NIGHT LEG CRAMPS AND OTHER MUSCLE CRAMPS AND CONDITIONS

Leg pain is a common problem. It can be due to a cramp, injury, or other cause. The focus of this booklet is on 'night leg cramps,' circulatory disorders, metabolic problems and other conditions that cause muscle cramps.

BITS - n - PIECES

THE SYNCHRONICITY INVESTOR

No matter if you are a homeowner, a small business owner, or a decision maker at a real estate conglomerate, The Synchronicity Investor (TSI) is committed to providing you with choice and transparency so that you can make informed decisions.

With all of the information and misinformation that is out there, we want to make it easy for you to find the resources that you need. We encourage you to think of TSI as your go to source.

Note: Content for Bits-n-Pieces is provided by Real Property Experts LLC and authored by Pierre Mouchette

PUBLICATIONS

All publications provide accurate and authoritative information for:

- **HOMEOWNERS** - obtaining homeownership, maintaining your investment , and much more.
- **REAL ESTATE PROFESSIONALS** - we provide educational excellent material to help you enhance your career, and the services you provide to others.
- **INVESTORS** - we have content related to legal services, accounting, financing, taxes, insurance, management, investment and more.

WEBSITE

THE SYNCHRONICITY INVESTOR website contains hundreds of articles on **Real Estate,** everyday **Life,** and the **Environment.**
- **ALL AVAILABLE FOR FREE -**

There you will find more Books, Booklets, Guides, How-to-Articles, Environmental and Life Knowledge Publications.

BITS-n-PIECES

This publication will provide you with both information, and knowledgeable facts, on matters that you may be challenged with.

Night Leg Cramps and other Muscle Cramps and Conditions

Relief from Leg Pain Using
Magnesium Rich Natural Products and Supplements

Pierre Mouchette, author

Bits-n-Pieces
a TSI Publication

Contents

PART 1 BACKGROUND INFORMATION

THE PROBLEM

Most of the time, there is no apparent cause for night leg cramps that can be readily identified. Night leg cramps are likely to be related to muscle fatigue and nerve problems. As one gets older the chance of getting night cramps increases. Pregnant women also have a higher likelihood of having night leg cramps than the general population.

The following should be noted:

- There are several conditions, such as kidney failure and diabetic nerve damage, that are known to cause night leg cramps. But, if you have one of these conditions, you are most likely aware of it and have symptoms other than night leg cramps.
- People who are taking certain medications such as diuretics are more likely to have night leg cramps, although it has not been proven scientifically.
- Restless Legs Syndrome (RLS) is sometimes confused with night leg cramps, but it is a separate condition.

In addition to the above, other conditions may be associated with night leg cramps such as:

Structural Disorders

- **Peripheral artery disease** - narrowing of arteries which results in reduced blood flow, usually to the legs.
- **Spinal stenosis** - a condition where the spinal column narrows and compresses the spinal cord.

Circulatory Disorders

- **Atherosclerosis** - blocks blood flow in the arteries. This type of pain, called claudication, is generally felt when exercising or walking and is relieved through rest.
- **Blood clot** (deep vein thrombosis) - from long-term bed rest.

- **Infection of the bone** (osteomyelitis) - or skin and soft tissue (cellulitis).
- **Inflammation** - of the leg joints caused by arthritis or gout.
- **Nerve damage** - common to people with diabetes, smokers, and alcoholics.
- **Varicose veins** - a condition in which the veins enlarge due to the malfunctioning of their valves causing the improper flow of blood and pooling as a result.

Metabolic Problems

- **Acute kidney failure** - this occurs when kidneys lose their ability to filter waste from the blood system.
- **Addison's disease** - a long-term endocrine disorder resulting from insufficient amounts of hormones released by the adrenal glands.
- **Anemia** - a state in which the hemoglobin in blood is below the referenced range.
- **Chronic kidney disease** - a condition measured by a gradual loss of kidney function.
- **Cirrhosis** - a degenerative disease of the liver resulting in scarring and liver failure.
- **Hyperthyroidism** - overactive thyroid.
- **Hypothyroidism** - underactive thyroid.
- **Type 1 diabetes** - a chronic condition where the pancreas produces little or no insulin.
- **Type 2 diabetes** - a result of insufficient production of insulin, causing high blood sugar.

