

## **Magnesium article by Walter Last from Nexus magazine**

Magnesium is nothing short of a miracle mineral in its healing effect on a wide range of diseases, as well as in its ability to rejuvenate the aging body. We know that it is essential for many enzyme reactions (especially in regard to cellular energy production), for the health of the brain and nervous system, and also for healthy teeth and bones. However, many are not aware that - in the form of magnesium chloride - it is also an impressive infection fighter.

The first prominent researcher to investigate and promote the antibiotic effects of magnesium was a French surgeon, Prof. Pierre Delbet. In 1915 he was looking for a safe solution to cleanse wounds of soldiers, because he had found that traditionally used antiseptics actually damaged tissues and encouraged infections instead of preventing them. In all of his tests, magnesium chloride solution proved by far the best answer. Not only was it harmless for tissues, but it also greatly increased leucocyte activity and phagocytosis (the destruction of microbes).

After World War I, Prof. Delbet performed experiments with internal applications of magnesium chloride, and found it to be a powerful immune stimulant. In his experiments, phagocytosis increased by up to 333%. This means that, after magnesium chloride intake, the same number of white blood cells destroyed up to three times more microbes than beforehand.

Over the years, Prof. Delbet found magnesium chloride to be beneficial in a wide range of diseases. These included diseases of the digestive tract such as colitis and gall bladder problems, Parkinson's disease, tremors and muscle cramps; acne, eczema, psoriasis, warts and itching skin; impotence, prostatic hypertrophy, cerebral and circulatory problems; asthma, hay fever, urticaria and anaphylactic reactions. Hair and nails became stronger and healthier, and patients also had more energy.

Prof. Delbet also found an excellent preventative effect on cancer, and he cured precancerous conditions such as leukoplasia, hyperkeratosis and chronic mastitis. (Epidemiological studies have since confirmed that regions with magnesium-rich soil have a lower cancer rate than those deficient in magnesium.)

Another French doctor, A. Neveu, cured several diphtheria patients with magnesium chloride in just two days. He also published 15 cases of poliomyelitis that were cured within days if treatment was started immediately, or within months if paralysis had already progressed. Neveu also found magnesium chloride effective with asthma, bronchitis, pneumonia and emphysema; pharyngitis, tonsillitis, hoarseness, common cold, influenza, whooping cough, measles, rubella, mumps, scarlet fever; poisoning, gastroenteritis, boils, abscesses, infected wounds and osteomyelitis.

In more recent years Dr Raul Vergini and others have confirmed these earlier results and have added more diseases to the list of successful uses: acute asthma attacks, shock, tetanus, herpes zoster, acute and chronic conjunctivitis, optic neuritis, rheumatic diseases, many allergic diseases, chronic fatigue syndrome and cancer. In all of these cases magnesium chloride gave much better results than other magnesium compounds.

### **Magnesium for Nerves**

Magnesium has a calming effect on the nervous system, and is frequently used to promote good sleep. But, more importantly, it can be used to calm irritated and over-excited people. This is especially useful with epileptic seizures, convulsions in pregnant women and the 'shakes' in alcoholism. Magnesium levels are generally low in alcoholics, contributing or causing many of their health problems. If magnesium levels are low, the nerves lose control over muscle activity, respiration and mental processes. Nervous fatigue, tics and twitches, tremors, irritability, hypersensitivity, muscle spasms, restlessness, anxiety, confusion, disorientation and irregular

heartbeat all respond to increased magnesium levels. A common phenomenon of magnesium deficiency is a sharp muscle reaction to an unexpected loud noise. 'Memory pills' have been marketed that consist mainly of magnesium.

Many of the symptoms of Parkinson's disease can be overcome with high magnesium supplementation. Shaking can be prevented and rigidity eased. Pregnant women often develop convulsions, nausea, dizziness and headaches. In hospitals this is treated with magnesium infusions. Because of its strong relaxing effect, magnesium helps not only to have a better sleep but is also useful in overcoming headaches and migraines. Even the number of suicides are linked to magnesium deficiency. The lower the magnesium content in soil and water in a given region, the higher the rate of suicides.

Epilepsy is marked by abnormally low magnesium levels in the blood, spinal fluid and brain, causing hyperexcitability in regions of the brain. There are many reported cases of epilepsy greatly improving or disappearing with magnesium supplementation. In a trial with 30 epileptics, 450 mg of magnesium supplied daily successfully controlled seizures. Another study found that the lower the magnesium blood levels, the more severe the epilepsy. Magnesium often works best in combination with vitamin B6 and zinc. In sufficient concentrations, magnesium inhibits convulsions by limiting or slowing the spread of the electric discharge from an isolated group of brain cells to the rest of the brain. Animal studies show that even the initial burst of firing nerve cells that starts an epileptic attack can be suppressed with magnesium.

