Get to Know Vitamin D
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(NaturalNews) Vitamin D has received a lot of attention lately. As its health implications become more and more apparent through research, it is becoming evident that a significant proportion of the population has inadequate blood levels of the vitamin. It is estimated that up to 58% of US adolescents and adults are deficient. Chronic vitamin D deficiency and its consequences represent a major public health challenge. This article is intended to increase understanding of vitamin D and promote awareness of its connection to health and well-being, through a series of questions and answers.

What is Vitamin D?

Vitamin D actually refers to a number of distinct, but related compounds. Differentiating between these compounds is necessary in order to fully appreciate this important substance. When exposed to sunlight, the skin synthesizes cholecalciferol, or vitamin D3. Cholecalciferol can also be taken as a supplement. After it is produced in the skin or ingested, it undergoes a two-step modification by the liver and kidneys. The first step yields calcidiol, which serves as an intermediate, storage form. Calcidiol is later activated to become calcitriol, which functions as a steroid hormone in the body.

Why is Vitamin D Important?

Vitamin D has been synthesized by life since the beginning of time. This fact alone suggests that vitamin D is a fundamental component of physiology and health. The vitamin D receptor (VDR) is located inside virtually every cell in the body. It is the target of activated calcitriol. After calcitriol binds to its receptor, the resulting complex functions to regulate DNA expression. This process affects more than 2000 genes. Some genes are activated and others are suppressed by the action of vitamin D. Through such genetic control, vitamin D ultimately directs the activity of hundreds of enzymes and proteins. This is perhaps the strongest evidence for its vital role.

What are the Effects of Vitamin D?

Vitamin D is well known for its role in calcium absorption and bone metabolism. However, this is only one of many important health benefits that vitamin D has to offer. It is also known for its anti-inflammatory effects, anti-cancer activity and its ability to strengthen the immune system. The capacity to regulate DNA itself means that vitamin D influences the very foundations of biochemistry, giving it the power to positively impact all body systems and harness the body's innate healing ability.

What Evidence Exists for the Benefits of Vitamin D?
Vitamin D deficiency has been associated with at least 17 varieties of cancer, along with many other chronic diseases including heart disease, diabetes, depression, rheumatoid arthritis, multiple sclerosis, fibromyalgia and chronic pain. This may appear to be a tremendous claim. However, the relationship between vitamin D and disease is easy to recognize once you understand that it is integrated into our physiology, acting as one of the keys to normal cellular activity.

**Where do I get Vitamin D?**

The body can make its own vitamin D following exposure to UVB radiation from the sun. Adequate exposure typically requires around 15 to 20 minutes of midday sunlight, 2 to 3 times per week. However, this particular ultraviolet light is not available during the winter months at some latitudes, while other latitudes offer a year-round supply. The greater the distance from the equator, the less UVB there is. Another factor to consider when it comes to sun exposure is skin pigmentation. Those with darker skin will require a longer duration of exposure to sunlight, compared to those with lighter skin.

Remember to protect your skin if you are going to be in the sun for prolonged periods of time. Sensible sun exposure must be balanced against the harmful effects of sunburn.

Supplementation can provide an optimal amount of vitamin D for those unable to spend sufficient time in the sun. There are also dietary sources of vitamin D, but it's practically impossible to get enough from food alone. Some examples include fatty fish, egg yolks and fortified milk. To reach even bare minimum levels would require drinking around 20 glasses of milk every single day.

**What is the Difference between Vitamin D2 and Vitamin D3?**

The two forms of vitamin D available as supplements are ergocalciferol (vitamin D2) and cholecalciferol (vitamin D3). Fungi, plants and invertebrate animals make ergocalciferol. Cholecalciferol is produced in the skin of vertebrate animals, including humans. There is only a slight difference in molecular structure between these two compounds. Still, that small difference has a significant impact on biological activity. In humans, vitamin D3 is much more effective, and safer, than vitamin D2. Therefore, if you supplement, be sure that you are taking vitamin D3, or cholecalciferol.

**Am I Taking Enough or Too Much?**

Estimates from current research show that a healthy individual uses around 4,000 IU of vitamin D per day. The dose needed to satisfy daily demand varies depending upon sun exposure factors, age and weight. Generally, older people need more than younger people, and those who are overweight need more than those who are normal weight.

Fortunately, there is a wide gap between the level of supplementation that will guarantee
optimal vitamin D status and the level that could lead to toxicity. Research has shown that vitamin D toxicity may occur following long-term intake of around 40,000 IU daily; whereas, toxicity is unlikely with a daily intake of 10,000 IU or less. While it is true that most individuals do not need a dose of 10,000 IU per day, it's good to know that vitamin D has such a wide margin of safety.

**What is my Vitamin D Status?**

The only way to be certain of vitamin D status is to measure the blood level of 25(OH)D, also known as calcidiol. Experts recommend having at least one test every year. It is also advisable to check a few months after beginning regular supplementation, especially when taking 5,000 IU per day or greater. Additionally, anyone taking extremely high doses for an extended period should be aware of the signs and symptoms of vitamin D toxicity. These may include nausea, vomiting, poor appetite, constipation, weakness, kidney stones, and arrhythmias, along with elevated blood levels of calcium, liver enzymes or cholesterol.

**References:**

Is Vitamin D Deficiency Casting a Cloud Over Your Health?

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