Medications and Procedures

- **Blood pressure drugs** - diuretics are some of the most commonly used drugs for treating high blood pressure. They help the kidneys get rid of excess water and sodium, thereby reducing the volume of blood that needs to pass through blood vessels (which lowers blood pressure).
- **Cholesterol-lowering drugs** - statins, are usually the first type of drug that doctors prescribe to lower LDL.
- **Dialysis** - the process of removing excess water, solutes, and toxins from the blood in people whose kidneys can no longer perform these functions naturally.
- **Diuretics** - a substance that promotes diuresis, the increased production of urine.
- **Oral contraceptives** - birth-control pills (used to prevent pregnancy).

- **Statins** - a class of drugs that lowers the level of cholesterol in the blood by reducing the production of cholesterol by the liver.

Other Conditions

- **Dehydration** - or low amounts of potassium, sodium, calcium, or magnesium in the blood.
- **Diarrhea -** feces are discharged from the bowels frequently and in a liquid form. This condition is often caused by stress, anxiety, and antibiotics.
- **Muscle fatigue or strain** - from overuse, too much exercise, or holding a muscle in a position for a long time.
- **Strain** - caused by a torn or overstretched muscle.
- **Stress fracture** - or a hairline crack in the bone.
- **Nerve damag**e - from cancer treatments.
- **Osteoarthritis** - a disease-causing the breakdown of joints.
- **Tendinitis** - or an inflamed tendon.
- **Shin splints** - pain in the front of the leg from overuse.
- **Parkinson's disease -** a progressive nervous system disorder that affects movement.
- **Pregnancy** - leg cramps are a common pregnancy symptom that usually occurs in the second and third trimester.

Less Common Causes Can Include

- **Cancerous bone tumors** (osteosarcoma, Ewing sarcoma).
- **Legg-Calve-Perthes disease** (poor blood flow to the hip that may stop or slow the normal growth of the leg).
- **Noncancerous (benign) tumors** - or cysts of the femur or tibia (osteoid osteoma).
- **Sciatic nerve pain** (radiating pain down the leg) - caused by a slipped disk.
- **Slipped capital femoral epiphysis** - most often seen in boys and overweight children between ages 11 and 15.

Leg Cramps at Night

According to Dr. Oz, Dr. Weil, and the Mayo Clinic - low magnesium is the major cause of muscle cramps everywhere in the body (this includes leg and foot cramps). The fact that only 80% of Americans have enough magnesium within their body is a big problem. **Magnesium is a necessary nutrient vital for health!**

Fixing A Magnesium Deficiency to Stop Cramps?

Fixing a magnesium deficiency is FAST, EASY, SAFE, and POWERFUL. This crucial mineral can:

- Loosen muscles by blocking the effect of calcium, which tightens muscles. As people age, excess calcium collects in the muscles, causing cramps.
- Increase the absorption of potassium, which is critical for proper muscle function.
- Decrease pain by blocking pain receptors in the brain and nervous system.
- Dampen inflammation in the muscles and the entire body.
- Relaxes blood vessels and decreases blood pressure, which restores healthy circulation.
- Increases your serotonin and melatonin, which helps you relax and fall asleep.

Magnesium is a necessary nutrient, not a medication. Health officials are saying that many people are walking around with levels of magnesium that while "sufficient," might be somewhat too low for optimal performance.

What is Magnesium?

It is a mineral that is essential to the human body's functions. Magnesium's primary role in the body is to act as a cofactor that enables the activation of important biological enzymes. There are more than 300 enzymes that require magnesium to function, including the biological pathways responsible for energy production, synthesis of DNA and RNA, blood sugar control, nerve and muscle cell function, immunity, hormone production, and many other important processes.

