

Magnesium: THE Ultimate Guide (Dr. Carolyn Dean)

<http://www.fireitupwithcj.com/the-ultimate-guide-to-magnesium/>



By [cjlui](#) | February 19, 2015

Learn why you are likely deficient in magnesium and how taking a supplement may help you sleep better, reduce your stress, and get you off all your pills. Get advice straight from the doctor on how much to take, when to take magnesium, and what symptoms magnesium may help with.

What is magnesium? Is Magnesium a metal? *

“Magnesium, an abundant mineral in the body, is naturally present in many foods, added to other food products, available as a dietary supplement, and present in some medicines (such as antacids and laxatives)”. *Magnesium Fact Sheet for Consumers*, National Health Institute <www.nih.gov> (March 3, 2008)

“Magnesium is the eighth most abundant element in the earth’s crust although not found in its elemental form. It is a Group 2 element (Group IIA in older labelling schemes). Group 2 elements are called alkaline earth metals” Magnesium Essentials, <<http://www.webelements.com/magnesium>>, *Web*

Where is Magnesium found in the body; why is it one of the most important minerals?

Magnesium is a nutrient that the body needs to stay healthy. Magnesium is important for many processes in the body, including regulating muscle and nerve function, blood sugar levels, and blood pressure and making protein, bone, and DNA.

Approximately 50% of total body magnesium is found in bone. The other half is found predominantly inside cells of body tissues and organs. Only 1% of magnesium is found in blood, but the body works very

hard to keep blood levels of magnesium constant. *Magnesium Fact Sheet for Consumers*, National Health Institute <www.nih.gov> (March 3, 2008)

In an interview with Magnesium expert, Dr. Carolyn Dean, she explained why Magnesium is one of the most important minerals for our body [Here](#).

What does Magnesium do and what are its functions? *

According to the [University of Maryland Medical Center](#), magnesium is a mineral used by every organ in your body, especially your heart, muscles, and kidneys.

Listen [here](#) to the interview with magnesium expert, Dr. Carolyn Dean, for a simple non-technical answer.

In her book, “[The Magnesium Miracle](#)”, Dr. Carolyn Dean offers a more scientific look at the five high level functions of Magnesium:

1. Catalyze most chemical reactions in the body.
2. Produce and transport energy.
3. Synthesize protein.
4. Transmit nerve signals.
5. Relax muscles.

Dr. Dean provides a more technical explanation summarized below:

1. Magnesium is a cofactor for enzyme ATP, a main source of energy in our cells.
2. Magnesium is an important membrane stabilizing agent.
3. Magnesium is required for the structural integrity of numerous body proteins, nucleic acids. Magnesium is a cofactor for the enzyme guanosine triphosphatase, phospholipase C, adenylate cyclase, guanylate cyclase.
4. Magnesium is required cofactor for the activity of hundreds of enzymes.
5. Magnesium is a direct regulator of ion channels, most notably of the other key electrolytes, calcium, sodium, and potassium.
6. Magnesium is an important intracellular signaling molecule itself.
7. Magnesium is a modulator of oxidate phosphory.
8. Magnesium is intimately involved in nerve conduction and muscle function.

Source: Dean, [The Magnesium Miracle](#), 3rd ed. (2014) p xv

What is Magnesium good for and what are the deficiency symptoms?

Below is a list of thirty-six conditions that you may experience if you are low on magnesium:

1. Acid reflux
2. Adrenal fatigue
3. Alzheimer's disease
4. Angina
5. Anxiety and Panic Attacks

6. Arthritis
7. Asthma
8. Atherosclerosis with calcium deposits.
9. Blood Clots
10. Bowel disease
11. Brian dysfunction
12. Cholesterol elevation
13. Cystitis
14. Depression
15. Detoxification
16. Diabetes
17. Fatigue
18. Headaches
19. Heart disease
20. Hypertension
21. Hypoglycemia
22. Indigestion
23. Inflammation
24. Insomnia
25. Irritable bowel syndrome
26. Kidney disease
27. Kidney stones
28. Migraine
29. Musculoskeletal conditions
30. Nerve problems
31. Obstetrical and gynecological problems
32. Osteoporosis
33. Parking's disease
34. Raynaud's syndrome
35. Sports injuries
36. Tooth Decay

Source: Dean, The Magnesium Miracle, 3rd ed. (2014)

Magnesium deficiency: How do you know if you have Magnesium deficiency? What causes low levels? Why do we have a deficiency?

