

# NEXT GENERATION MINERALS

## 7 Reasons

Why You Need Albion® Chelated Minerals



# 1 Minerals are more essential than Vitamins

Vitamins & Minerals are often categorized as one group in market reports. You probably know that minerals are important to your overall health. But do you realize that minerals are every bit as, if not more, critical to your well-being than vitamins? Your blood, bones, nervous system, cells, tissues, and immune system all rely on minerals to keep your body functioning and thriving. We are not able to produce them ourselves in the body, but need to get them from food sources.



One reason that our food cannot meet our needs is that our agricultural practices are producing less nutrient dense foods. In a seminal study in the British Food Journal, it was found that there were statistically significant reductions in calcium, magnesium, iron, zinc copper, and potassium in fruits and vegetables.<sup>5</sup>

Dietary food supplements and food fortification strategies are very effective to ensure adequate consumption of minerals.

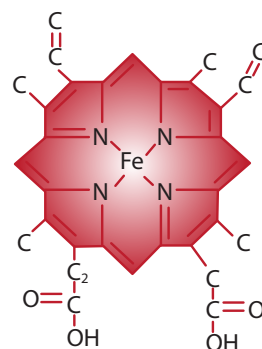
## 2 Take the best – take them the natural way

Today most of the minerals used in the food supplement market are an inorganic form (oxides, carbonates, sulfates, etc.), which are poorly absorbed by our bodies. Minerals found in your daily supplement could be leaving your body without ever being absorbed and put to use.

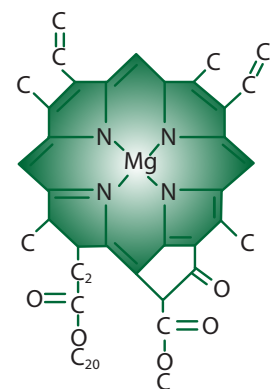
In nature, the highly bioavailable forms of minerals are packaged in proteins to protect them from binding to other food, not causing irritation to the GI tract and increasing bioavailability. Two examples are iron in the form of hemoglobin and magnesium in plant chlorophyll. (see picture on the right)

- 15% of German adults, about 75% of Taiwanese adults, and 28% of Mexican adults do not consume adequate magnesium in their diets.<sup>1</sup>
- The World Health Organization estimates that 17.3% of the global population does not consume adequate zinc in their diets.<sup>2</sup>
- Although there has been a significant reduction of risk of deficiency, it is still estimated that 51% of the global population is at risk of calcium deficiency.<sup>3</sup>
- Iron deficiency is the most common and widespread nutritional disorder in both developed and developing countries, and is a major global economic drain on productivity.<sup>4</sup>

Fortunately, science and patented technology can help by creating and mimicking an organic molecule in a form the body can assimilate. These special organic forms of mineral elements are known as mineral amino acid chelates. Albion's chelates used in food and nutritional supplements provide complete organic mineral nutrition, giving our bodies the ultimate chance to absorb the minerals for our best biological advantage.



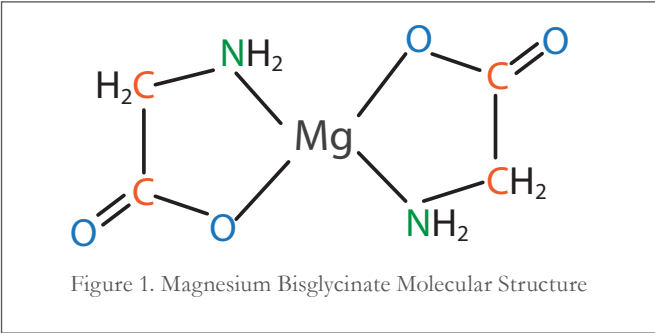
[ Human Blood Hemoglobin ]



[ Plant Chlorophyll ]

