SmPC (Summary of Product Characteristics)

1. Name of the medicinal Product

Vitakris Tablets (Vitamins and Minerals Tablets)

2. Qualitative and Quantitative Composition

Each sugar coated tablet contains:

Vitamin A Acetate BP 200IU

Vitamin D3 BP 200 IU

Vitamin B1 (as Thiamine Mononitrate) BP 1.0 mg

Vitamin B2 (as Riboflavin) BP 1.0 mg

Vitamin B6 BP 0.5 mg

Vitamin B12 BP 1.0 mg

Niacinamide BP 1.0 mg

Calcium Pantothenate BP 1.0 mg

Magnesium

Phosphorous

Sodium

Quantitative declaration

Excipients with known effect:
Ethyl cellulose, Iso-propyl alcohol, Micro crystalline cellulose, Sodium Starch Glycolate, Maize starch, Methyl paraben sodium, Prolpy paraben sodium, Povidone -30, Magnesium Stearate, Purified Talc, Butylated Hydroxy Anisole, Butylated Hydroxy Toluene, Sodium Benzoate, Di sodium EDTA, Calcium Carbonate, Sucrose, Gelatin, Carbon tetrachloride, Colour Ponceau 4R supra, beeswax, carnubawax, Povidone K-90, Dibasic Calcium Phosphate & Colloidal anhydrous silica (Aerosil).
For a full list of excipients, see section 6.1

3. Pharmaceutical Form

Oral Tablet
A Red coloured, concave round sugar coated tablets

4. Clinical Particulars

4.1 Therapeutic Indications

As a therapeutic nutritional adjunct where the intake of vitamins and minerals is suboptimal, e.g. in the presence of organic disease such as malignancy and immune deficiency syndromes, such as AIDS.

As a therapeutic nutritional adjunct in conditions where the absorption of vitamins and minerals is suboptimal, e.g. malabsorption, inflammatory bowel disease and fistulae, short bowel syndrome and Crohn's disease, and where concurrent medication decreases vitamin and mineral absorption.

As a therapeutic nutritional adjunct in convalescence from illness, e.g. where anorexia or cachexia exists and following chemo- or radio-therapy.

As a therapeutic nutritional adjunct in convalescence from surgery, e.g. where nutritional intake continues to be inadequate.

As a therapeutic nutritional adjunct for patients on special or restricted diets, e.g. in renal diets and where several food groups are restricted in therapeutic weight reducing diets.

As a therapeutic nutritional adjunct where food intolerance exists, e.g. exclusion diets.

As an adjunct in synthetic diets, e.g. in phenylketonuria, galactosaemia and ketogenic diets.

4.2 Posology and Method of Administration

Posology

Adults and the Elderly

One capsule daily, preferably taken one hour after meals. Do not exceed the stated dose. The tablet should be swallowed whole with water.

Children under 12 years of age

Vitakris tablets are not recommended for this age group.

4.3 Contraindications

Hypercalcaemia, haemochromatosis and other iron storage disorders.

Hypersensitivity to the active substance(s) or to any of the excipients.

4.4 Special Warnings and Special Precautions for Use

Whilst taking Vitakris tablets both protein and energy are also required to provide complete nutrition in the daily diet. No other vitamins, minerals or supplements with or without vitamin A should be taken with this preparation except under medical supervision.

Do not take Vitakris tablets on an empty stomach. Do not exceed the stated dose. Keep out of the reach of children. If symptoms persist, consult your doctor.
Important warning: Contains iron. Keep out of the reach and sight of children, as overdose may be fatal.

This medicine E124 (ponceau 4R red) which may cause allergic reactions.

Evidence from Randomised Control Trials suggests that high doses (20-30 mg/day) b-carotene intake may increase the risk of lung cancer in current smokers and those previously exposed to asbestos. This high-risk population should consider the potential risks and benefits of Vitakris tablets, which contain 4.5mg per recommended daily dose, before use.

Patients with thyroid disorders should seek medical advice before taking Vitakris tablets. An allowance should be made for vitamins or minerals obtained from other sources.

4.5 Interaction with other medicinal products and other forms of interaction

No information available.

4.6 Fertility, Pregnancy and Lactation

Vitakris tablets may be administered during pregnancy and lactation at the recommendation of the physician.