Although magnesium is found naturally in certain foods, it can be difficult to eat the daily recommended amount. This is the primary reason that most people boost their diet with a magnesium supplement.

Why Magnesium is Crucial for Health

Adenosine triphosphate (ATP) is the primary energy molecule in the human body. It is a coenzyme that transports chemical energy within cells and is responsible for proper metabolism. Magnesium is required to bond with phosphates to protect ATP molecules from degrading in high pH levels.

Additionally:

- Magnesium is crucial for protein synthesis. Without it, ribozymes are unable to locate the proper location and cannot synthesize new proteins. The proteins created by this process control the activities and growth of cells. Magnesium is also needed to produce DNA and RNA molecules.
- Magnesium (1.5-2.5 mEq/L) is a crucial electrolyte. Along with sodium (136-145 mEq/L), potassium (5-5.3 mEq/L), chloride (97-107 mEq/L) and calcium (5-5.5 mEq/L), magnesium is an electrolyte found mEq/L the body. As a positively charged ion, magnesium plays a major role in maintaining homeostasis in the body and helps to balance electrolyte levels in cells. Figures in brackets are normal ranges.
- Magnesium helps to regulate other nutrient levels in the body. It is especially crucial for regulating the movement of calcium into skeletal and smooth muscle cells, nerve cells, heart pacemaker cells, and other tissues. Although calcium is vital to the human body, too much of it can lead to ailments such as anxiety, depression, insomnia, heart palpitations, asthma, cramps, muscle spasms, and chronic headaches. A magnesium deficiency means that cells throughout the human body will be adversely affected by excess calcium.
- Besides regulating calcium movement, magnesium is necessary for ensuring that vitamin D, copper, zinc, sodium, and potassium are used properly in various biological processes.

Magnesium is necessary for the healthy functioning of many other parts of the body and has a role in preventing kidney stones, fibromyalgia, depression, deafness, diabetes, insulin resistance, osteoporosis, migraines, preeclampsia and eclampsia, premenstrual syndrome, restless leg syndrome, colorectal cancer, and blood clots. It also helps to regulate cholesterol levels and has laxative properties.

Internal Processing of Magnesium

Magnesium is a positively charged ion, otherwise known as a cation. Therefore, it must be bonded with another compound before it can be consumed in either supplement or dietary form. When taken as a supplement, magnesium is typically bonded with compounds such as oxide, citrate, or chloride to help deliver it to the

intestines. Once processed in the intestines, magnesium, and the compound to which it is bonded will dissociate, leaving the magnesium-free to perform its many roles in the body. The kidneys play a crucial role in conserving and excreting magnesium, depending on the level in the body.

About 50 to 60% of all magnesium in the human body is stored in bone, less than 1% is found in blood and blood serum, and the balance is found in the soft tissues of the body.

What Does Magnesium Deficiency Do to The Body?

In having a magnesium deficiency, the body cannot function properly, and you could develop muscle weakness, depression, high blood pressure, and even heart disease.

This mineral is vital for regulation and helps:

- The brain communicates with the body.
- The heart maintains a healthy beat.
- Muscles regulate their contractions.
- Blood pressure stays low.

Note: Every muscle in the body depends on magnesium to keep and continue working properly.

What Are Magnesium Deficiency Signs and Symptoms

Magnesium deficiency looks like a lot of other conditions since magnesium involves so many body processes. Trying to pinpoint magnesium deficiency as the source of specific troubles especially when the mineral is involved in so many seemingly unrelated functions in the body is difficult.

The following are the most common signs of low magnesium:

- Aches and pains
- ADHD
- Anxiety
- Arrhythmias

- Brain fog
- Constipation
- Depression
- Digestive trouble
- Fatigue
- Heart irregularities, palpitations, or flutters
- Irregular sleep patterns and insomnia
- Lack of appetite
- Memory problems
- Migraines
- Mood problems
- Muscle cramps
- Muscle twitches and spasms
- Nightly leg cramps, especially in pregnancy
- PMS
- Restless leg syndrome
- Twitching eyelids, lips, or skeletal muscle

Note: some of the above symptoms can have a root cause other than a magnesium deficiency. Conditions can be serious and require medical attention. Review all your concerns with your doctor.