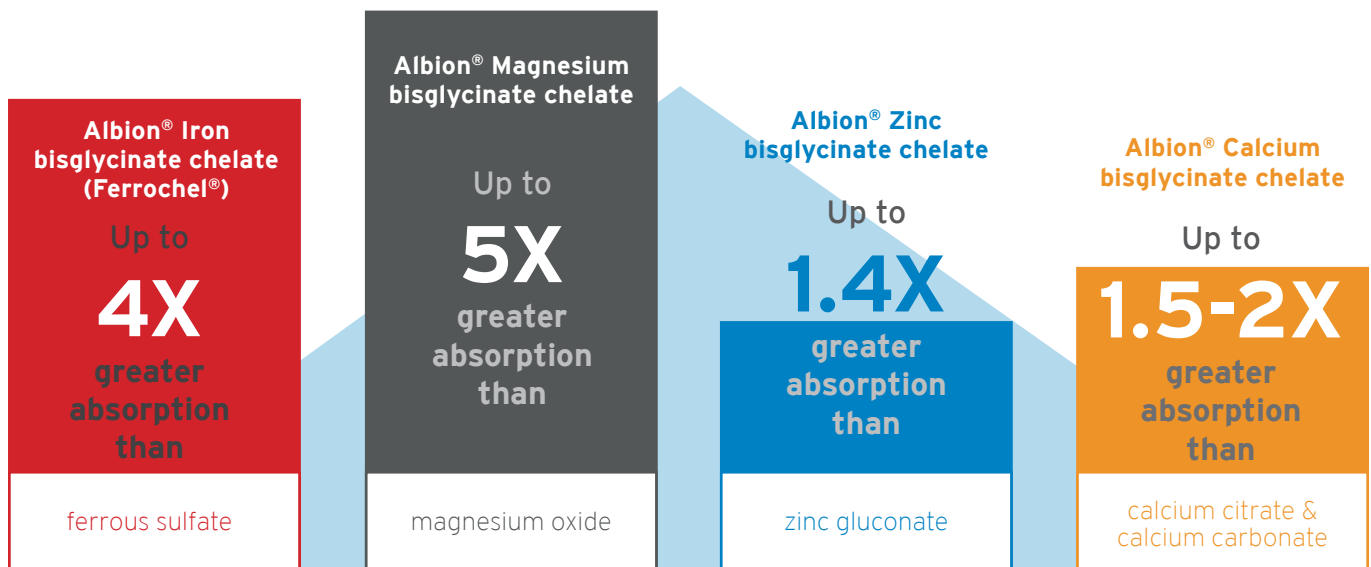


The human body is very efficient at absorbing individual amino acids. For instance, the amino acid glycine is readily absorbed across the intestinal wall. When the glycine “grabs” and bonds with a Magnesium molecule, you’ve got Magnesium Glycinate. The chelated Magnesium doesn’t break down in the digestive process. Instead it is easily absorbed, because it gets carried to your cells bound to the amino acid. (Figure 1)



### 3 Scientifically proven superior bioavailability

Bioavailability is the measure of the amount of an ingested nutrient that is absorbed and made available to the body for metabolic use. Bioavailability is important because nutrients must be absorbed to be available to various body systems for growth, maintenance of body tissues, reproduction, and other performance factors. No matter how high the nutrient levels or how well formulated the product, if the nutrient is not bioavailable for use by body tissue, then money and effort have been wasted.



- Pineda, Ashmead, Perez, & Lenus, 1994<sup>6</sup>
- Pineda & Ashmead, 2001<sup>7</sup>
- Layrisse & al., 2000<sup>8</sup>

- Schuette, Lashner, & Janghorbani, 1994<sup>9</sup>
- Hartle, Morgan, & Poulsen, 2014<sup>10</sup>

- Gandia, 2007<sup>11</sup>

- Heaney, Recker, & Weaver, 1990<sup>12</sup>

Additionally, factors like pH and ionization have influence on the absorption of minerals and their final bioavailability in the circulatory system. Chelated minerals don’t need ionization and are not pH dependent, which results in an improved absorption and higher bioavailability.

Organic mineral amino acid chelates have been scientifically proven to be more easily absorbed into the human body. Part of the reason for this higher bioavailability and tolerability is that chelated minerals are absorbed intact and break apart in the intestinal cell for transport.

