an essential role in the decarboxylation of alpha keto acids.

Riboflavin (Vitamin B_2)
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.

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, C, D_3 and nicotinamide are well absorbed from the gastro-intestinal tract.

Distribution

The vitamins present in Bradvite syrup are widely distributed to all tissues in the body.

Metabolism and elimination

Vitamin A palmitate

Vitamin A palmitate is hydrolysed 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 oxidised 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 metabolised by the liver and peripheral tissues.

Cholecalciferol (Vitamin D_2)

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 colecalciferol which is then further metabolised 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 B_1)

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 B_2)

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.

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.

5.3 Pharmacokinetic Properties

There are no relevant data available.

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.

5.4 Clinical Studies
There are no relevant data available.

6. NONCLINICAL PROPERTIES
There are no relevant data available.

6. Pharmaceutical particulars

6.1 List of excipients
Methyl hydroxyl benzoate

Glycerol

Sorbitol

Liquid glucose

Polysorbate 60

Purified water

6.2 Incompatibilities
None known.

6.3 Shelf life
24 months after manufacture.

6.4 Special precautions for storage
Store in temperature not more than 30ºC.
Replace cap after use and store away from light and keep bottle in the outer carton.

6.5 Nature and contents of container
Pack Size: 60 ml in amber colour PET bottle with ROPP aluminium cap.
Packing Pattern: The product in mono carton is packed in outer carton as 60units/carton.

6.6 Special precautions for disposal and other handling
None applicable

7. Marketing Authorization Holder

Biomedical Limited

1, Ohimege road, Industrial estate Ilorin, Kwara state.

8. Date of first authorization/renewal of the authorization –

Awaiting Approval

9. Date of revision of the text

Upon any modification in master formula