Why Are So Many People Magnesium Deficient?

It is estimated that over 80% of people are magnesium deficient. But, why so many? The reason for this is you do not get as much magnesium in your diet as your predecessors did. Magnesium deficiency is a modern phenomenon, largely caused by industrial farming and food processing techniques that have depleted both soil and crops of their former magnesium content. The typical American diet provides only half of the Recommended Daily Allowance (RDA) of magnesium. Consequently, the majority of Americans are, to some extent, deficient in magnesium. Older adults tend to be more deficient in magnesium because their intestines absorb less magnesium and their kidneys excrete more of it, compared to younger adults.

The Magnesium RBC Test

The magnesium RBC test measures the amount of magnesium stored in your **'red blood cells.'** This will give you an indication of how much magnesium your body has in reserves in your bones and soft tissues.

The Optimal Magnesium Range

If your numbers are below 6.0 mg/dl, you will want to supplement, and if your lab results are reported in mmol/L, multiply that number by 2.43 to get mg/dl, and see how close you are to 6.0. This is a **functional level.**

Most labs report a normal range, which tells you more about the levels of everyone else's magnesium than it tells you about the amount your body needs to work properly.

PART 2 NATURAL and SUPPLEMLEMT INFORMATION

Recommended Daily Allowance (RDA) For Magnesium

The following table shows the RDA or adequate intake for men and women in the United States.

AGE	MALE	FEMALE	PREGNANCY	LACTATION
Birth to 6 mo.	30 mg. *	30 mg. *		
7-12 mo.	75 mg.	75 mg.		
1-3 years	80 mg.	80 mg.		
4–8 years	130 mg.	80 mg.		
9–13 years	240 mg.	80 mg.		
14–18 years	410 mg.	80 mg.	400 mg	360 mg
19–30 years	400 mg.	80 mg.	350 mg	310 mg
31–50 years	420 mg	320 mg	360 mg	320 mg
51+ years	420 mg	320 mg		

*Adequate intake

Note: when you are supplementing, research shows that the body absorbs magnesium best when taken in doses of 100 to 125 mg at a time. If more is taken, the body is much less efficient at absorbing it due to intestinal permeability limits, so it will just pass through the body. Also, the body needs an adequate level of vitamin B6 to process magnesium correctly.

NATURAL FORMS OF MAGNESIUM

Dark, leafy vegetables such as spinach, swiss chard, and kale are the best dietary sources of magnesium, followed by nuts and seeds. Certain fruits, peas, beans, soy products, and whole grains contain magnesium, as do wheat bran, oatmeal, chocolate, meat, seafood, and milk.

Vegetables.

VEGETABLE	SERVING	MAGNESIUM	
Spinach	3.5 oz., 100g.	80 mg.	
Swiss Chard	3.5 oz., 100g.	80 mg.	
Kale	3.5 oz., 100g.	50 mg.	
Romaine Lettuce	3.5 oz., 100g.	15 mg.	

Nuts and Seeds.

NUT / SEED	SERVING	MAGNESIUM	
Almonds	1.0 oz., 28g.	78 mg.	
Pumpkin Seeds	1.0 oz., 28g.	73 mg.	
Walnuts	1.0 oz., 28g.	56 mg.	
Peanuts	1.0 oz., 28g.	50 mg.	
Hazelnuts	1.0 oz., 28g.	49 mg.	
Sunflower Seeds	1.0 oz., 28g.	33 mg.	

OTHER FORMS OF MAGNESIUM

Magnesium Rich for Mood and Memory

Dark Chocolate - 64 mg of magnesium in a 1-ounce (28-gram) serving. It is high in iron, copper and contains prebiotic fiber that feeds your healthy gut bacteria. Dark chocolate contains magnesium along with tryptophan and offers a dual approach to enhancing mood and mental clarity. Tryptophan is a precursor to serotonin, the brain chemical that makes you feel happy, focused, and calm.

