

What's New With ALBION

The past year at Albion laboratories has truly been a landmark year. It has been filled with frenzied activity and meaningful achievements. As one might expect, Albion's strengths - research and technology - are at the core of all of our activities and accomplishments. Following are some of the more significant Albion achievements that have stood out over the past year.

- American Chemical Society granted all of Albion's patented totally reacted, nutritionally functional mineral amino acid chelates CAS RNs (Chemical Abstract Services Registry Numbers).
- Albion's patented iron amino acid chelate, Ferrochel, was self affirmed as G.R.A.S. for food fortification in the fall of 1997.
- All of Albion's ingredients and blends have been certified Kosher and Parve by KOF-K Kosher Supervision of Teaneck, NJ.
- Albion held another international conference on human nutrition. Scientific presentations were made by over a dozen leading experts in the field of mineral nutrition. Many of the presentations will soon be published in scientific journals.
- Albion introduced its new Gold Medallion program and awarded Gold Medallion company status to several respected nutritional supplement companies in the natural products industry.
- At least five research studies were published or accepted for publication

in peer reviewed journals. Several of these studies have also been presented at leading scientific conferences around the world.

- Several countries around the world have approved and registered Albion's patented amino acid chelates for use in their countries.

Albion's website on the Internet will soon be completed. Albion is also working towards getting F.R.A.S. for food fortification status for the rest of its patented chelates. The process of attaining this type of G.R.A.S. status is expensive and time consuming. It requires a considerable amount of peer reviewed research before a chelate can be affirmed.

Albion is the only company to have its mineral amino acid chelates granted CAS RNs by the American Chemical Society. This means that only Albion's customers can rest assured that Albion's totally reacted, nutritionally functional mineral amino acid chelates are exactly what we say they are. Only Albion has proven to the highest chemical authority that its chelates are true amino acid chelates that possess the chemical structures and characteristics that we have been touting all along. No other marketer of mineral amino acid chelates has been able to achieve this status. We wonder why!!

In the early 1970's, only mineral supplement chelates made by Albion were officially acknowledged as being

G.R.A.S. by the FDA. No other company has ever conducted the necessary research to prove its so-called chelates are safe. Since then, these other mineral products have been grandfathered as safe as a result of changes in the federal laws, but their safety claims have never been proving that its patented amino acid chelates are also safe when added to food.

The Self Affirmation of Ferrochel as G.R.A.S. for food fortification is a very significant accomplishment. In pursuing this status, Albion has had a wide range of independently conducted toxicology studies performed to evaluate the safety of Ferrochel. These studies, in addition to the vast prior efficacy research done on Ferrochel, were reviewed by an outstanding panel of food safety experts, including former FDA officials, M.D.s, and toxicologists. These experts concluded that Ferrochel met the appropriate specifications to be considered G.R.A.S. for food fortification, as well as for dietary supplementation, even though the latter was not technically necessary. Under the conditions of the studies, the panel found Ferrochel to have a NOAEL (no observed adverse effect level) of greater than 500 mg of iron/kg bw/day. This is quite a remarkable level of safety for any iron ingredient, let alone one that has the high degree of bioavailability seen in Ferrochel.

Selected Highlights From ALBION'S Second International Conference on Human Nutrition

On January 24-25, 1998, Albion hosted a two day conference devoted to original presentations and research reports on Albion's patented, totally reacted, nutritionally functional mineral amino acid chelates. Over a dozen scientists gave an invited audience that consisted of nutrition industry leaders and scientists from around the world a well rounded series of reports on a variety of minerals that dealt with safety, effectiveness, metabolism, bioavailability, applications, nutrient interactions, and the need for supplementation.

A list of the speakers and titles of their presentations follows. It would not be possible to cover the complete conference in the text of this newsletter. Presentation highlights from the conference will follow in this and subsequent issues of the newsletter.

ALBION HUMAN NUTRITION CONFERENCE, 1998	
TOPIC	SPEAKER
The Need for Fortification of Food	Dr. Christiaan Barnard, M.D., Ph.D.
The Need for Bioavailable Minerals	Deloy Hendricks, Ph.D., CNS
The Metabolism of Amino Acid Chelates	H. DeWayne Ashmead, Ph.D., FACN
Calcium: Importance of Health and Bioavailability of Various Sources	Robert P. Heaney, M.D., FACP, F.A.I.N.
Non-Interaction of Albion's Metal Amino Acid Chelates with Food Ingredients	Stephen Ashmead, M.S.
Milk Fortification with Calcium Amino Acid Chelates	Jose Joao Name, M.D.
The Bioavailability of Copper Amino Acid Chelate	David Atherton, Ph.D.
Cause and Consequences of Suboptimal Zinc and Copper Intake	Robert D. DiSilvestro, Ph.D.
The Bioavailability of Magnesium Amino Acid Chelate	Dennis Nuzback, DVM, Ph.D.
Bioavailability and Efficacy of Iron From Ferrochel	Haile Mehansho, Ph.D.
Safety Evaluation of Ferrous Bisglycinate Chelate	Joseph Borzelleca, Ph.D.
Properties of Iron Amino Acid Chelates As Iron Fortificants for Maize	Lindsay H. Allen, Ph.D.
Studies Using Iron Bis-Glycinate Chelate: Absorption, Regulation, and Toxicity	Oscar Pineda, M.D., Ph.D.

