



Liquid Magnesium

PRODUCT TECHNICAL EDUCATION SHEET

Liquid Magnesium can be used with MgUlti for people who need additional magnesium supplementation. Alternatively, practitioners can prescribe Liquid Magnesium to individuals with compromised digestion; for older or younger people who struggle with taking capsules.

INDICATIONS

- Sleeping challenges: light sleeping, waking in the night
- Easily woken by noise, unrefreshing sleep
- Snoring
- Muscle twitching – day and night
- Restless legs
- Muscle aches and tension
- Support for mood, worries and anxiety
- Low energy/ fatigue
- Stress management
- Headaches and migraines
- Ringing in ears
- Cardiovascular health
- Nervous system support
- Premenstrual cramps
- Hypertension
- Magnesium deficiency

INGREDIENTS

Ingredient	Per 1ml	Per 4ml
Magnesium Chloride	833mg	3,3332mg
Total Magnesium	833mg	3,3332mg
Total Elemental Magnesium	100mg	400mg

COMPANION PRODUCTS

SleepDrops Practitioner Only Products: SleepDrops MgUlti and SleepDrops MAX
SleepDrops Premium Range: Daytime Revive and Essential Sleep and Stress Nutrients.

FEATURES & BENEFITS

Feature	Benefit
Liquid form	Flexible dosage and easy to mix with juice or water. Great for patient compliance.
High strength	1ml = 100mg of elemental magnesium
Fast absorption	Doesn't need to be broken down prior to absorption.
Therapeutic doses of magnesium	Supports overall health and wellbeing with the required amount of elemental magnesium to correct nutritional deficiency.

CAUTIONS & CONTRAINDICATIONS

Not recommended for use with heart block without a pacemaker. Magnesium supplementation may decrease the absorption of some medications. Liquid Magnesium should be used 2 hours away from medications, such as tetracycline and quinolone antibiotics. Magnesium supplementation can cause loose bowel movements. The threshold at which this may occur varies between people. If you feel uncomfortable please, lower the amount until bowel movements stabilise.

Drug, nutrient, diet or dietary interactions [i]:

- Kidney problems, such as kidney failure. Kidneys that don't work well have trouble clearing magnesium from the body. Taking extra magnesium can cause magnesium to build up to dangerous levels. Don't take high magnesium doses if you have kidney problems
- Diuretics such as Furosemide and Hydrochlorothiazide used to reduce hypertension by moving fluid out of the body by acting on the kidney may deplete magnesium levels.
- Lactulose, Miralax, Senna which are laxative medications may reduce magnesium absorption.
- OCPs may decrease magnesium absorption.



DOSAGE INSTRUCTIONS

For best results, use for a minimum of one month or as directed by a healthcare professional.

Adult
1mL to 4mL per day

Children
Aged 9 – 13 years
1mL to 2.5mL per day

Aged 4 – 8 years
1mL to 1.5mL per day

Note: 1mL = 100mg elemental magnesium

Available in 100ml dropper bottle



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Drug, nutrient, diet or dietary interactions continued...

- Osteoporosis medications such as Fosamax or Actonel, these medications act to push calcium into bones. Magnesium is needed for calcium balance.
- Magnesium in higher doses has been shown to prolong clotting time and potential interaction with anticoagulant medicines and in bleeding disorders[iii].
- Antibiotics such as Quinolones and Tetracycline's, as well as other medicines such as
- Digoxin and Gabapentin's absorption rates may be affected by Magnesium and need to be taken 2 hours before or after.
- Medication for diabetes specifically Sulfonylureas absorption rates are increased, thus take 2-4 hours away from the Magnesium to avoid blood sugar levels dropping too low[iii].
- Medication for hypertension specifically Calcium channel blockers, the Magnesium also blocks calcium from entering the cells and therefore taking Magnesium may cause the blood pressure to go too low [iv].

MAGNESIUM RECOMMENDED DAILY INTAKE

Infants and Children	Elemental RDI
0-6 months	30mg/ day
7-12 months	75mg/ day
1-3 years	80mg/ day
4-8 years	130mg/ day
9-13 years	240mg/ day

Adults	Elemental RDI
14 – 18 years old Male	410mg/day
14 – 18 years old Female	360mg/day
19 – 30 years old Male	400mg/day
19 – 30 years old Female	310mg/day
30 + Male	420mg/day
30 + Female	320mg/day
Pregnancy: 14 – 18 years old	400mg/day
Lactation: 14 – 18 years old	360mg/ day
Pregnancy: 19 – 30 years old	350mg/day
Lactation: 19 – 30 years old	310mg/day
Pregnancy: 30 +	360mg/day
Lactation: 30 +	320mg/day

In 1968 magnesium was estimated to be required as a cofactor for over 300 enzymes systems[i], it is now more reliably estimated at 700 or 800 enzymatic functions[ii] [iii] [iv] Magnesium is essential in ATP production. ATP is required universally for muscle contraction, energy production for every function, glucose utilization, synthesis of fat, protein, nucleic acids and coenzymes[v]. Therefore it is important to highlight that ATP metabolism, muscle contraction and relaxation, normal neurological function and release of neurotransmitters are all magnesium-dependent.

