

Vitamin C With Serum

Vitamin E deficiency The term 'vitamin E' commonly refers to α -tocopherol, and so α -tocopherol deficiency refers to the same syndrome. may present with spinocerebellar ataxia, polyneuropathy, muscle weakness, and retinopathy. Diagnosis is confirmed through low serum vitamin E levels, and treatment involves dietary supplementation with vitamin E and (if possible) addressing the underlying cause of malabsorption. As a potent antioxidant, vitamin E protects cell membranes from oxidative damage, and its deficiency primarily affects tissues with high fatty acid content, especially the nervous system. Diagnosis is confirmed through low serum vitamin E levels, and Vitamin E deficiency is a rare condition caused by low levels of vitamin E that may result from malabsorption disorders (such as abetalipoproteinemia, cystic fibrosis, or Crohn's disease), or impaired lipid transport. Clinically, patients may present with spinocerebellar ataxia, polyneuropathy, muscle weakness, and retinopathy 816df2fd3a

Vitamin A deficiency is the leading cause of preventable childhood blindness worldwide and is a major cause of childhood mortality. Each year, approximately 250,000 to 500,000 malnourished children in the developing world go blind from a VAD, with about half of whom dying within a year of losing their sight. Addressing VAD has been a critical focus of global health initiatives, including Sustainable Development Goal 2: to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. 816df2fd3a

Vitamin D toxicity Serum vitamin D has been found to correlate with calcified atherosclerotic plaque in African Americans as they have higher active serum vitamin D levels Vitamin D toxicity, or hypervitaminosis D, is the toxic state of an excess of vitamin D. The normal range for blood concentration of 25-hydroxyvitamin D in adults is 20 to 50 nanograms per milliliter (ng/mL). Blood levels necessary to cause adverse effects in adults are thought to be greater than about 150 ng/mL, leading the Endocrine Society to suggest an upper limit for safety of 100 ng/mL. calcification 816df2fd3a

Vitamin E deficiency is typically seen only in the setting of severe and prolonged illnesses causing steatorrhea or other forms of malabsorption. Other patients may have had bariatric surgery or surgical removal of the small intestine. Many of these patients also have deficiencies of other fat-soluble vitamins, and an isolated deficiency of vitamin E is... 816df2fd3a It is also a generic prescription medication and in some countries is sold as a non-prescription dietary supplement. As a therapy, it is used to prevent and treat scurvy, a disease caused by vitamin C deficiency. Vitamin C may be taken by mouth or by intramuscular, subcutaneous or intravenous injection. Various health claims exist on the supposition that moderate vitamin C deficiency increases disease risk, such as for the common... 816df2fd3a Vitamin D can be synthesized in the skin under exposure to UVB from sunlight. Oily fish, such as salmon, herring, and mackerel, are also sources of vitamin D, as are mushrooms. Milk is often fortified with vitamin D; sometimes bread, juices, and other dairy products are fortified with vitamin

D. Many multivitamins contain vitamin D in different amounts. 816df2fd3a Vitamin E is classified as an essential nutrient for humans. Various government organizations recommend that adults consume between 3 and 15 mg per day, while a 2016 worldwide review reported a median dietary intake of 6.2 mg per day. Sources rich in vitamin E include seeds, nuts, seed oils, peanut butter, vitamin E-fortified foods, and dietary supplements. Symptomatic vitamin E deficiency is rare, usually caused by an underlying problem with digesting dietary fat rather than from a diet low in vitamin E. Deficiency can cause neurological disorders. 816df2fd3a

Serum vitamin B12 Normal total body vitamin B12 is between 2 and 5 mg with 50% of that stored in the liver. Vitamin B12 levels can be falsely high or low and data for sensitivity and specificity vary widely. Total serum vitamin B12 may not be a reliable biomarker for reflecting what the body stores inside cells. Serum vitamin B12 is a medical laboratory test that measure vitamin B12 only in the blood binding to both transcobalamins. Most of the time, 80–94% of vitamin B12 in the blood binds to haptocorrin, while only 6–20% is binds to transcobalamin II. Only transcobalamin II is "active" and can be used by the body. Most of the time, 80–94% of Serum vitamin B12 is a medical laboratory test that measure vitamin B12 only in the blood binding to both transcobalamins. There is no gold standard human assay to confirm a vitamin B12 deficiency 816df2fd3a