### **Magnesium for the Heart**

Adequate levels of magnesium are essential for the heart muscle. Those who die from heart attacks have very low magnesium, but high calcium levels in their heart muscles. Patients with coronary heart disease who have been treated with large amounts of magnesium survived better than those with drug treatment. Magnesium dilates the arteries of the heart and lowers cholesterol and fat levels.

High calcium levels, on the other hand, constrict the heart arteries and increase the risk of heart attacks. Calcium deposits in the walls of the arteries contribute to the development of arteriosclerosis. The arteries become hard and rigid, thereby restricting the blood flow and causing high blood pressure. In addition, such inelastic blood vessels may easily rupture and cause strokes. Countries with the highest calcium to magnesium ratios (high calcium and low magnesium levels) in soil and water have the highest incidence of cardiovascular disease. At the top of the list is Australia.

Worldwide the intake of magnesium has been lowered and that of calcium increased because of the heavy use of fertilisers high in calcium and low in magnesium. With this, the intake of magnesium from our food has steadily decreased in the last fifty years, while the use of calcium-rich fertilisers and cardiovascular disease have greatly increased at the same time.

Diabetics are prone to atherosclerosis, fatty degeneration of the liver and heart disease. Diabetics have low magnesium tissue levels. They often develop eye problems such as retinopathy. Diabetics with the lowest magnesium levels had the most severe retinopathy. The lower the magnesium content of their water, the higher is the death rate of diabetics from cardiovascular disease. In an American study the death rate due to diabetes was four times higher in areas with low magnesium water levels.

### **Magnesium for Healthy Bones & Teeth**

Medical authorities claim that the widespread incidence of osteoporosis and tooth decay in western countries can be prevented with a high calcium intake. However, published evidence reveals that

the opposite is true. Asian and African populations with a very low intake (300mg of calcium) daily have very little osteoporosis. Bantu women with an intake of 200 to 300 mg of calcium daily have the lowest incidence of osteoporosis in the world. In western countries, due to a high intake of dairy products, the average calcium intake is about 1000 mg. The higher the calcium intake, especially in the form of cows' milk products (except butter) the higher the incidence of osteoporosis.

Calcium, magnesium and phosphorus levels are kept in a seesaw balance by the parathyroid hormones. If calcium goes up, magnesium goes down and vice versa. With a low magnesium intake, calcium goes out of the bones to increase tissue levels, while a high magnesium intake causes calcium to go out of the tissues into the bones. A high phosphorus intake without a high calcium or magnesium intake causes calcium to leach from the bones and leave the body with the urine. A high phosphorus intake with high calcium and magnesium leads to bone mineralisation.

Dr Lewis Barnett, an orthopaedic surgeon, practised in two different U.S. counties with very different soil and water mineral levels. In Dallas County, with a high calcium and low magnesium concentration, osteoporosis and hip fractures were very common, while in Hereford County, with high magnesium and low calcium these were nearly absent. In Dallas County the magnesium content of bones was 0.5% while in Hereford it was 1.76% In another comparison the magnesium content in bones of osteoporosis sufferers was 0.62% while in healthy individuals it was 1.26%.

The same applies for healthy teeth. In a New Zealand study it was found that caries-resistant teeth had on average twice the amount of magnesium as caries-prone teeth. The average concentration of magnesium phosphate in bones is about 1%, in teeth about 1.5%, in elephant tusks 2% and, in the teeth of carnivorous animals designed to crush bones, it is 5%. In regard to the strength of bones and teeth, think of calcium as chalk and of magnesium as superglue. The magnesium superglue binds and transforms the chalk into superior bones and teeth.

## **Cancer and Aging**

Many studies have shown an increased cancer rate in regions with low magnesium levels in soil and drinking water. In Egypt the cancer rate was only about 10% of that in Europe and America. Among the rural fellahin it was almost nonexistent. The main difference was an extremely high magnesium intake of 2.5g per day in these cancer-free populations, ten times more than in most western countries.

Dr A Seeger and Dr Johanna Budwig in Germany have shown that cancer is mainly the result of a faulty energy metabolism in the powerhouses of the cells, the mitochondria. A similar decline in energy production takes place when we age. The great majority of enzymes involved in the production of energy require magnesium. A healthy cell has high magnesium and low calcium levels. Up to 30% of the energy of cells is used to pump calcium out of the cells. The higher the calcium level and the lower the magnesium level in the extra-cellular fluid, the harder it is for cells to pump the calcium out. The result is that with low magnesium levels the mitochondria gradually calcify and energy production decreases. We may say that our biochemical age is determined by the ratio of magnesium to calcium within our cells. Tests with chronic fatigue syndrome showed that magnesium supplementation resulted in better energy levels.