Magnesium is a key ingredient to support:

- Sleep, stress and insomnia
- Increase slow-wave sleep (the most restorative sleep phase)[vi]
- Mediates stress response of the sympathetic nervous system[vii]
- Reduces cortisol (stress hormone) over production[viii]
- Helps reduce restless leg syndrome[ix]
- During health and wellbeing the body needs approximately 4.5mg of magnesium per kilogram of body weight[x]
- Extra magnesium is needed in times of stress, sleeping challenges, pregnancy and breastfeeding[xi]

MAGNESIUM DISTRIBUTION

Approximately 99% of the body's total magnesium is in bones, muscles, and soft tissue[i] [ii]. With about 50-60% residing in the surface mineral of bones[iii]. Intracellular magnesium concentration ranges from 5 to 20 mmol/L and extracellular magnesium accounts for ~1% of total magnesium levels and is primarily found in serum and red blood cells [iv]



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MAGNESIUM ABSORPTION AND ELIMINATION

Magnesium is absorbed in the small intestine, specifically in the duodenum and ileum by both active and passive processes[i]. Up to 76% of magnesium is absorbed in the gut and the rest is eliminated[ii]. Absorption is not always related to the intake, but mainly the current magnesium status. Lower levels of magnesium relate to a higher rate of absorption in the gut. Excess magnesium is excreted by the kidneys and the faeces. Magnesium excretion follows a circadian rhythm with maximum elimination occurring at night[iii].

SIGNS AND SYMPTOMS OF MAGNESIUM DEFICIENCY

- Muscular weakness
- Muscle twitching
- Abdominal cramps
- Ataxia
- Vertigo
- Depression or apathy
- Irritability
- Anxiety
- Agitation
- Confusion
- Forgetfulness
- Sleeping issues
- Poor attention and concentration
- Heart beat irregularities
- Cardiovascular disease
- Hypertension
- Asthma
- Migraines or tension headaches
- Premenstrual tension
- Sensitivity to loud or sudden noise
- Low circulating levels of parathyroid hormone
- Tingling or numbness
- Low calcium levels
- Heart failure
- Retention of sodium
- Low blood potassium levels
- Rapid or irregular heart beat

Diets of the industrialized world are gradually containing less magnesium than is required for health. Given the widespread of refined sugar, refined grains, highly processed foods and use of calcium in fortified food and supplements, daily magnesium levels are inhibited. Magnesium levels are consistently being blocked and depleted without being replaced[xii].

AT RISK GROUPS OF MAGNESIUM DEFICIENCY

- People with gastrointestinal diseases – chronic diarrhea, fat malabsorption resulting from irritable bowel diseases, gluten sensitivity enteropathy, resection or bypass of small intestine (especially ileum) may cause malabsorption and magnesium loss.
- People with type 2 diabetes and insulin resistance due to increased urinary excretion.
- Alcohol dependence may result in depleted magnesium status, as it decreases the secretion of pancreatic enzymes, thus interfering with the breakdown of nutrients into absorbable molecules the body can use. Alcohol damages the stomach and intestinal lining which limits/prevent optimal absorption of magnesium[i].



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INGREDIENT RESEARCH

MAGNESIUM CHLORIDE

- Magnesium chloride has been shown to penetrate the blood-brain barrier and cause enhancement of brain intracellular free Mg^{2+} concentration following traumatic brain injury in rats [i]
- Mg chloride has shown to reduce pain and regions of allodynia in patients suffering from peripheral neuropathic pain [ii]
- A cross over experimental design study found that magnesium chloride had significantly higher bioavailability of Magnesium chloride compared to magnesium oxide [iii]
- A 2008 study, evaluated the efficacy and safety of oral magnesium supplementation, with magnesium chloride in the treatment of newly diagnosed depression in the elderly with type 2 diabetes and hypomagnesemia. Finding that $MgCl_2$ is as effective as imipramine (tricyclic antidepressant) 50mg [iv]
- Evidence suggests that magnesium chloride may be the most useful inorganic source of magnesium [v]
- A 2006 study discussed the use of magnesium as treatment of major depression. Authors suggested that magnesium deficiency is a cause of major depression, exacerbated by calcium excess and elevated stressed.
- Study suggested fortifying refined grains and drinking water with biologically available magnesium to pre-twentieth century levels [vi]
- Magnesium chloride supplementation was shown to reduce the frequency of asymptomatic ventricular arrhythmias (possibly due to secondary change in potassium homeostasis) and produced a minor degree of vasodilation [vii]
- The research found that oral magnesium chloride (dose of 30ml of $MgCl_2$ 5% solution daily for 3 months) decreased high-sensitivity C-reactive protein (hs-CRP) in healthy subjects with prediabetes and hypomagnesemia [viii]



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