In healthy adults, vitamin B12 deficiency is not common, mainly because body stores of the vitamin... 816df2fd3a Unlike the other twelve vitamins, vitamin D is only conditionally essential in the diet, as with adequate skin exposure to the ultraviolet B (UVB) radiation component of sunlight there is synthesis of cholecalciferol in the deeper layers of the skin's epidermis. Vitamin D can also be obtained through diet, food fortification and dietary supplements. For most people, skin synthesis contributes more than dietary sources. In the United States, milk and plant-based milk substitutes are fortified with vitamin D3, as are many breakfast cereals. US dietary guides generally assume that all of a person's vitamin D is taken orally, given the potential for insufficient sunlight exposure due to urban living, cultural choices for the amount of clothing worn when outdoors... 816df2fd3a == Classifications... == 816df2fd3a

Vitamin D The name Vitamin D is a misnomer; technically vitamin D is not a vitamin, but rather a fat-soluble secosteroid hormone. In humans, the most important compounds within this group are vitamin D3 (cholecalciferol) and vitamin D2 (ergocalciferol). These two vitamin D metabolites, collectively referred to as 25-hydroxyvitamin D or 25(OH)D, are measured in serum to assess a person's vitamin D status Vitamin D is a group of structurally related, fat-soluble compounds responsible for increasing intestinal absorption of calcium and phosphate, along with numerous other biological functions 816df2fd3a

Healthcare providers use this test when a vitamin B12 deficiency is suspected, which can cause anemia and irreversible nerve damage. The cutoff between normal vitamin B12 levels and deficiency varies by country and region. A diagnosis of vitamin B12 deficiency is determined by blood levels lower than 200 or 250 picograms per ml (148 or 185 picomoles per liter). Some people can have symptoms with their normal levels of the vitamin, or may have low levels despite having no symptoms. Other tests may

be done to ensure... Vitamin B12 is the most chemically complex of all vitamins, and is synthesized exclusively by certain archaea and bacteria. Natural food sources include meat, shellfish, liver, fish, poultry, eggs, and dairy products. It is also added to many breakfast cereals through food fortification and is available in dietary supplement and pharmaceutical forms. Supplements are commonly taken orally but may be administered via intramuscular injection to treat deficiencies.

Vitamin B12 deficiency reported that deficiencies of vitamin B12 were associated with the length of hospital stay, as observed by serum vitamin B12 concentrations and methylmalonic Vitamin B12 deficiency, also known as cobalamin deficiency, is the medical condition in which the blood and tissues have a lower than normal level of vitamin B12

Vitamin E the consumption of foods high in vitamin E, and also higher serum concentration of alpha-tocopherol. The tocopherols function as fat-soluble antioxidants which may help protect cell membranes from reactive oxygen species. The problem with observational studies is that these Vitamin E is a group of eight compounds related in molecular structure that includes four tocopherols and four tocotrienols

Vitamin A deficiency Vitamin A plays a major role in phototransduction, so this deficiency impairs vision, often presenting with nyctalopia (night blindness). bodily vitamin A levels are available, with plasma retinol levels being the most common method of assessing VAD in individuals. A plasma or serum retinol Vitamin A deficiency (VAD) or hypovitaminosis A is a lack of vitamin A in blood and tissues. It is common in poorer countries, especially among children and women of reproductive age, but is rarely seen in more developed countries. In more severe VAD cases, it can progress to xerophthalmia, keratomalacia, and complete blindness

