Vitamin D – Why the sunshine vitamin really matters

There is a lot of talk about the benefits of Vitamin D this past year & it's worth listening too. This vitamin/hormone can provide some pretty impressive health benefits. Here is just a summary to help you understand.

Vitamin D is both a vitamin & a hormone because it is synthesized through the skin as well as affecting organs.

There are 2 primary forms of Vitamin D:

- Cholecalciferol D3 is produced from the conversion of 7-dehydrocholesterol in the skin into vitamin D3 due to sunlight. It also found in meats & few other foods
- Ergocalciferol D2 is produced again through sunlight but found only in plants.

Vitamin D has a host of functions in the body, some of them most notable ones are:

- The primary function of Vitamin D3 is to aid in Calcium absorption & maintain normal blood levels of Calcium & Phosphorus.
- Absorbs Calcium from the gut
- Reduces excretion from the kidneys
- Promotes reabsorption of Ca & Phosphorous from bone & assists in getting these minerals to the teeth
- Helps to keep bones strong by blocking the release of Parathyroid Hormone & again helping to maintain normal blood calcium levels
- Aids in immune support
- Reduces the risk of falls in elderly individuals
- Important for brain function & insufficient amounts may play a role in depression & other mental health related illnesses
- It helps to regulate & control muscle function & contractions due to its interactions with Calcium
- Shown to increase insulin sensitivity through the interaction of Vitamin D and VDR (vitamin D receptors) in the beta Islet cells
- Influences brain development & respiratory function

Vitamin D is best obtained from the sun but if you don't get the exposure you need, some foods that can also provide small amounts are:

- 3oz serving of: Salmon (447 IUs), swordfish (556 IUs), tuna (228 IUs), cod liver oil (440 IUs)...also high in Omega-3s beneficial for brain health
- Egg yolks, beef liver & sardines (40-60 IUs)
- Dairy & Yogurts (115-124 IUs per cup)
- Butter
- Mushrooms
- Fortified foods like milk & dairy, soya milks & orange juice.
- Sunlight – 20 minutes a day on exposed skin like arms & face

Signs & symptoms included but are not limited to:

- Softening of the bones (Osteomalacia) & bone abnormality (Rickets namely in youth)
- Weakened immune system
- Frail & weak bones that fracture or break easily (Osteopenia)
- Seasonal Depression or Seasonal Affected Disorder
- Autoimmune diseases as Vitamin D helps with cell replication
- Skin issues like Psoriasis and Eczema
- Dementia
- Impaired ability to heal minor wounds

- Fatigue & tiredness
- Muscle pains (as related to Calcium absorption & the effect of calcium on muscle contraction)

Always check with a professional before self-diagnosing. Insufficient Vitamin D levels have now been linked to diseases such as; cancer, cardiovascular disease, autoimmune diseases & infections as per (Tsiaras, WG. & Weinstock, MA. 2011).

Risk Factors include:

- Geographical location
- Skin pigmentation, due to melatonin acting as a natural sunblock
- Limited access to daylight
- Excessive use of sunscreen or covering up when outside
- Poor diet and obesity all contribute to the risks of Vitamin D3 deficiency.

Therapeutic uses:
Vitamin D has been getting more wide spread in the past decade as links to cancer prevention, most notably Colorectal Cancer (Liu et al. 2010), Osteomalacia among other bone deterioration disorders, improvement in mood for those suffering SAD, & even immunity diseases. Vitamin D has been shown to play a key role in reducing influenza infection risk due to its ability to aid the immune system. High & low levels of Vitamin D in a mother's milk have been linked to the onset of MS (Sandoiu, A. 2017) with higher levels resulting in a lesser chance of onset. Vitamin D is also currently being studied to see how a deficiency can relate to the susceptibility of some cancers as well as immunosuppression, according to a (Brown, AJ. 2001).

Toxicity:
Vitamin D toxicity is rare as your body regulates vitamin D production from sun exposure & most foods do not contain enough to worry about. Vitamin D toxicity would require a person to take more than 10,000 IU's daily for over 3 months & even then the chances of toxicity would be more likely if that amount was nearer to 40,000 IU's. Since vitamin D regulate bloods calcium levels if you have too much vitamin D in your system you will end up with Hypercalcemia, a build-up of calcium in the blood. **Symptoms of Hypercalcemia** include poor appetite, nausea, vomiting, weakness, & in some cases kidney issues are reported (Zeratsky, K. 2015).
Though rare to acquire Vitamin D toxicity it is also reversible by stopping supplementation. In some cases a lowered consumption of calcium will assist in correction of toxicity, as well as intravenous fluids. Corticosteroids may also be required depending on the severity of toxicity.

RDA (recommended daily allowance): Birth to 12 months - 400IU / Age 1-70 - 600 IU / Age 80+ - 800 IU

While the RDAs above are the recommended by most resources, in order to maintain sufficient levels a daily intake of 1,000 to 40,000 IUs or (25 – 100ug) is acceptable for optimal Vitamin D levels.

You should always consult & have your levels checked before supplementing with any vitamins though.

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