4.7 Effects on ability To Drive and use Machines

None anticipated

4.8 Undesirable Effects

Assessment of undesirable effects is based on the following frequency groupings:

Very common: ≥ 1/10

Common: ≥ 1/100 to <1/10

Uncommon: ≥ 1/1,000 to <1/100

Rare: ≥ 1/10,000 to <1/1,000

Very rare: <1/10,000

Not known: cannot be estimated from the available data

Immune system disorders	*Not known:* Hypersensitivity reaction (such as rash)
Gastrointestinal disorders	*Not known:* Gastrointestinal disturbances (such as nausea, vomiting and abdominal pain)

4.9 Overdose

No cases of overdosage due to Vitakris tablets therapy have been reported. Any symptoms which may be observed due to the ingestion of large quantities of Vitakris tablets will be due to the fat soluble vitamin content. If iron overdosage is suspected, symptoms may include nausea, vomiting, diarrhoea, abdominal pain, haematemesis, rectal bleeding, lethargy and circulatory collapse. Hyperglycaemia and metabolic acidosis may also occur. Treatment should be implemented immediately. In severe cases, after a latent phase, relapse may occur after 24 - 48 hours, manifest by hypotension coma and hepatocellular necrosis and renal failure.

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. Severe poisoning: in the presence of shock and/or coma with high serum iron levels (>142 µ mol/l) immediate supportive measures plus i.v. infusion of desferrioxamine should be instituted. The recommended dose of desferrioxamine is 5 mg/kg/h by slow i.v. infusion up to a maximum of 80 mg/kg/24 hours. Warning: hypotension may occur if the infusion rate is too rapid.

5. Less severe poisoning: i.m. desferrioxamine 50 mg/kg up to a maximum dose of 4 g should be given.

6. Serum iron levels should be monitored throughout.

5. Pharmacological Properties

5.1 Pharmacodynamics Properties

The following account summarises the pharmacological effects of the vitamins and minerals in Vitakris tablets and describes the conditions caused by deficiency of these.

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 B_1 (Thiamine)

Thiamine (as the coenzyme, thiamine pyrophosphate) is associated with carbohydrate metabolism. Thiamine pyrophosphate also acts as a co-enzyme in the direct 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 beri-beri.

Vitamin B_2 (Riboflavine)

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

Vitamin B_6 (Pyridoxine)

Pyridoxine, once absorbed, is rapidly converted to the co-enzymes pyridoxal phosphate and pyridoxamine phosphate which play an essential role in protein metabolism. Convulsions and hypochromic anaemia have occurred in infants deficient in pyridoxine.

Vitamin B_{12} (Cyanocobalamin)

Vitamin B_{12} 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 B_{12} 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.

Calcium (Calcium Pantothenate)

Calcium D-pantothenate (Vitamin B5 calcium salt, known as pantothenic acid, (CDP)) is a member of the vitamin B category and it is commonly distributed in animals and plants. This drug has the function of creating antibodies and it plays an imperative character in the fight against pressure to maintain blood health, hair, and skin. In addition, the scientific reports represented that CDP contributes to enhance neuritis and deficiency and it is broadly applied in nutrient supplements, animal feed, pharmaceutical sciences, and other fields.
The complex nature and the types of molecular interactions that occur in mixtures can be studied via physicochemical and thermodynamic investigations. Thermodynamic properties are very useful for the understanding of the ionic, hydrophilic and hydrophobic interactions in different solutions media as they provide information elucidating the solute–solute and solute–solvent interactions in the solution phase. The volume and compressibility are two fundamental thermophysical properties that allow the deep consideration of interactions between the solute and solvent molecules in the mixtures. The contributions of structurally similar vital amino acids that affect the interactions of the CDP and the around environments concerning temperature are limited. Consequently, in this research, the values of densities (*d*) and speeds of sound (*u*) of the aqueous solutions of CDP and in the presence amino acids (glycine, L-alanine and L-leucine) with molalities of 0.04, 0.07 and 0.10 at T = (293.15 to 308.15) K in an interval of 5 K are measured. The obtained data has been applied for the calculation of numerous thermodynamic parameters. The derived parameters including the apparent molar volume, V_ϕ, standard partial molar volume, V_ϕ^0, apparent molar isentropic compression, K_ϕ, and partial isentropic compression, K_ϕ^0 values. These findings can be helpful to predict the performance and behavior of solvents through the drug manufacturing processes. The study of acoustic and volumetric properties of aqueous solutions of amino acids and CDP provides us an important information about the intermolecular interactions existing in these mixtures.