Mild deficiencies may have few or absent symptoms. In moderate deficiencies, feeling tired, feeling faint, mouth ulcers, rapid breathing, upset stomach, pallor, hair loss, decreased ability to think and joint pain and the beginning of neurological symptoms, including abnormal sensations such as, numbness and tingling, and tinnitus may occur. Severe deficiencies may include symptoms of reduced heart function, suppression of bone marrow, as well as more various severe neurological symptoms possibly including sensory loss, abnormal balance and reflexes, memory and consciousness impairment, smell and taste problems, depression, irritability, confusion, and psychosis. If left untreated, some of these changes can become permanent. Onset of deficiency may take years to develop. In exclusively breastfed infants of vegan mothers, undetected and untreated deficiency can lead to poor growth, poor development, and difficulties with movement. Tocopherols and tocotrienols both occur in α (alpha), β (beta), γ (gamma), and δ (delta) forms, as determined by the number and position of methyl groups on the chromanol ring. All eight of these vitamins feature a chromane double ring, with a hydroxyl group that can donate a hydrogen atom to reduce free radicals, and a hydrophobic side chain that allows for penetration into biological membranes...

Vitamin C Most animals are able to synthesize their own vitamin C. Vitamin C or

ascorbate is a water-soluble vitamin found in citrus and other fruits, berries and vegetables. It is also an antioxidant. It is found as a form of ascorbic acid. It is required for the functioning of several enzymes and is important for immune system function. It is found as a form of ascorbic acid. It Vitamin C or ascorbate is a water-soluble vitamin found in citrus and other fruits, berries and vegetables. However, higher primates (including humans), most bats, guinea pigs, some fish species, and some bird species must acquire it from dietary sources because a gene for a synthesis enzyme has mutations that render it dysfunctional; humans obtain this vitamin from those fruits and vegetables. It is an essential nutrient involved in the repair of tissue, the formation of collagen, and the enzymatic production of certain neurotransmitters

Vitamin D deficiency Vitamin D deficiency can also be caused by inadequate nutritional intake of vitamin D; disorders that limit vitamin D absorption; and disorders that impair the conversion of vitamin D to active metabolites, including certain liver, kidney, and hereditary disorders. Muscle weakness is also a common symptom of vitamin D deficiency, further increasing the risk of falls and bone fractures in adults. It most commonly occurs in people when they have inadequate exposure to sunlight, particularly sunlight with adequate ultraviolet B rays. National Institutes of Health cautions that “serum concentrations of 25(OH)D that are associated with vitamin D deficiency have not been definitively identified Vitamin D deficiency or hypovitaminosis D is a vitamin D level that is below normal. Deficiency impairs bone mineralization, leading to bone-softening diseases, such as rickets in children. It can also worsen osteomalacia and osteoporosis in adults, increasing the risk of bone fractures

== Signs and symptoms ==

Vitamin B12 One of eight B vitamins, it serves as a vital cofactor in DNA synthesis and both fatty acid and amino acid metabolism. It plays an essential role in the nervous system by supporting myelin synthesis and is critical for the maturation of red blood cells in the bone marrow. Animals require B12 but plants do not, relying instead on alternative enzymatic pathways. primidone and topiramate are associated with lower than normal serum vitamin concentration. However, serum levels were higher in people prescribed valproate Vitamin B12, also known as cobalamin or extrinsic factor, is a water-soluble vitamin involved in metabolism

In healthy adults, vitamin B12 deficiency is not common, mainly because body stores of the vitamin are substantial and turnover is slow, with relatively low dietary requirements. However, B12 deficiency in the elderly is a significant concern, and is related to dementia... An excess of vitamin D causes abnormally high blood concentrations of calcium, which can cause overcalcification of soft tissues, including arteries and kidneys. Symptoms appear several months after excessive doses of vitamin D are administered. A mutation of the CYP24A1 gene can lead to a reduction in the degradation of vitamin D and thus to vitamin toxicity without high oral intake (see Vitamin D § Excess). Symptoms of vitamin D toxicity may include the following:

== Signs and symptoms ==

In pregnant women, VAD is associated with a high prevalence of night blindness and poor maternal health

outcomes including an increased risk of maternal mortality and complications during pregnancy and lactation... 816df2fd3a

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