Magnesium Rich and Fiber

These vegetables will help you go more regularly:

- Artichokes
- Asparagus
- Avocados
- Broccoli
- Cabbage
- Legumes
- Spinach (lightly steam it first to reduce the lectin content)

Magnesium Rich and Fiber

The following are a two-for, that is plenty of magnesium and other healthy goodies.

- **Fatty Fish** - Many types of fish are high in magnesium and rich in potassium, selenium, B vitamins, and other nutrients. These fish include salmon, mackerel, and halibut.
- **Bananas** - are among the most popular fruits in the world and are rich in magnesium. Known for their high potassium content, bananas provide vitamin C, vitamin B6, manganese, and fiber.

SUPPLEMENTS

Magnesium Found in Supplements

There are a variety of magnesium forms of which each has its pros and cons:

- **Magnesium oxide and hydroxide -** supplement companies love this because it is cheap. Unfortunately, it is poorly absorbed (only 8%) and is highly laxative. It is what you find in most common multi-vitamins. It is also the active ingredient in **Milk of Magnesia.**
- **Magnesium citrate** - well absorbed and highly laxative. It is the main ingredient in many laxatives. For those that have had a colonoscopy, this is what they provided to **'clean you out.'**
- **Magnesium sulfate -** also known as **Epsom Salt.** It is also a good laxative.
- **Magnesium glycinate -** this is magnesium bound to the amino acid glycine. This form is not ideal, because magnesium tells your neurons to slow down, and glycine tells them to speed up. So, do magnesium and glycine cancel each other out?
- **Magnesium chelate or glutamate** - both are the same thing. These products are low quality because they have large amounts of **'unbound magnesium.'** This poor form of magnesium causes laxative effects.
- **Magnesium chloride -** turns to liquid when exposed to air, making it difficult to deliver via capsule. It is not naturally found in food.
- **Magnesium taurinate -** this is magnesium bound to the amino acid Taurine. It has the side effect of causing extreme drowsiness, which makes it difficult to take during the day. It is also expensive.

Because magnesium is an ion, it is commercially available as an oral supplement only when combined with a carrier, to which it binds and which carries it to the intestines, where it is broken down into elemental magnesium and used throughout the body. Different carriers break apart at different rates, which affects the bioavailability of elemental magnesium and how much can be absorbed by the body.

Magnesium supplements should always be taken with meals, taking some magnesium supplements on an empty stomach could cause diarrhea.

Additional Items to Avoid When Choosing Supplements

- **Vitamin D and Fillers** - be wary of any supplement containing ergocalciferol (D2), cholecalciferol (D3), and artificial or unnecessary

ingredients or fillers. They are not only useless they can cause uncomfortable and even dangerous side effects.
    - Pay attention to the dosage. You will see supplements with as little as 20 mg of magnesium, which is ineffective. Although, it is not as simple as **'more is better.'** i.e., taking too much synthetic, low-quality D3, can be dangerous to your health.
- **Very High Dosages** - many nutrients are taken in large quantities can cause health complications and unnecessary strain on your liver and other organs.
- **Unknown Manufacturers** - the label of the product should be understandable, and you should be able to verify any claims made by the company before you buy their supplement. Select well-known manufacturers only.

Vitamins and Supplements Additives?

Manufacturers put additives into vitamin and supplement tablets and capsules as a processing aid. The following are of no benefit to your body.

- **Fillers** - to add volume to tablets and capsules.
- **Bulking agents** - to top up the content of the pills or capsules.
- **Binders** - used to stick ingredients together in a tablet.
- **Anti-caking agents** - to stop the ingredients clogging up machines.
- **Carriers** - to maintain a powder consistency.
- **Coatings** - to make swallowing easy.
- **Preservatives** - to save ingredients from spoiling.
- **Emulsifiers** - to bind water to fats.
- **Colors** - to look more appealing to the consumer.
- **Flavors** - to alter the taste, even in tablets that are swallowed whole.
- **Sweeteners** - to make the flavor more palatable.