We use our muscles by selectively contracting them. On the biochemical level, muscle contraction is triggered by calcium ions flowing into muscle cells. To relax the muscle calcium is pumped out again. However, as we age, more and more calcium remains trapped in the muscles and these become more or less permanently contracted, leading to increasing muscle tension and spasms. Together with calcification of the joints, this is the typical rigidity and inflexibility of old age. The higher our intake of calcium relative to magnesium, the faster do we calcify and age. Most of the excess calcium in our diet ends up in our soft tissues and around joints leading to calcification with arthritic deformations, arteriosclerosis, cataracts, kidney stones and senility. Dr Hans Selye proved

experimentally that biochemical stress can lead to the pathological calcification of almost any organ. The more stress, the more calcification, the more rapid the aging.

### **The Rejuvenation Mineral**

In addition to its anti-microbial and immune-stimulating properties, both magnesium as well as chloride have other important functions in keeping us young and healthy. Chloride, of course, is required to produce a large quantity of gastric acid each day and is also needed to stimulate starch-digesting enzymes. Magnesium is the mineral of rejuvenation, and prevents the calcification of our organs and tissues that is characteristic of the old-age related degeneration of our body.

Using other forms of magnesium is less advantageous, because these have to be converted into chlorides in the body anyway. If we take magnesium as oxide or carbonate, we then need to produce additional hydrochloric acid to absorb the magnesium. Many aging individuals, especially those with chronic diseases who desperately need more magnesium, cannot produce sufficient hydrochloric acid and then cannot absorb the oxide or carbonate.

Epsom salt is magnesium sulphate. It is soluble but not well-absorbed, and acts mainly as a laxative. Chelated magnesium is well absorbed but much more expensive, and lacks the beneficial contribution of the chloride ions. Orotates are good, but very expensive for the amount of magnesium that they provide, and both orotates and chelates seem to lack the infection-fighting potential of magnesium chloride.

Calcium and magnesium are opposites in their effects on our body structure. As a general rule, the softer our body structure the more we need calcium, while the more rigid and inflexible it is, the less calcium and the more magnesium we need. Magnesium can reverse the age-related degenerative calcification of our body structure and with this help us to rejuvenate.

Young women, children and most of all babies have soft body structures and smooth skin with low calcium and high magnesium levels in their cells and soft tissues. This is the biochemistry of youth.

As we age we become more and more inflexible. The arteries harden to cause arteriosclerosis, the skeletal system calcifies to cause rigidity with fusion of the spine and joints, kidneys and other organs and glands increasingly calcify and harden with stone formation, calcification in the eyes causes cataracts, and even the skin hardens, becoming tough and wrinkled. In this way calcium is in the same league as oxygen and free radicals, while magnesium works together with hydrogen and the antioxidants to keep our body structure soft

A gynaecologist reported that one of the first organs to calcify are the ovaries, leading to pre-menstrual tension. When he put his patients on a high magnesium intake their PMT vanished and they felt and looked much younger. Most of these women said that they lost weight, increased their energy, felt less depressed and enjoyed sex much more than before. For men it is equally beneficial for problems arising from an enlarged prostate gland. Symptoms commonly disappear after a period of supplementation with magnesium chloride.

Increased magnesium intake has also been shown to be an effective way to prevent or dissolve kidney stones and gall bladder stones. Digestive enzymes and increased bile production help restore a healthy intestine, normalise our digestive processes, reducing any digestive discomfort, bloating and offensive stool odours. This is consistent with a reduction of all offensive body odours, including underarm and foot odour.

Prof. Delbet gave magnesium chloride solution routinely to his patients with infections, and for several days before any planned surgery and was surprised by many of these patients experiencing euphoria and bursts of energy. Magnesium chloride also has a specific action on the tetanus virus

and its effects on the body. It even seems to be protective against snakebites. Guinea pigs did not die after normally lethal injections of snake venom and a rabbit survived a poisonous snakebite when given magnesium chloride solution.

In addition to being the most essential mineral in our cellular energy production, magnesium is also needed for the ingested B-vitamins to become metabolically active. Magnesium is also essential for the synthesis of nucleic acids, for cell division to occur, for DNA and RNA synthesis of our genetic material and for protein as well as fatty acid synthesis. Unfortunately magnesium deficiency at a cellular level where it counts is not easy to diagnose, as serum magnesium levels do not correlate to muscle or cellular magnesium levels. Instead of trying difficult tissue magnesium analysis to find out if your health problems may be due to low magnesium levels, it is much easier and more effective just to take more magnesium and see what happens.