### 4 Excellent safety and tolerability

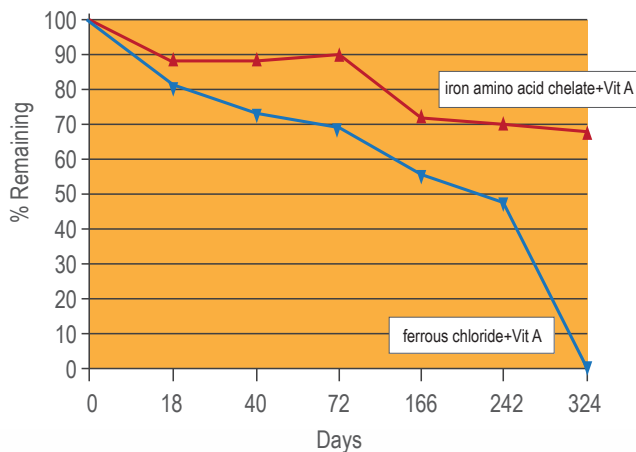
It is important that as highly bioavailable mineral sources, amino acid chelates are safe and well tolerated to be considered as effective and nutritionally relevant.

- In a study in ileal resected patients comparing magnesium oxide and magnesium bisglycinate chelate, the magnesium bisglycinate caused fewer bowel movements and no diarrhea.<sup>9</sup>
- In healthy adults, magnesium bisglycinate chelates at dosages of 450 mg and 600 mg of magnesium per day had good bowel physiological response as determined by fecal consistency scores.<sup>13</sup>

- In adolescents, ferrous bisglycinate chelate, had less than half the gastric distress incidents recorded than the equivalent dose of ferrous sulfate.<sup>6</sup>
- In healthy adult women there was an overwhelming preference for the ferrous bisglycinate compared to ferrous sulfate due to lower incident of moderate to severe gastric side effects with the ferrous bisglycinate.<sup>14</sup>

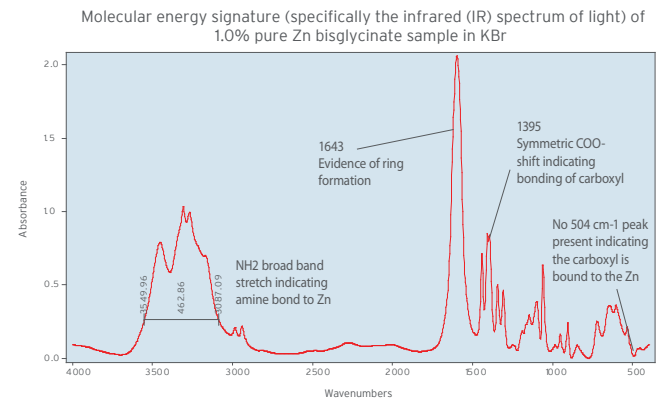
Finally, it is beneficial if the mineral sources do not cause negative side effects with other nutrients in a supplement, such as phytates and other substances that are not absorbable. In addition, non-chelated mineral compounds can destroy other important nutrient factors, such as vitamin E, ascorbic acid, various B-vitamins, and certain medications.

Amino acid chelates were compared to sulfates in a vitamin and mineral mixture. It was found that the amino acid chelates caused less degradation of the vitamins when stored at either 20 or 37 C.<sup>15</sup> In another study, a comparison of iron amino acid chelate to ferrous chloride in a vitamin A solution showed that the iron amino acid chelate had no effect on the degradation of vitamin A.<sup>16</sup> (See the graph below)



## 5 Proven 100% Chelate - TRAACS™

In the process of making a chelated mineral there are many factors which contribute to producing a “fully reacted” amino acid chelate. For example, the amount of ligand that is used, the time of the reaction and of course, the technology used. A mineral amino acid chelate is “fully reacted” depending on the measurement of bonds between the ligand and the mineral. Albion is unique in that we verify that our mineral products are fully reacted chelates through a series of testing methods and especially Fast-Fourier Transforming Infrared (FT-IR) spectroscopy.



This technology identifies the bonds between the ligand (amino acid) and mineral. Albion can guarantee each batch of minerals has the molecular structure indicating that chelation has occurred. We are proud to bring you and your consumers the proven clinical benefits of a true chelated mineral.

To make it easy to communicate these benefits to consumers, we have created a brand name for this unique technology and proof of quality: TRAACS™ - The Real Amino Acid Chelate System, which can be used on the consumer package.

