



Big Friends®

# Chewable Magnesium Citrate

50 mg • Bubble gum

NPN 886160008 NCI

RESEARCH INFORMATION

## Feature summary

Big Friends Magnesium Citrate from Natural Factors provides a tasty, chewable way to help children meet their daily magnesium requirements. This one-per-day formula provides 50 mg of bioavailable magnesium citrate in a delicious bubble gum-flavoured chewable tablet to support children's growth and development.

Magnesium is often known as a relaxation mineral, but children's growing bodies also need magnesium to conduct hundreds of additional biochemical processes. It is essential for the proper development and maintenance of bones and teeth, as well as maintaining proper muscle function and tissue formation. Magnesium also provides a source of electrolytes and helps with nutrient metabolism.

Despite its importance, many Canadians are deficient in magnesium, making a daily magnesium supplement an important part of a well-balanced nutrition plan for children. Big Friends Magnesium Citrate is a suitable choice for parents of fussy eaters who would like their children to take a supplemental source of magnesium. The easy-to-take chewable tablets are gently sweetened with tooth-friendly xylitol and stevia, and contain no artificial preservatives, sweeteners, gluten, or GMOs. They are made specifically for children ages 3 and up, and adolescents.

## How it works

More than half of the body's magnesium is stored within the bones and the remainder is found mostly within the skeletal muscle and soft tissue. It is an important component of bone mineralization and structure, which contributes to the proper development and maintenance of bones and teeth. When magnesium intake is low, the body compensates by withdrawing stored magnesium from the bones. Deficiency can impair bone-building cells, called osteoblasts, and increase the activity of osteoclasts responsible for bone resorbing (breaking down the tissue in bones and releasing their minerals).

Magnesium is a cofactor in more than 300 enzymatic processes, including those involved in converting carbohydrates, proteins, and fats into cellular energy as adenosine triphosphate (ATP). It is also a cofactor for enzymes that catalyze DNA and RNA, and helps stabilize the structure of proteins and DNA.

As an electrolyte, magnesium is needed to regulate the movement of minerals, such as sodium, potassium, and calcium, in and out of cells. This affects nerve impulses, regulates muscle contractions (including heart rhythm), and prevents muscle cramps. It also helps promote digestive regularity by modulating the contraction and relaxation of intestinal muscles.

Blood magnesium levels increase during times of acute stress. In these periods, it helps regulate multiple neurotransmitter systems and influences the sensitivity of nerve receptors, such as those involved in stress and nervousness.

## Research

Magnesium is an essential mineral and an important cofactor in many enzyme-driven processes throughout the body. It has numerous roles, including the formation of healthy bones and teeth, regulating muscle contraction and relaxation, maintaining heart rhythm, energy production, and electrolyte and water balance (Bertinato et al., 2017). The Recommended Daily Allowance (RDA) for magnesium for children and adolescents is shown in the table below. Achieving these daily intakes can be challenging through diet alone.

Magnesium is crucial for healthy growth and development, making it important to consume enough magnesium during childhood. Maintaining an adequate intake can be challenging for children due to picky eating habits and increased prevalence of processed foods. Additionally, declining mineral levels in agricultural soil is believed to be reducing the magnesium content of plant-based foods (DiNicolantonio et al., 2018).

Despite its importance, the Canadian Health Measures Survey (CHMS) found that up to 22% of children aged 12–19 and up to 7% of children aged 6–11 have severe magnesium deficiency (Bertinato et al., 2017). Low magnesium levels are associated with numerous health problems, from low bone mineral density and decreased physical performance, to cardiovascular conditions (Bertinato et al., 2017). In order to prevent magnesium deficiency, it must be consumed regularly.

Approximately 60% of the body's stored magnesium is found in the bones. It is an essential structural component of the bone's mineral matrix and is stored there as a resource for replenishing extracellular magnesium levels. Childhood and adolescence are important times for building bone mineral density that affects bone health throughout life. It is believed that inadequate bone mineral mass during adolescence is related to the development of osteoporosis later in life (Abrams et al., 2013). A clinical study identified that magnesium intake and total magnesium absorption in 4–8-year-old children is more significantly associated with bone mineral content and bone mineral density than calcium intake is (Abrams et al., 2013).

Magnesium is critical for maintaining muscle mass and function, with approximately 27% of the body's magnesium found in the skeletal muscle tissue (DiNicolantonio et al., 2018). Its roles in muscle function and energy metabolism are thought to be involved in its benefits for relaxation and cognitive function. This is supported by the body's increased demand for magnesium during times of emotional or psychological stress (DiNicolantonio et al., 2018). Magnesium deficiency has been shown to impact attention span and increase symptoms of nervousness, fatigue, and mood swing (Elbaz et al., 2017). Research shows that children with attention-deficit hyperactivity disorder (ADHD) are more likely to have low magnesium levels. A study of children aged 6–16 years detected magnesium deficiency in 65% of children with ADHD (Elbaz et al., 2017).

**Table 1: Recommended Daily Allowance (RDA) for magnesium (Health Canada, 2018)**

Children	1–3 years	80 mg/day
Children	4–8 years	130 mg/day
Adolescents	9–13 years	240 mg/day
Adolescent Males	14–18 years	410 mg/day
Adolescent Females	14–18 years	360 mg/day

## Ingredients

### Each chewable tablet contains:

Magnesium (citrate) ..... 50 mg

## Dosage

### Recommended dose (children 3 years and older):

Chew 1 tablet daily or as directed by a health care practitioner.

## Cautions

Keep out of the reach of children.

## References

- Abrams, S.A., Chen, Z., & Hawthorne, K.M. (2013). Magnesium metabolism in 4-year-old to 8-year-old children. *Journal of Bone and Mineral Research*, 29(1), 118-122.
- Bertinato, J., Wang, K.C., & Hayward, S. (2017). Serum magnesium concentrations in the Canadian population and associations with diabetes, glycemic regulation, and insulin resistance. *Nutrients*, 9(3), 296.
- DiNicolantonio, J.J., O'Keefe, J.H., & Wilson, W. (2018). Subclinical magnesium deficiency: a principal driver of cardiovascular disease and a public health crisis. *Open Heart*, 5(1), e000668.
- Elbaz, F., Zahra, S., & Hanafy, H. (2017). Magnesium, zinc and copper estimation in children with attention deficit hyperactivity disorder (ADHD). *Egyptian Journal of Medical Human Genetics*, 18(2), 153-163.
- Health Canada. (2018). Multivitamin/Mineral Supplements Monograph. Retrieved from: [http://webprod.hc-sc.gc.ca/nhpid-bdipsn/atReq.do?atid=multi\\_vitmin\\_suppl&lang=eng](http://webprod.hc-sc.gc.ca/nhpid-bdipsn/atReq.do?atid=multi_vitmin_suppl&lang=eng)