Caution - Potentially Harmful Additives

Choose additive-free products. The following additives may be potentially harmful:

- **Magnesium stearate and stearic acid** - used in 90% of nutritional supplements to speed up the manufacturing process and keep costs down. It can be derived from animals or vegetables, has no nutritional benefit, and could potentially cause harm.
- **Sodium selenite and selenite** - toxic, inorganic chemical sources of selenium.

- **Gelatin** - an animal protein that is not vegan-friendly and is likely to be sourced from low-quality, factory-farmed animals fed GMO grain.
- **Lactose** - sugar from milk, likely to be sourced from cows treated with medications and fed grains. It is also a common allergen.
- **Titanium dioxide** - a colorant used to make tablets and capsules bright white. It is not an ingredient found in any natural food.
- **Dicalcium phosphate** - a cheap and inorganic form of calcium, which helps to bulk out tablets. It is not well absorbed and used by the body.

Most vitamins and minerals contain synthetic laboratory-produced materials. Because the materials are artificially made and not from natural food, there is no guarantee that your body will recognize or use them.

Be Safe - Choose Chemical-Free Supplements

- Select products that are natural and from food sources.
- Read the labels and look up any suspicious ingredients.
- Check for Good Manufacturing Practices (GMP) certification and vigorous quality control.

Magnesium and Prescribed Drugs

Magnesium has been known to interfere with more than 30 prescribed drugs. For optimal effectiveness, avoid combining a magnesium supplement with the following medications: aminoglycosides, antibiotics (ciprofloxacin, moxifloxacin, tetracycline, doxycycline, minocycline), blood pressure medications, calcium channel blockers (amlodipine, diltiazem, felodipine, verapamil), diabetes medications, digoxin, diuretics, fluoroquinolones, hormone replacement therapy, labetol, levomethadyl, levothyroxine, penicillamine, tiludronate and alendronate, amphotericin B, corticosteroids, antacids, and insulin. Seek advice from a healthcare professional before taking magnesium at the same time as any of these medications.

It is difficult and very uncommon to overdose on magnesium because the kidneys excrete excess amounts of magnesium into the urine. However, there is a limit to how much the kidneys can do and once that limit is reached, there can be negative consequences. Diarrhea is the most common side effect of excessive magnesium

intake and it can be accompanied by nausea and abdominal cramping as the body excretes excessive magnesium.

Severe magnesium overdose can result in additional problems such as kidney failure, severely lowered blood pressure, and heart problems. But, to overdose, one must consume an exorbitantly large amount of magnesium.

PART 3 EPILOGUE

Home Care

If you have leg pain from cramps or overuse, take these steps first:

- Rest as much as possible.
- Elevate your leg.
- Apply ice for up to 15 minutes. Do this 4-times per day, more often for the first few days.
- Gently stretch and massage cramping muscles.
- Take over-the-counter pain medicines like acetaminophen or ibuprofen.
- Other homecare will depend on the cause of your leg pain.

Activities that might help relieve night leg cramps include:

- Flexing your foot up toward your head.
- Massaging the cramped muscle with your hands or with ice.
- Walking or jiggling the leg.
- Taking a hot shower or warm bath.

When to Contact a Medical Professional

Call your health care provider if:

- The painful leg is swollen or red.
- You have a fever.
- Your pain gets worse when you walk or exercise and improves with rest.
- The leg is black and blue.
- The leg is cold and pale.
- You are taking medicines that may be causing leg pain. DO NOT stop taking or change any of your medicines without talking to your provider.