According to William Fallon from "Life Extensions Magazine", the latest government study shows a staggering 68% of Americans don't consume the recommended daily intake of magnesium. 19% of Americans don't consume even half of the government's recommended daily intake of magnesium. (Falloon, "How many Americans are Magnesium Deficient? <http://www.lef.org/>)

In the video interview, Dr. Carolyn Dean discussed how some moms and their babies have a deficiency at birth, which may result in a number of childhood illnesses such as asthma, body cramping, etc. Click [here](#) to find out if your child may be born with a deficiency (<http://youtu.be/Tp8fXWXqzTQ?t=7m5s>).

VIDEO: Get more details from the interview with Dr. Dean about the RBC test [here](#).

Listen to Dr. Dean's advice on how to ensure safe interactions with other medications if you are magnesium deficient (<http://youtu.be/Tp8fXWXqzTQ?t=14m33s>).

Dr. Carolyn Dean hypothesized that LeBron James is magnesium deficient? Find out more [here](#) and read Dr. Dean's article on LeBron [here](#).

BLOG: Dr. Carolyn Dean's blog provides more information about problems with magnesium testes here: <http://drcarolyndean.com/2014/05/magnesium-rbc-blood-test>.

The easiest way to know if you have a deficit is to take a glance at the list from "*Magnesium Miracle*". If you are taking prescription medications and need a more accurate measure, then Dr. Dean recommends an RBC blood test (<http://requestatest.com/magnesium-rbc-testing>). Currently, there are no over the counter or laboratory tests to measure magnesium, which is found mostly in the bone. Dr. Carolyn Dean cautions that there's no way of knowing how many factors correlate with any one person's magnesium deficiency, but if you find yourself with a few dozen from the list, you may want to see how your symptoms improve if you take a magnesium supplement.

1. Alcohol intake: You drink more than 7 drinks per week
2. Anger
3. Angina
4. Anxiety
5. Apathy
6. Arrhythmia of the heart
7. Asthma
8. Blood tests with low calcium, potassium, and magnesium
9. Bowel problems: Undigested fat, constipation, diarrhea, IBS, Crohn's, Colitis.
10. Brain trauma
11. Chronic Bronchitis
12. Caffeine more than 3 servings a day
13. Chronic Fatigue Syndrome
14. Cold Extremities
15. Concentration difficulties.
16. Confusion
17. Convulsions
18. Depression
19. Diabetes
20. Fibromyalgia
21. Food Take imbalance: Limit in leafy green, seeds, and fresh fruit or high protein
22. Food Cravings: Carbs, Chocolate, Salt, Junk Food
23. Gagging or choking on Food
24. Headaches
25. Heart disease
26. Heart-rapid rate
27. High blood pressure
28. Homocysteinuria
29. Hyperactivity
30. Hyperventilation
31. Infertility

32. Insomnia
33. Irritability
34. Kidney Stones
35. Medications: Digitalis, Diuretics, antibiotics, steroids, oral contraceptives, indomethacin, cisplatin, Amphotereicin B, Cisplatin, Cholosetyramine, Synthetic estrogens
36. Memory impairments
37. Mercury amalgam dental fillings
38. Menstrual pains and cramps
39. Migraines
40. Mineral supplements: calcium, zinc, iron without magnesium.
41. Mitral valve prolapsed
42. Muscle cramps or spasms
43. Muscle twitching or tics
44. Muscle weakness
45. Numbness or hands or feet
46. Osteoporosis
47. Paranoia
48. Parathyroid hyperactivity
49. PMS
50. Polycystic ovarian disease
51. Pregnancy
52. Recent Radiation therapy
53. Raynaud's syndrome
54. Restlessness
55. Sexual energy diminished
56. Shortness of breath
57. Smoking
58. Startled easily by noise
59. Stressful life or circumstances
60. Stroke
61. Sugar, high intake daily
62. Syndrome X
63. Thyroid hyperactivity.
64. Tingling of hands or feet
65. Transplants (Liver or Kidney)
66. Tremors in hands
67. Water that contains fluoride, chlorine, calcium
68. Wheezing

Make sure to check out this blog post for more information: <http://drCarolynDean.com/2010/06/gauging-magnesium-deficiency-symptoms/>

How much Magnesium should I take?

