

# Algecal<sup>®</sup>

## Effervescent Tablet

### Description

Calcium is used as a pharmacologic agent in humans almost entirely to remedy deficiency. Adequate calcium in the blood is so vital to a wide variety of bodily functions that our internal biochemistry will not tolerate a deficiency even for short periods.

Vitamin C is an essential component of the diet as man can not synthesize Vitamin C. It is a very powerful reducing agent. Vitamin C plays an important part in the response of the body to stress. It is important in the defense against infection.

Vitamin D is a fat-soluble vitamin that helps the body absorb calcium. Fat-soluble vitamins are stored in the body's fatty tissue.

### Mode of action

Calcium: The major mechanism whereby calcium effects bone is probably through inhibition of PTH secretion. Calcium could alter the physical-chemical properties of the bone mineral. Direct effects of calcium on the calcium receptor could also play a role. Vitamin C (Ascorbic acid) plays an important role on maximizing the synthesis of hydroxyproline and deposition of collagen. Vitamin C can also modulates cell differentiation & matrix synthesis, hypertrophic chondrocytes transform into osteoblast like cells, increase sulphate incorporation into GAGs. Vitamin D: The active form of vitamin D binds to intracellular receptors that then function as transcription factors to modulate gene expression. Like the receptors for other steroid hormones and thyroid hormones, the vitamin D receptor has hormone-binding and DNA-binding domains.

### Pharmacokinetics

Plasma protein binding of Calcium is 50%. The absorption of calcium carbonate (Algae source) is about 75%.

Since vitamin D is present in the body naturally, and it is not drug, it is impossible to start with completely deprived individuals to do appropriate studies of pharmacokinetics. Furthermore the component of nutritional interest is 25(OH)D, and this is a metabolite of vitamin D3. Studies using isotopic techniques show that in humans, molecules of 25(OH)D have a plasma half-life of about 10 days. However, a more practical measure of the half-life of 25(OH) D is reflected in the rate at which 25(OH)D concentrations decline upon the sudden elimination of sources of vitamin D (acute deprivation of ultraviolet light).

### Composition

**Algecal<sup>®</sup> C Effervescent Tablet:** Each effervescent tablet contains calcium carbonate USP (Algae source) 327 mg, calcium lactate gluconate 1000 mg, ascorbic acid (vitamin C) USP 500 mg.

**Algecal<sup>®</sup> C Plus Effervescent Tablet:** Each effervescent tablet contains calcium carbonate USP (Algae source) 327 mg, calcium lactate gluconate 1000 mg, ascorbic acid (vitamin C) USP 500 mg, Vitamin D<sub>3</sub> BP 400 IU.

### Indications

As an adjunct to specific therapy for osteoporosis. Increased demand for Calcium, Vitamin C and Vitamin D such as pregnancy, lactation, period of rapid growing (in childhood, adolescence) and in old age. In osteomalacia. The prevention and treatment of Calcium deficiency/Vitamin D deficiency especially in the housebound and hospitalized elderly subjects. As adjuvant in cold and influenza, Postmenopausal syndromes. Premenstrual symptoms, In high body temperatures, As alkalinizing agent in conditions with systemic acidosis.

### Dosage & administration

Dosage of effervescent tablet should be individualized based on the demands in age, sex and various physiological (pregnancy & lactation) & disease conditions. In general the dosage is- Adults, Elderly and School going children: 1 effervescent tablet daily.

Children 3-7 years:  $\frac{1}{2}$  effervescent tablet daily.

Infants: As prescribed by the physicians.

### Contraindications

**Absolute contraindications are hypercalcaemia resulting from myeloma, bone metastases or other malignant bone disease, sarcoidosis; primary hyperparathyroidism and Vitamin D overdosage. It is also contraindicated in severe renal failure and hypersensitivity to any of the tablet ingredients.**

### Side effects

The use of Calcium supplements has, rarely, given rise to mild gastrointestinal disturbances, such as constipation, flatulence, nausea, gastric pain and diarrhoea. Following administration of Vitamin D supplements occasional skin rash has been reported. Hypercalciuria, and in rare cases hypercalcaemia have been seen in long-term treatment with Vitamin D at high doses.

### Precautions

Patients with mild to moderate renal failure or mild hypercalciuria should be supervised carefully. Periodic checks of plasma Calcium levels and urinary Calcium excretion should be made in patients with mild to moderate renal failure or mild hypercalciuria. In patients with a history of renal stones urinary Calcium excretion should be measured to exclude hypercalciuria. With long-term treatment it is advisable to monitor serum and urinary Calcium levels and kidney function, and reduce or stop treatment temporarily if urinary Calcium exceeds 7.5mmol/24 hours. Allowances should be made for Calcium and Vitamin D supplements from other sources.

### Drug interactions

The risk of hypercalcaemia should be considered in patients taking thiazide diuretics since these drugs can reduce urinary calcium excretion. Hypercalcaemia must be avoided in digitalised patients. Certain foods (e.g. those containing oxalic acid, phosphate or phytinic acid) may reduce the absorption of calcium. Concomitant therapy with phenytoin or barbiturates can decrease the effect of Vitamin D because of metabolic activation. The effect of digitalis and other cardiac glycosides may be accentuated with the oral administration of calcium combined with Vitamin D. Calcium salts may reduce the absorption of thyroxine, bisphosphonates, sodium fluoride, quinolone or tetracycline antibiotics or iron. It is advisable to allow a minimum period of 4 hours before taking the calcium.

### Over dosage

The most serious consequence of acute or chronic overdose is hypercalcaemia due to Vitamin D toxicity. Symptoms include nausea, vomiting, polyuria, and constipation. Chronic overdoses can lead to vascular and organ calcification as a result of hypercalcaemia. Treatment should consist of stopping all intakes of calcium and Vitamin D and rehydration.

### Storage

Keep out of reach of children. Store in a dry place, below 30°C temperature and protected from light.

### Packaging

**Algecal<sup>®</sup> C Plus Effervescent Tablet:** Each plastic container contain 14 effervescent tablets.

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