**TRAACS™**



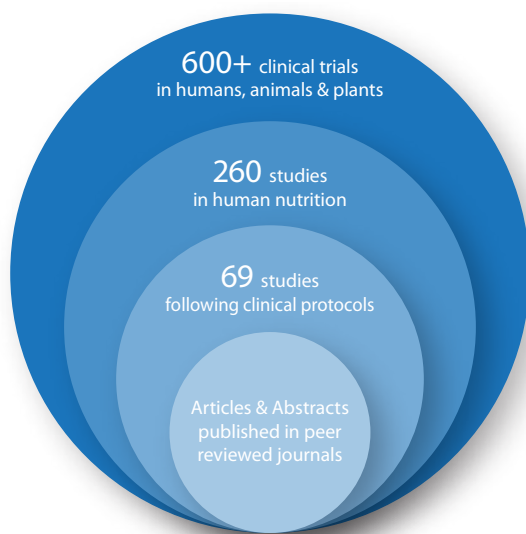
## 6 Patented technology & Scientifically proven

Albion® creates proven, fully reacted mineral chelates in our lab under tightly controlled conditions, specific manufacturing processes, and carefully monitored state-of-the-art facilities. Albion has acquired multiple patents on the chelation manufacturing process.

Today Albion's patent portfolio includes approximately 162 US and International patents with approximately 32 applications pending.

Research on Albion minerals begins a long history of acceptance for publication in peer reviewed journals. Over 600 studies and clinical trials have been conducted on Albion minerals in plants, animals and humans. Of those, 260 studies investigated our products for human nutrition; 69 of these investigations were conducted following clinical protocols.

To date, over 134 articles and abstracts on Albion minerals in human nutrition have been published in peer reviewed journals.



## References

1. Naithani, M., Bharadwaj, J., & Darbari, A. (2014). J Med Nutr & Nutraceut, 3(2):66-72.
2. Wessels, K., & Brown, K. (2012). PLOS One, 7(11):e50568.

## 7 Albion® has a unique quality which is approved by EFSA

Since 2006 Albion has submitted various dossiers with details on Albion minerals to get them approved in Europe. It is only due to the scientific back up and high quality production processes that Albion chelates have been approved on the EU market.

EFSA stands for European Food Safety Authority. This body follows strict protocols for approving the additives, flavorings, processing aids and materials that are included in, and that come into contact with food.

Albion quality begins with the selection of high grade, pure ingredients for the nutritional value they provide. We source our ingredients through qualified manufacturers evaluated by our quality department. To be accepted for use by Albion, raw materials must be tested and guaranteed:

- Halal
- Kosher
- Non-GMO
- Hypoallergenic
- Low in heavy metal content
- Vegan and vegetarian friendly



TRAACS®



GRAS

3. Kumssa, D., Joy, E., Ander, E., & al., e. (2015). Sci REp, 5:10974.
4. www.who.int/nutrition/topics/ida/en/, Accessed Mar 20, 2017.
5. Mayar, A. (1997). Brit Food J, 99(6):207-211.
6. Pineda, O., Ashmead, H., Perez, J., & Lenus, C. (1994). J Appl Nutr, 46:2-12.
7. Pineda, O., & Ashmead, H. (2001). Nutrition, 17:381-384.
8. Layrisse, M., & al., e. (2000). J Nutr, 130:2195-2199.
9. Schuette, S., Lashner, B., & Janghorbani, M. (1994). J Parenteral Enteral Nutr, 18:430-435.
10. Hartle, J., Morgan, S., & Poulsen, T. (2014). Experimental Biology Meeting.
11. Gandia, P. e. (2007). Int J Vitam Nutr Res, 77:243-248.
12. Heaney, R., Recker, R., & Weaver, C. (1990). Calcif Tissue Int, 46:300-304.
13. Ashmead, S., & al, e. (2016). Toxicologist, Proceedings of Society of Toxicology, Abstract 2457.
14. Coplin, M., & Schuette, S. (1991). Clin Therapeut, 13:606-612.
15. Marchetti M, e. a. (2000). J Food Comp Anal, 13:875-884.
16. Albion Laboratories, Inc. (1994). Unpublished internal study.



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Albion's facilities are cGMP certified for Dietary Supplements through NSF International



Albion is ISO 9001:2008 certified through NQA