The US Food and Nutrition Board offers the following suggestions:

The FNB has established ULs for magnesium that apply *only to supplemental* magnesium for healthy infants, children, and adults (see Table 3) [1].

Table 3: Tolerable Upper Intake Levels (ULs) for Supplemental Magnesium [1]

Age	Male	Female	Pregnant	Lactating
Birth to 12 months	None established	None established		
1–3 years	65 mg	65 mg		
4–8 years	110 mg	110 mg		
9–18 years	350 mg	350 mg	350 mg	350 mg
19+ years	350 mg	350 mg	350 mg	350 mg

Source: Magnesium Fact Sheet for Consumers, National Health Institute <www.nih.gov> (accessed Jan 30, 2015)

VIDEO: Want the doctor's advice? Dr. Carolyn Dean explains more on how much you should take, and how to get started here: <http://youtu.be/Tp8fXWXqzTQ?t=20m36s>.

Dr. Dean explains in her book, "The Magnesium Miracle", that it may take up to a year to build up the magnesium that is stored in your muscles and bones.

What form of Magnesium should I take? *

There are many types of magnesium that you can take.

Magnesium glycinate is a chelated form of magnesium that tends to provide the highest levels of absorption and bioavailability and is typically considered ideal for those who are trying to correct a deficiency

Magnesium chloride / Magnesium lactate contain only 12 percent magnesium, but has better absorption than others, such as magnesium oxide, which contains five times more magnesium

Magnesium carbonate, which has antacid properties, contains 45 percent magnesium

Magnesium oxide is a non-chelated type of magnesium, bound to an organic acid or a fatty acid. Contains 60 percent magnesium and has stool softening properties

Magnesium sulfate / Magnesium hydroxide (milk of magnesia) are typically used as a laxative. Be aware that it's easy to overdose on these, so ONLY take as directed

Magnesium taurate contains a combination of magnesium and taurine, an amino acid. Together, they tend to provide a calming

Magnesium citrate is magnesium with citric acid, which has laxative properties

effect on your body and mind

Magnesium threonate is a newer, emerging type of magnesium supplement that appears promising, primarily due to its superior ability to penetrate the mitochondrial membrane

Source: Dr. Mercola, Magnesium—“The Missing Link to Better Health”, Dec 8, 2013, <http://articles.mercola.com/>

VIDEO: Don't be discouraged if you take one of the above forms and it gives you diarrhea. Dr. Dean cautions that magnesium carbonate, chloride, gluconate, and oxide (least expensive, but only 4% absorption) often cause diarrhea. That symptom just means that you should try a different form.

Dr. Carolyn Dean talks about the limitations of magnesium oxide <http://youtu.be/Tp8fXWXqzTQ?t=12m49s> and more about the forms of magnesium to take [here](http://youtu.be/Tp8fXWXqzTQ?t=16m43s) (<http://youtu.be/Tp8fXWXqzTQ?t=16m43s>).

BLOG: [herehttp://drcarolyndean.com/2010/05/stand-back-and-watch-the-miracle-working-power-of-magnesium/](http://drcarolyndean.com/2010/05/stand-back-and-watch-the-miracle-working-power-of-magnesium/)

There are various ways to get your Magnesium fix. Supplements are commonly consumed via pill or in liquid form such as over-the-counter magnesium citrate, malate, or oxide; another oral magnesium supplement is ionic magnesium in liquid form, such as that offered by Trace Minerals Research. This is a sodium-reduced concentration of seawater from the Great Salt Lake in Utah.

Instead of oral supplements, you can also opt into a regular Epsom salt bath or footbath. Epsom salt is a magnesium sulfate that can absorb into your body through your skin. Magnesium oil (from magnesium chloride) is a spray for topical application and absorption to areas in your body experiencing muscle soreness. Dr. Dean cautions that some may experience some itchiness and that it takes a lot of spray to build up magnesium through this method.

If any of the above has a laxative effect, then those under medical supervision have taken Magnesium intravenously. You can also try Dr. Dean's self-created formulation called ReMag.

According to Dr. Carolyn Dean it doesn't matter which supplement you choose. She recommends a combination of both oral and topical application and to keep track of how much you ingest with RBC testing. Make sure to get a baseline if you are heavily supplementing. In “The Magnesium Miracle”, Dr. Dean offers other recommended magnesium supplements here:

- Natural Clam – powdered magnesium citrate sweetened with organic Stevia.
- JigSaw Magnesium SRT is a chelated form. Chelated is supposed to offer superior absorption.
- Ancient Minerals Magnesium Oil. How much should I take?
- ReMag, Dr. Dean's 100% absorbed, non-laxative form of picometer-ionic magnesium

– See more at: <http://www.fireitupwithcj.com/the-ultimate-guide-to-magnesium/#sthash.efn3gFGH.dpuf>

When should I take Magnesium?

