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The license may not give you all of the permissions necessary for your intended use. For example, other rights such as publicity, privacy, or moral rights may limit how you use the material. B vitamins are a group of eight essential nutrients that play roles in many organs and bodily systems. They help with various functions, including creating energy from food, producing blood cells, and maintaining healthy skin. In this article, we explore the function of B vitamins, the body and some key dietary sources of each. We also look at the symptoms of each B vitamin deficiency. Share on Pinterest Many B vitamins are important for making sure the body's cells are functioning properly. They help the body convert food into energy (metabolism), create new blood cells, and maintain healthy skin cells, brain cells, and other body tissues. There are eight types of B vitamin, each with their own function.Together, they are called the vitamin B complex.B vitamins often occur together in the same foods. Many people can get enough B vitamins by eating a variety of nutrient-dense foods.However, those who can't meet their daily needs through food can use supplements.People may develop B vitamin deficiencies if they do not get enough of the vitamins from their diet or supplements. They may also have a deficiency if their body cannot absorb nutrients properly, or if their body eliminates too much of them due to certain health conditions or medications.Healthcare professionals recommend that people get a certain amount of each vitamin per day to maintain good health.The following table provides the daily values (DVs) of each B vitamin according to the Food and Drug Administration (FDA) in milligrams (mg) or micrograms (mcg).Below, we look at each B vitamin in more detail.The heart, liver, kidney, and brain all contain high amounts of thiamin. The body needs thiamin for:Thiamin deficiency is not common in the United States. However, certain groups of people may not get enough thiamin, including:those with alcohol dependenceolder adultsthose with HIV or AIDSthose with diabetesthose who have heart failurethose who have had bariatric surgeryA person with a thiamin deficiency may experience:Alcohol dependence can cause a person to develop a thiamin deficiency. This can cause Wernicke-Korsakoff syndrome (WKS), which may result in tingling and numbness in the hands and feet, memory loss, and confusion.Riboflavin is essential for:energy productionhelping the body break down fats, drugs, and steroid hormonesconverting tryptophan into niacin (vitamin B3)converting vitamin B6 into a coenzyme that the body needsFoods rich in riboflavin include:Riboflavin deficiency is rare but may occur when a person has an endocrine disorder, such as thyroid problems, or certain other conditions.A person who is deficient in riboflavin may experience:Having severe riboflavin deficiency can lead to anemia and cataracts. Being riboflavin deficient during pregnancy can create a higher risk of certain birth defects.People at highest risk of riboflavin deficiency include:those following a vegan diet, or who do not consume any products/athletes who do not eat meat, especially those who also do not eat dairy or other animal productswomen who are pregnant or lactating, especially those who do not consume meat or dairy productsThe body converts niacin into a coenzyme called nicotinamide adenine dinucleotide (NAD). NAD is a necessary part of more than 400 different enzyme reactions in the body, the highest of all vitamin-derived coenzymes. These enzymes help with:changing the energy in carbohydrates, fats, and proteins into a form the body can use metabolic processes in the body's cellcommunication among cellsexpression of DNA in cellsAnimal-based foods such as meat, poultry, and fish are high in NAD, which the body can easily use.Plant-based foods including nuts, legumes, and grains contain a natural form of niacin that the body cannot use as easily. However, manufacturers add niacin to foods such as cereals, and the body can easily use this form.If pellagra goes untreated, it can lead to severe memory problems, behavioral changes, and suicidal behavior. It may also lead to an extreme loss of appetite or death.People at risk of niacin deficiency include those who have:Pantothenic acid is necessary for the body to create new coenzymes, proteins, and fats.Red blood cells carry pantothenic acid throughout the body so it can use the nutrient in a variety of processes for energy and metabolism.Many foods contain at least some pantothenic acid, but some of the highest amounts are present in:Pantothenic acid deficiency is rare in the U.S. because it is plentiful in many foods. However, it may affect people with severe malnutrition. In such cases, they are usually deficient in other nutrients as well.Symptoms of deficiency include:numbness and burning of the hands and feetheadacheirritabilityrestlessness and poor sleepa lack of appetitePeople with a specific gene mutation called pantothenate kinase-associated neurodegeneration 2 mutation are at a high risk of deficiency.Manufacturers add biotin to many hair, skin, and nail supplements. However, The National Institute of Health (NIH) states that there is not sufficient evidence to conclude whether taking extra biotin helps with hair, skin, or nails. Some people believe that biotin may help with psoriasis.The human body needs biotin for breaking down fats, carbohydrates, and proteincommunication among cells in the bodyregulation of DNAMany foods contain biotin, including:organ meatseggssalmonorbeefsunflower seedsSugns of a biotin deficiency include:Deficiency is rare in the U.S., but the following groups may be more at risk:people with a metabolic disorder called biotinidase deficiencypeople with alcohol use disorderwomen who are pregnant or lactatingThe natural form of vitamin B9 is called folate. Folic acid, which is present in fortified foods and some supplements, is a synthetic form of the vitamin.Folate is also essential for:DNA replicationmetabolism of vitaminsmetabolism of amino acidsproper cell divisionThe FDA requires manufacturers to add folic acid to standardized enriched grain products to help reduce the risk of