Proper Dosage and Contraindications

There are different recommendations for how much magnesium people should ingest each day, depending on age, gender, and other factors. The Food and Nutrition Board at the Institute of Medicine of the National Academies has set the Recommended Dietary of Allowance (RDA). The Mayo Clinic has similar, yet slightly lower recommended and other healthcare professionals recommend a higher amount of magnesium for adults. You should not administer magnesium supplements to a child without a doctor's **express permission.**

APPENDIX

Commonly Used Words and Phrases

WORD or PHRASE	MEANING
Cofactor	a substance (other than the substrate) whose presence is essential for the activity of an enzyme.
DNA	Deoxyribonucleic acid - the hereditary material in humans and almost all other organisms.
LDL Cholesterol	Often called bad cholesterol because it can build up in the walls of arteries and form plaque, putting you at risk of a cardiovascular event like a heart attack or stroke.
Ph	A scale used to specify how acidic or basic a water-based solution is. Acidic solutions have a lower pH, while basic solutions have a higher ph. At room temperature **'pure water'** is neither acidic nor basic and has a pH of 7.
Restless Leg Syndrome (RLS)	RLS is a disorder that causes an unpleasant feeling in the legs that improves somewhat with moving them. The feeling is described as aching, tingling, or crawling. RLS often occurs when one is at rest and therefore can make it hard to sleep. Due to the disturbance in sleep, people with RLS may have daytime sleepiness, low energy, irritability, and a depressed mood. **RLS** is often confused with **Night Leg Cramps,** but it is a different condition.
RNA	Ribonucleic acid - a polymeric molecule implicated in various biological roles in coding, decoding, regulation, and expression of genes.

Vitamins and Minerals

ITEM	DESCRIPTION
VITAMINS	
A	A group of unsaturated nutritional organic compounds that includes retinol, retinal, retinoic acid, and several provitamins A carotenoids. Vitamin A has multiple functions - it is important for growth and development, for the maintenance of the immune system, and good vision. It is needed by the retina of the eye in the form of retinal, which combines with protein opsin to form rhodopsin, the light-absorbing molecule necessary for both low-light and color vision. Vitamin A also functions in a hugely different role as retinoic acid, which is an important hormone-like growth factor for epithelial and other cells.
B	Any of a group of substances (the vitamin B complex) that are essential for the working of certain enzymes in the body and, although not chemically related, are generally found together in the same foods. They include vitamins - B1, B2, B6, and B12.
B1	Thiamine – a vitamin found in food and manufactured as a dietary supplement and medication. Food sources of thiamine include whole grains, legumes, and some meats and fish.
B2	Riboflavin - a vitamin found in food and used as a dietary supplement. Food sources include eggs, green vegetables, milk, and other dairy product, meat, mushrooms, and almonds.
B3	Niacin - also called nicotinic acid. It occurs naturally in plants and animals.
B6	Pyridoxine - a group of chemically similar compounds that can be interconverted in biological systems. It is an essential nutrient. In its active form, pyridoxal 5′-phosphate serves as a coenzyme in some 100 enzyme reactions in amino acid, glucose, and lipid metabolism.
B12	Cyanocobalamin - is a water-soluble vitamin that plays essential roles in red blood cell formation, cell metabolism, nerve function, and the production of DNA. Food sources include poultry, meat, fish, and dairy products. Because the body can store several years' worth of B-12, deficiency is rare. However, if you follow a vegetarian or vegan diet, you might be prone to deficiency because plant foods do not contain vitamin B-12. Older adults and people with digestive tract conditions that affect the absorption of nutrients also are susceptible to vitamin B-12 deficiency. Left untreated, a deficiency can lead to anemia, fatigue, muscle weakness, intestinal problems, nerve damage, and mood disturbances.
C	Ascorbic acid and L-ascorbic acid - a vitamin found in various foods. It is used to prevent and treat scurvy. This vitamin is an essential nutrient involved in the repair of tissue and the enzymatic production of certain neurotransmitters. It is required for the functioning of several enzymes and is important for immune system function. It also functions as an antioxidant.