Dr. Carolyn suggests 2-3 doses a day, the first when you wake up in the morning and the last at bedtime. If you choose, one can also be taken in the afternoon. Magnesium levels are generally lowest during the early morning and later in the afternoon. If you have leg cramps or restless legs then you might want to take it at night.

Could you take too much or over dose on Magnesium? What are the risks of taking too much too soon?

Dr. Dean cautions not to take enormous doses but to build using a more gradual process because magnesium saturation levels don't increase overnight. When you take these supplements, you want to slowly awaken your body to the hundreds of metabolic processes. Overdosing may make your body tired or toxic.

Luckily, our bodies have a fail-safe mechanism that prevents us from absorbing too much magnesium. If overconsumption were to happen, the body will rid itself of the excess through diarrhea. Other possible side effects are cramping and nausea. Dr. Carolyn explains more [here](http://youtu.be/Tp8fXWXqzTQ?t=11m16s) (<http://youtu.be/Tp8fXWXqzTQ?t=11m16s>).

There are some special cases that Dr. Carolyn Dean details in "The Magnesium Miracle", when you may feel worse after taking magnesium:

- You're not taking enough
- You're taking too much
- You have low blood pressure from long-standing magnesium deficiency and adrenal fatigue.
- You're on heart medications, and as your health improves your meds are becoming "toxic"
- You've started taking iodine or thyroid medication or you have hyperthyroidism.
- You're taking too much vitamin D
- You're taking too much calcium and it's pushing out your magnesium
- You're taking fairly high doses of magnesium and not taking trace minerals or drinking enough water.
- You're not taking enough B Vitamins
- You are mercury toxic.
- You are toxic from a bad diet

VIDEO : Hear from Dr. Dean why experiencing withdrawal symptoms from your meds may make you feel worse when you start magnesium [here](#).

How are Calcium and Magnesium related?

Dr. Carolyn Dean talks about how diets are often times rich in calcium but deficient in magnesium. As such, it's important to calibrate the amount of magnesium you intake if you are also taking calcium supplements. Why so? Because if you have too much calcium and not enough magnesium, your muscles may spasm, and this negatively impacts your heart.

VIDEO: Dr. Dean explains why calcium contracts the muscles while magnesium relaxes the muscles and the resulting heart pain, high blood pressure and insomnia [here](http://youtu.be/Tp8fXWXqzTQ) (<http://youtu.be/Tp8fXWXqzTQ>).

BLOG: Best ratio of Calcium to Magnesium: <http://www.nutritionalmagnesium.org/optimum-calcium-magnesium-ratio/>

How can Magnesium help constipation?

VIDEO: Constipation can happen because the muscles don't move the content around. Tight muscles result in a tightening of your anal sphincter. Watch here for more: <http://youtu.be/Tp8fXWXqzTQ?t=9m42s>.

How does Magnesium relate to sleep?

VIDEO: It has been reported that taking a few doses of magnesium will result in your first good night's sleep in years. A dose of Magnesium can take affect within minutes. Learn more [here](http://youtu.be/Tp8fXWXqzTQ?t=6m2s) (<http://youtu.be/Tp8fXWXqzTQ?t=6m2s>).

VIDEO: Experiencing insomnia? Check out some steps you could take towards resolution here (<http://youtu.be/Tp8fXWXqzTQ?t=23m8s>).

Magnesium and migraines:

VIDEO: Carolyn describes why magnesium helps with migraines and how it balances hormones and relaxes muscles (<http://youtu.be/Tp8fXWXqzTQ?t=34m42s>). Check out another video interview here: <http://youtu.be/hluEHcpIJ-M>.

BLOG: <http://drcarolyndean.com/2015/01/therapeutic-levels-of-magnesium-treat-migraines/>

<http://drcarolyndean.com/2014/06/magnesium-treats-migraines/>

Magnesium and Anxiety:

VIDEO: Dr. Carolyn talks about how she has helped her clients handle anxiety, even if they've been on anxiety pills for several years. The magnesium works on the adrenal glands and helps calm the flight or fright system that is too easily triggered. Check out more [here](http://youtu.be/Tp8fXWXqzTQ?t=35m46s) (<http://youtu.be/Tp8fXWXqzTQ?t=35m46s>).