Rejuvenation by ingesting more magnesium is a slow process, especially as the amount of magnesium that we can take is limited by its laxative effect and the need to keep it in a reasonable balance with calcium and phosphorus intake. The other problem is that spastic muscles have poor blood and lymph circulation, which makes it difficult for the ingested magnesium to dissolve and flush out the tissue and joint calcifications. Therefore, we can greatly speed up the rejuvenation process by increasing the circulation through contracted muscles with deep tissue massage, hot and cold water applications, relaxation exercises, lymphatising and packs and rubs with magnesium chloride.

### **How much?**

Magnesium chloride contains about 120 mg of magnesium per gram or 600 mg per rounded teaspoon. It has a mild laxative effect. As a good maintenance intake to remain healthy you may take a teaspoon daily in divided doses with meals. With raised blood pressure and symptoms of magnesium deficiency you may temporarily increase this to 2 teaspoons daily in divided doses. This may already cause 'loose stools' in some but that is generally beneficial. However, with low blood pressure additional calcium may be required together with about 300 mg of magnesium supplement for a ratio of two parts of calcium to one part of magnesium.

Individuals with very sensitive taste buds may start using it in tiny amounts mixed with strongly flavoured food and increase doses very gradually. Alternatively, drink it in one gulp dissolved in water while pinching your nose and quickly drink something pleasant afterwards. With acute infections dissolve 40g or 8 slightly rounded teaspoons in 1 litre of water.

With children commonly a small glassful or 125 mL has been used every 6 hours. Adults may double this dose by drinking this amount every 3 hours or even more until diarrhoea develops and then cut back to a maintenance intake just below the level of diarrhoea until the infection has cleared.

For daily use it may be more convenient as well to dissolve the magnesium chloride in water. (What some call "Magnesium Oil" is simply magnesium chloride dissolved in water.) You may dissolve half of a lightly rounded teaspoon of the crystals in a medium size glass of water or, more accurately, 2.5g in 150 mL of water. Mix one teaspoon of this solution three times daily with food or drink for a daily intake of about 600mg of magnesium. This or a more concentrated solution may also be used as a pack over tumours and infected, inflamed, painful, stiff or calcified joints, muscles, adhesions or scar tissue. It is also excellent as a back rub and to relax tense muscles anywhere and even to rejuvenate aging skin. For sensitive skin use it in a very diluted form. On wounds it was commonly used in a 4% solution, that is 4g or a level teaspoon in 100 mL or a small glass of water.

For quickest results with insensitive skin use a friction massage: rub hard enough so that the skin

becomes hot and red. After doing this for several days a rash may develop over the area and the skin becomes very sensitive. When this happens moisten the skin only lightly with a much diluted magnesium chloride solution. Repeat the rubbing if necessary after the skin has healed.

For muscle relaxation in massage, magnesium chloride may be added to coconut oil or other quality massage oils.

While a high magnesium intake is beneficial for most individuals, those with low blood pressure usually require more calcium in addition. Normal blood pressure is about 120/80; the lower it is the higher should be the daily intake of calcium. While those with high blood pressure benefit from ingesting twice as much magnesium as calcium, those with low blood pressure may take twice as much calcium as magnesium, but both minerals in relatively high amounts. Those with low blood pressure and a tendency towards inflammations should also greatly reduce their intake of phosphorus. A high level of phosphorus in the blood tends to cause magnesium and calcium levels to be low.

**Magnesium supplementation should be avoided with severe kidney problems (severe renal insufficiency), and also with myasthenia gravis. Be careful with severe adrenal weakness or with very low blood pressure.**

## **Magnesium Profile**

Magnesium is mainly found inside the cells, it activates many enzymes and is necessary for the metabolism of carbohydrates, fats and amino acids. It is essential for the functions of muscles and nerves and for the formation of bones and teeth. It regulates the influence of calcium.

### **Deficiency Symptoms and Increased Requirements:**

**CIRCULATION:** angina, arteriosclerosis/atherosclerosis, high blood pressure and cholesterol, heart infarcts, hypertension, strokes, tachycardia (fast pulse), thrombosis.

**DIGESTIVE SYSTEM:** colic, constipation, chronic diarrhoea, malabsorption, pancreatitis (inflammation of the pancreas).

**MUSCLES:** backache, convulsions, cramps, increased excitability/jumpiness, numbness, nystagmus (rapid eye movements), spasms, tense/tight muscles, tingling, tremors.

**NERVOUS SYSTEM:** apathy, confusion, depression, disorientation, epilepsy, hallucinations, irritability, mental illness, multiple sclerosis, nervousness, neuritis paranoia, Parkinson's disease, poor memory, senility.

**GENERAL:** alcoholism, arthritis, body odours, broken bones, calcification in any organ, cancer, chronic fatigue syndrome, diabetes, headaches, infections and inflammations, liver cirrhosis, lupus erythematosus, migraines, old age, prostate problems, rickets, mental and physical rigidity, wrinkled skin, stiffness, gall or kidney stones, overactive thyroid.