neural tube defects. People can get folic acid from fortified breads and cereals.Natural folate occurs in:dark green leafy vegetablesbeef liveravocadopapayaorange juiceeggbeansnutsThe addition of folic acid to grain products has made folate deficiency uncommon. However, the possible symptoms of a folate deficiency may include:The CDC recommends that women of reproductive age take 400 mcg of folic acid daily. Other groups who may need extra folate include people who have:alcohol use disorderceliac diseaseconditions that interfere with nutrient absorptionIDDPeople should not take more than 1,000 mcg of folic acid each day. Taking more than this can mask symptoms of a vitamin B12 deficiency. This can cause permanent nerve damage.Most people are able to get sufficient B vitamins from their diet. Supplementation is generally unnecessary unless a healthcare professional confirms a deficiency in a particular B vitamin. If a person is deficient, their healthcare provider will typically advise on whether they should take a vitamin B complex or a specific B supplement.Certain factors may increase the likelihood of needing supplementation, including:being 65 years of age or olderpregnancyuse of certain medicationsadherence to a vegan dietIt's important to remember that dietary supplements are not regulated by the Food and Drug Administration (FDA). Therefore, a person should only purchase supplements from a reputable brand to ensure they're taking a high quality product. Below are some commonly asked questions about B vitamins. There is no such thing as a vitamin B deficiency. Rather, a person may have one or more types of vitamin B. The symptoms will vary depending on which vitamin B a person is deficient in. For example, a vitamin B9 deficiency may cause headaches and heart palpitations while a vitamin B2 deficiency may cause cracked lips and hair loss. It is possible to have more than one B vitamin deficiency at one time. No, vitamin B is not the same as vitamin B12. Vitamin B12 is one of many B vitamins which, together, are known as vitamin B complex. The body needs vitamin B12 to support brain and neurological function, to produce new red blood cells, and to create DNA. All B vitamins are essential for health.The following foods are sources of B vitamins: pork (B1), B7nuts (B1, B3, B9)legumes (B1, B3)yogurt (B2, B12)avocado (B5, B9)chickpeas (B6)beef (B7, B12)B vitamins each have their own unique functions, but they depend upon one another for proper absorption and the best health benefits. Eating a healthy, varied diet will generally provide all the B vitamins a person needs.People can treat and prevent B vitamin deficiencies by increasing their dietary intake of high-vitamin foods or taking vitamin supplements.Ask a doctor before taking any supplements to be sure they will not interact with medications. Vitamin B complex is a supplement that usually delivers eight B vitamins: B1 (thiamin), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folate), and B12 (cobalamin). Found naturally in meat, leafy greens, dairy, beans, peas, and whole or fortified grains, B vitamins are water-soluble and play essential roles in certain bodily functions, such as helping your body make energy from the food you eat and forming red blood cells. Vervwell / Joshua Seong Each of the eight vitamins in vitamin B complex supplements has its own unique set of health benefits. For instance, vitamin B1 is crucial for the growth, development, and function of cells in the body. Other vitamins, such as B2, work cooperatively with the body with other vitamins to convert food into energy. B2 converts B6 into a usable form and aids in niacin production, which is mainly obtained from food and is essential in the proper functioning of cells. While vitamin B5 breaks down fats and carbohydrates into energy and helps the body use other vitamins, such as riboflavin (found in B2), B6 is involved in immune function and is required by the body to use and store energy from the form of glycogen. B7 helps the body convert fats, carbohydrates, and proteins from the food you eat into energy. It is also needed to make fatty acids (which help to build and sustain overall health) and maintain bone and hair health. Vitamin B9 is required to help cells produce and maintain DNA (the genetic material found in all body cells), while B12 is important for protein metabolism. Keep in mind that not everyone requires vitamin B supplementation. Speak with your healthcare provider if you believe supplementation may benefit you. Depending on your individual needs, your provider may advise you to take a specific B vitamin supplement, such as B6 or B12, instead of a vitamin B complex supplement. Most B vitamins are involved in the process of converting food into energy. Some help to metabolize carbohydrates and others aid in breaking down fat and/or protein. While this is an essential process, that's not to say taking a vitamin B complex supplement will boost your energy. Although B vitamins are essential for your body, the effect is different when they are consumed in the form of dietary supplements rather than food. A vitamin B complex supplement may fill a specific vitamin gap or deficiency, however, it cannot provide energy in the form of calories like a food source. B vitamins involved: B1, B2, B3, B5, B6, B7, and B12 Research shows that B vitamins support just about every aspect of brain health. While all B vitamins promote healthy brain function, a 2016 review published in Nutrients indicates that vitamins B6, B9, and B12 in particular play a role in homocysteine metabolism, which helps reduce the risk of cognitive decline and dementia. In particular, B12 supports healthy DNA structures, which is important during fetal development and the prevention of chronic migraines with aura—meaning a recurring headache with sensory disturbances. However, the report notes that more rigorous research is required to determine the safety and efficacy of B vitamin supplementation as a preventative measure for chronic migraines. B vitamins involved: B1, B2, B3, B5, B6, B7, B9, B12 Some B vitamins, particularly vitamin B12, play an essential role in the formation of red blood cells. 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