<http://drcarolyndean.com/2014/10/anxiety-mended-with-magnesium-join-the-anxiety-summit/>

Magnesium and Cholesterol (Statin):

Before you get a prescription of Statin for prevention, first try some natural ways of changing your situation. Dr. Dean explains that magnesium helps balance the enzyme that creates cholesterol in your body, thereby aiding in normalizing your cholesterol levels. Interestingly, and importantly, statin drugs destroy the same enzyme that magnesium balances. Magnesium deficiency is also a common symptom in diabetes, so drugs may inadvertently contribute to diabetes simply by depleting your body of magnesium.

VIDEO Dr. Carolyn Dean talks about a side effect for Statin, how it affects your hormone level, and how fluoride-based drugs can further worsen your magnesium deficiency. Get more information [here](http://youtu.be/Tp8fXWXqzTQ?t=45m34s) (<http://youtu.be/Tp8fXWXqzTQ?t=45m34s>).

Dr. Dean questions the medical research on Cholesterol that was conducted with Rancid Cholesterol. Find out more [here](http://youtu.be/Tp8fXWXqzTQ?t=50m46s) (<http://youtu.be/Tp8fXWXqzTQ?t=50m46s>).

Check out this video with cardiologist Dr. Sinatra talking about how cholesterol works [here](#).

Magnesium rich foods.

While there are foods with high magnesium (see chart below and <https://www.cedars-sinai.edu/Patients/Programs-and-Services/Documents/CP0403MagnesiumRichFoods.pdf>), this mineral is often not found in our foods unless farms add it to their soil. Thus, those that consume natural foods aren't getting enough Magnesium and are at risk for deficiency.

VIDEO: Dr. Carolyn explains why foods contain less magnesium [here](http://youtu.be/Tp8fXWXqzTQ?t=42m34s) (<http://youtu.be/Tp8fXWXqzTQ?t=42m34s>).

"Magnesium is farmed out of the soil much more than calcium... A hundred years ago, we would get maybe 500 milligrams of magnesium in an ordinary diet. Now we're lucky to get 200 milligrams.".. Dr. Carolyn Dean

The Top 10 High Magnesium Foods by Nutrient Density (Magnesium per Gram)

#1: Rice Bran	781mg (195% DV) per 100 grams	922mg (230% DV) per cup (118 grams)	Click to see complete nutrition facts for Rice Bran
#2: Dried Herbs and Spices (Coriander, Dill, Sage Basil)	694mg (174% DV) per 100 grams	14mg (3% DV) per tablespoon (2 grams)	Click to see complete nutrition facts for Dried Herbs
#3: Pumpkin & Squash Seeds	535mg (134% DV) per 100 grams	738mg (185% DV) per cup (138 grams)	Click to see complete nutrition facts for Pumpkin & Squash Seeds
#4: Cocoa Powder	499mg (125% DV) per 100 grams	25mg (6% DV) per tablespoon (5 grams)	Click to see complete nutrition facts for Cocoa Powder
#5: Flaxseeds	392mg (98% DV) per 100 grams	39mg (10% DV) per tbsp (10 grams)	Click to see complete nutrition facts for Flaxseeds
#6: Brazil Nuts	376mg (94% DV) per 100 grams	500mg (125% DV) per cup (133 grams)	Click to see complete nutrition facts for Brazil Nuts
#7: Tahini (Sesame Seed Paste)	353mg (88% DV) per 100 grams	49mg (12% DV) per tablespoon (14 grams)	Click to see complete nutrition facts for Tahini

#8: Sunflower Seeds	346mg (87% DV) per 100 grams	14mg (3% DV) per tablespoon (4 grams)	Click to see complete nutrition facts for Sunflower Seeds
#9: Wheat Germ	313mg (78% DV) per 100 grams	360mg (90% DV) per cup (115 grams)	Click to see complete nutrition facts for Wheat Germ
#10: Molasses	242mg (61% DV) per 100 grams	48mg (12% DV) per tablespoon (20 grams)	Click to see complete nutrition facts for Molasses

Source: “Top 10 Foods Highest in Magnesium”

<http://www.healthaliciousness.com/> accessed 1/31/2015.