D2	Ergocalciferol - also known as calciferol, a type of vitamin D found in food and used as a dietary supplement. As a supplement, it is used to prevent and treat vitamin D deficiency.
D3	Cholecalciferol - used as a dietary supplement by people who do not get enough vitamin D in their diets to maintain adequate health.
E	A vitamin is found in many foods including vegetable oils, cereals, meat, poultry, eggs, fruits, vegetables, and wheat germ oil.
MINERALS	
Copper	Copper is a mineral found in many foods, particularly in organ meats, seafood, nuts, seeds, wheat bran cereals, grain products, and cocoa products. The body stores copper mostly in the bones and muscles. The liver regulates the amount of copper that is in the blood. There is no evidence that people who eat a normal diet need a copper supplement.
Potassium	A mineral that is crucial for life. It is necessary for the heart, kidneys, and other organs to work normally. Most people who eat a healthy diet should get enough potassium naturally. Low potassium is associated with a risk of high blood pressure, heart disease, stroke, arthritis, cancer, digestive disorders, and infertility.
Sodium	Table salt is a combination of two minerals - sodium and chloride. The body needs some sodium to work properly. It helps with the function of nerves, muscles, and helps to keep the right balance of fluids in your body. Your kidneys control how much sodium is in your body. If you have too much and your kidneys cannot get rid of it, sodium builds up in your blood and can lead to high blood pressure.
Zinc	Zinc is an essential nutrient that plays many roles in the body. The body does not produce zinc and it must be obtained through food or supplements. Zinc is required for numerous processes in the body.

Authorities

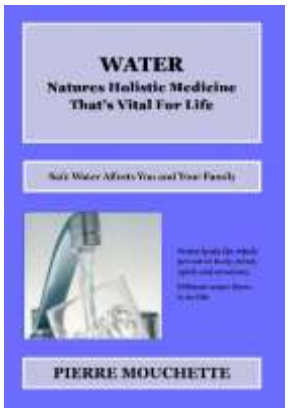
The Food and Nutrition Board (FNB) Institute of Medicine 500 Fifth Street, NW Room K-739 Washington, DC 20001 202-334-1732 (Voice) 202-334-2316 (FAX)	Advises public agencies on implications of nutrition research for food safety, nutritional status and health, food technology, food resources, and food processing. FNB identifies needed research and interprets research findings in the interest of public welfare.
The U.S. Food and Drug Administration (FDA) 10903 New Hampshire Ave. Silver Spring, MD 20993 1-888-INFO-FDA (1-888-463-6332) https://www.usa.gov/federal-agencies/food-and-drug-administration	The Food and Drug Administration (FDA) is responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, our nation's food supply, cosmetics, and products that emit radiation. The FDA also provides accurate, science-based health information to the public.

Independent Consumer Advocates

The Environmental Working Group (EWG) EWG is an independent consumer-powering organization that is dedicated to protecting human health and the environment. Their mission is to empower people to live healthier lives in a healthier environment.	
HEADQUARTERS 1436 U Street NW, Suite 100 Washington, DC 20009 (202) 667-6982 https://www.ewg.org/	Environmental Working Group is a 501(c)(3) nonprofit corporation
We highly recommend that you visit and follow EWG. They touch base on many items of concern to consumers today!	

Featured Book

WATER – Natures Holistic Medicine That's Vital For Life



In this book, we address the most pressing questions about water! From the moment that you first open the tap, you expect the water that flows to be pure and of excellent quality. This fact pertains to both waters from the public water supply, and private sources such as well water.
Have you ever questioned? – Why is it that there is an ever-increasing number of E. coli outbreaks; salmonella outbreaks; sickness and disease from waterborne germs, and other pathogens? Traceback data indicates that most outbreaks stem from contaminated water. This same DNA fingerprint links contaminated water to fruits and vegetables, beef and pork, and chickens. Yes, we are all being subjected to contaminants in our water and poor decision-making by irresponsible businesses. Safe water affects everyone!
Buy on AMAZON NOW!

TSI-Book Store:
Books; Manuals and Guides for upload in PDF format.

Thanks for reading!
If you enjoyed this publication, share it with family and friends.
Please take a moment to let us know how we are doing.
Your support does make a difference.

Comments

The Real Property Experts Website Family

Real Property Experts | Authors Website
The Synchronicity Investor | Website Collective of RPE Publications
TSI-BizSense | Recommended Products and Services