Phosphorus (Calcium Hydrogen Phosphate)

Phosphate plays important roles in the osteoblastic and osteoclastic reactions. It interacts with calcium to modify the balance between these two processes. Organic phosphate esters play a key role in the metabolism of carbohydrates, fats and proteins and in the formation of 'high energy phosphate' compounds. Phosphate also acts as a buffer and plays a role in the renal excretion of sodium and hydrogen ions.

Magnesium (Magnesium Oxide)

Magnesium is essential to the body as a constituent of skeletal structures and in maintaining cell integrity and fluid balance. It is utilised in many of the functions in which calcium is concerned but often exerts the opposite effect. Some enzymes require the magnesium ion as a co-factor.

5.2 Pharmacokinetic Properties

The following account describes the absorption and fate of each of the active constituents of Vitakris tablets.

Vitamin A

Except when liver function is impaired, Vitamin A is readily absorbed. β -carotene (as in Krishat Multivitamins & Minerals with Ginseng soft gelatin Capsules) 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 B_1 (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 B_2 (Riboflavine)

Riboflavine 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 riboflavine is converted to flavine mononucleotide (FMN) and then to flavine adenine dinucleotide (FAD).

Vitamin B_6 (Pyridoxine)

Pyridoxine is absorbed from the gastro-intestinal tract and converted to the active pyridoxal phosphate which is bound to plasma proteins. It is excreted in the urine as 4-pyridoxic acid.

Vitamin B_{12} (Cyanocobalamin)

Cyanocobalamin is absorbed from the gastro-intestinal tract and is extensively bound to specific plasma proteins. A study with labelled Vitamin B_{12} 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.

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 (Calcium Pantothenate)

The pharmacokinetics (PK) of orally administered calcium pantothenate isn’t well characterized. This singlecenter, open-marker study of 40 grown-ups delved single and multidose PK of orally administered calcium pantothenate. Tolerability of high boluses and impact of food were also estimated. This study included Single Ascending Cure (SAD) and Multiple Cure (MD) ages. For the SAD, four successional cohorts of 8 subjects entered single boluses of calcium pantothenate after an late fast. Boluses were 500 mg, 1000 mg, 2000 mg and 5000 mg; with the 5000 mg cure repeated following a 2- week flop and after a highfat mess. In the MD period, 8 subjects entered 2000 mg daily for 14 days.

Phosphorus (Calcium Hydrogen Phosphate)

The body contains from 600 - 800 g of phosphorus, over 80% of which is present in the bone as phosphate salts, mainly hydroxyapatite crystals. The phosphate in these crystals is available for exchange with phosphate ions in the extra-cellular fluids.

Magnesium Sulphate (Magnesium)

Magnesium salts are poorly absorbed from the gastro-intestinal tract; however, sufficient magnesium will normally be absorbed to replace deficiency states. Magnesium is excreted in both the urine and the faeces but excretion is reduced in deficiency states.

Manganese Sulfate (Manganese)

Manganese salts are poorly absorbed.

5.3 Preclinical Safety Data

No other relevant preclinical data is available.

6. Pharmaceutical Particulars

6.1 List of Excipients

Excipients with known effect:
Ethyl cellulose, Iso-propyl alcohol, Micro crystalline cellulose, Sodium Starch Glycolate, Maize starch, Methyl paraben sodium, Prolpy paraben sodium, Povidone -30, Magnesium Stearate, Purified Talc, Butylated Hydroxy Anisole, Butylated Hydroxy Toluene, Sodium Benzoate, Di sodium EDTA, Calcium Carbonate, Sucrose, Gelatin, Carbon tetrachloride, Colour Ponceau 4R supra, beeswax, carnubawax, Povidone K-90, Dibasic Calcium Phosphate & Colloidal anhydrous silica (Aerosil).

6.2 Incompatibilities

Not applicable.

6.3 Shelf Life

36 months

6.4 Special Precautions for Storage

Store below 30°C. Protect from light & moisture.

6.5 Nature and Contents of Container

The 10 tablets are packed in Alu/PVC blister and inserted in a carton.

Pack sizes: 3x10 tablets.

6.6 Special precaution for disposal and other handling

Any unused product or waste material should be disposed of in accordance with local requirements.

Keep the medicine out of reach of children

7. Manufacturing By

Krishat Pharma Industries Limited
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