How can Magnesium help you unwind from a litany of medications?

According to Dr. Dean, two major lifestyle factors that deplete your body of magnesium are stress and prescription drugs. Unfortunately, the conventional medical approach of prescribing medication for pretty much everything oftentimes lead to more body stress, which will ultimately make your situation progressively worse.

VIDEO: Dr. Dean explains how she’s weaned patients off of their medications here:

<http://youtu.be/Tp8fXWXqzTQ?t=49m49s>.

Magnesium Expert - Dr. Carolyn Dean

Dr. Dean has studied and written about magnesium for about 15 years. In January 2003, she published the first edition of [The Magnesium Miracle](#), and she’s currently working on the third edition of this book.

Last year, she was awarded the Arrhythmia Alliance Outstanding Medical Contribution to Cardiac Rhythm Management Services Award 2012. It was given by the Heart Rhythm Society of the UK, which is a major allopathic organization.

- See more at: <http://www.fireitupwithcj.com/the-ultimate-guide-to-magnesium/#sthash.aHqzegVr.dpuf>

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Magnesium: the essentials

<http://www.webelements.com/magnesium/>

Magnesium is a grayish-white, fairly tough metal. Magnesium is the eighth most abundant element in the earth's crust although not found in its elemental form. It is a Group 2 element (Group IIA in older labelling schemes). Group 2 elements are called alkaline earth metals. Magnesium metal burns with a very bright light.

Magnesium is an important element for plant and animal life. Chlorophylls are porphyrins based upon magnesium. The adult human daily requirement of magnesium is about 0.3 g day^{-1} .

- **Name:** magnesium
- **Symbol:** Mg
- **Atomic number:** 12
- **Relative atomic mass (A_r):** 24.3050 (6)
- **Standard state:** solid at 298 K
- **Colour:** silvery white
- **Classification:** Metallic

- **Group in periodic table:** 2
- **Group name:** Alkaline earth metal
- **Period in periodic table:** 3
- **Block in periodic table:** s-block
- **Electron shell structure:** 2.8.2
- **CAS Registry ID:** 7439-95-4

Magnesium tarnishes slightly in air, and finely divided magnesium readily ignites upon heating in air and burns with a dazzling white flame. Normally magnesium is coated with a layer of oxide, MgO, that protects magnesium from air and water.

Magnesium: historical information

Magnesium was **discovered** by Sir Humphrey Davy in 1755 at England. **Origin of name:** from the Greek word "*Magnesia*", a district of Thessaly.

In 1618 a farmer at Epsom in England attempted to give his cows water from a well. This they refused to drink because of the water's bitter taste. However the farmer noticed that the water seemed to heal scratches and rashes. The fame of Epsom salts spread. Eventually they were recognised to be magnesium sulphate, MgSO₄. Black recognized magnesium as an element in 1755. It was isolated by Davy in 1808 who electrolysed a mixture of magnesia (magnesium oxide, MgO) and mercuric oxide (HgO). Davy's first suggestion for a name was magnium but the name magnesium is now used.

Sometime prior to the autumn of 1803, the Englishman John Dalton was able to explain the results of some of his studies by assuming that matter is composed of atoms and that all samples of any given compound consist of the same combination of these atoms. Dalton also noted that in series of compounds, the ratios of the masses of the second element that combine with a given weight of the first element can be reduced to small whole numbers (the law of multiple proportions). This was further evidence for atoms. Dalton's

theory of atoms was published by Thomas Thomson in the 3rd edition of his *System of Chemistry* in 1807 and in a paper about strontium oxalates published in the *Philosophical Transactions*. Dalton published these ideas himself in the following year in the *New System of Chemical Philosophy*. The symbol used by Dalton for magnesium is shown below. [See *History of Chemistry*, Sir Edward Thorpe, volume 1, Watts & Co, London, 1914.]

Magnesium around us

Magnesium is an important element for plants and animals. Chlorophylls (responsible for the green colour of plants) are compounds known as porphyrins and are based upon magnesium. Magnesium is required for the proper working of some enzymes. The adult daily requirement of magnesium is about 0.3 g day^{-1} .

Magnesium is the eighth most abundant element in the earth's crust but is never found as the free metal. There are many minerals containing magnesium including magnesite and dolomite. Sea water also contains plenty of magnesium.

Abundances for cobalt in a number of different environments. [More abundance data »](#)