

# VITAMIN D

## OVERVIEW

Vitamin D is a fat-soluble nutrient that is acquired by ingestion or by the action of sunlight on the skin. Vitamin D is unique in that it is considered both a nutrient and a hormone. There are two major forms of vitamin D: Vitamin D<sub>2</sub> or ergocalciferol and vitamin D<sub>3</sub> or cholecalciferol (Hendler, 1991).

## METHOD OF ACTION

Vitamin D is unique in that it functions similar to a hormone and is sometimes referred to as one. It is part of the group of nutrients that are responsible for the formation and maintenance of healthy bones. Vitamin D's specific role is to promote bone mineralization. It is essential in producing enzymes in the mucous membranes, which are involved in the active transport of available calcium. It is crucial for normal growth in children especially for the normal growth of bones and teeth.

In adults, vitamin D is utilized in maintaining a stable nervous system, normal heart action, and normal blood clotting. These functions all relate to calcium and phosphorus levels in the body. Vitamin D regulates serum calcium and phosphorus levels by stimulating their absorption in the gastrointestinal tract, mobilizing calcium and phosphorus out of the bones and into the blood, and stimulating retention by the kidneys. Vitamin A enhances absorption of vitamin D (Kirschmann, 1996).

Dietary vitamin D is absorbed with other fats through the intestinal walls; vitamin D obtained through sunlight is formed in the skin and is taken up by the circulatory system. Vitamin D is then transported to the liver for storage. Other storage sites

are the skin, brain, spleen, and bones. Certain drugs including cholestyramine (used for high cholesterol levels), Dilantin, phenobarbital, and mineral oil all interfere with the absorption and utilization of vitamin D (Kirshmann, 1996; Murray, 1996).

## **PROPERTIES & USES**

The principle use of vitamin D is in the maintenance of bone health.

Vitamin D is known to regulate the absorption and utilization of calcium and phosphorus, and is thus important for the formation and maintenance of healthy bones and teeth.

Vitamin D may also support healthy breast and colon tissue.

Vitamin D regulates calcium blood levels and thus, contributes to the maintenance of a healthy nerve and muscle system. Calcium is essential for normal nerve transmission and muscle contraction (Somer, 1995).

## **HEALTHY AMOUNTS OF VITAMIN D**

Adequate levels of vitamin D in the diet or through nutritional supplementation supports bone health, muscle function, and nerve and joint health.

## **SAFETY ISSUES**

Vitamin D has the potential for toxicity and should not be consumed in dosages over four times the RDA. Symptoms of vitamin D overdose include increased frequency of urination, loss of appetite, nausea, vomiting, diarrhea, constipation, fatigue, muscular weakness, dizziness, calcification of the soft tissues of

the heart, blood vessels, and lungs, and in severe cases, confusion, high blood pressure, kidney failure, and coma (Kirschmann, 1996).

Vitamin D toxicity develops overtime, and there is a wide variation among individuals in their tolerance to overdose. Infants and children are more susceptible to vitamin D overdose. Parents should monitor vitamin D intake in an infant or child. Excess consumption of fortified foods can possible lead to vitamin D toxicity. Pregnant women should also avoid large doses of vitamin D.

Sunlight exposure does not cause vitamin D toxicity because the body has an efficient feedback system and reduces the production of vitamin D with increased sunlight exposure (Somers, 1995)