Causes And Consequences Of Suboptimal Zinc And Copper Intake

In the course of his presentation, Professor Robert DiSilvestro discussed two new research studies that he directed at Ohio State University. One study was devoted to the effects of supplementation with Albion's copper amino acid chelate on various parameters in 20 middle aged males, all of whom had moderately high plasma cholesterol readings. The second study which he supervised involved 40 postmenopausal, Type II diabetic women. This study examined some effects which resulted from supplementing this particular group with 30 mg of zinc from Albion's

zinc amino acid chelate.

Professor DiSilvestro also pointed out some possible reasons for individuals to

have high zinc or copper needs. Table 1 contains a list of those reasons. Note that Table 1 suggests that mineral needs can be raised by elevated levels of protein that contain zinc and copper. Dr. DiSilvestro believes that this idea is underappreciated. It may, in fact, be a common cause for the gap between mineral needs and mineral intakes. In certain conditions, the body must make an unusually high amount of a protein that normally contains zinc and/or copper. This can cause a substantial amount of the body's zinc or copper to be drawn from other places
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Table 1
Some Possible Reasons for High Zinc or Copper Needs

People Group	Problem
The elderly	Poor utilization
Diabetic individuals	High excretion, other factors
Female endurance athletes	High excretion, other factors
Arthritic subjects	Stress-induced increase in metalloprotein
Down syndrome children	Genetic-induced increase in metalloprotein
Premature infants	Low mineral stores
Cystic fibrosis & Crohn's disease patients	Poor absorption
Kidney dialysis patients	Many of the above
Trauma patients	Many of the above

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in the body into the protein pool. If zinc or copper intake is not particularly high, two things can happen. When the protein pool level rises, copper and zinc levels are depleted from other body sites, which results in inadequate zinc or copper to fill all the metal sites elsewhere in the body. This can pose a serious problem, in that the body needs to saturate certain enzymes, such as SOD, with those metals as a host defense. In another sequel, the copper or zinc can be drawn away from other functional copper or zinc pools, which could result in the impairment of other copper or zinc functions.

...NOW TO THE SUMMARY OF DR. DISILVESTRO'S STUDIES

In the first study, Professor DiSilvestro administered 2 mg/day of elemental copper (Albion's copper amino acid chelate) to 20 middle aged males suffering from moderately high cholesterol. The results were compared to a placebo in the same subjects. The study found that the copper supplementation had a significant effect on the men who had copper enzyme readings below median values at the start of the study. Subjects with the low copper enzyme values were significantly affected by the administration of the copper amino acid chelate. See Table 2.

It should be noted that these significant increases in copper parameters were

Table 2
Effects of Copper Supplementation of Adult Men With Copper Enzyme Activities Below The Study Men

	DAO* UL	SOD** U/ml cells x 10 ³	VLDL + LDL Oxidation lag time (Minutes)
Pre Copper	34 +/- 21	2.6 +/- 0.5	36 +/- 6
Post Copper	68 +/- 27***	3.0 +/- 0.7****	64 +/- ***

Median splits were based on precopper values. Values are means +/- SD for 10 subjects

* Diamine Oxidase in plasma

** Superoxide dismutase in erythrocytes

*** p < 0.01 (paired Student's t-test)

**** p = 0.05 (paired Student's t-test)

achieved with only 2 mg of copper/day as Albion's copper amino acid chelate for four weeks. There was no effect seen on plasma cholesterol in this study, but the researchers felt that this was due to the study time being too short.

Professor DiSilvestro pointed out that the effect seen on lipoprotein oxidation rates adds credence to the idea that copper helps prevent cardiovascular disease, and contradicts the idea that copper promotes atherosclerosis by stimulating lipoprotein oxidation.

In the second study that DiSilvestro supervised, 40 Type II, postmenopausal women were placed on 30 mg/day of elemental zinc (as Albion's zinc amino acid chelate) for three weeks. The researchers monitored changes in 5' - nucleotidase (a good collaborator of zinc status) over the

course of supplementation. The initial 5' - nucleotidase activities in the diabetic women were extremely low, and after the three week course of zinc amino acid chelate supplementation, this enzyme activity almost double. In addition, the plasma zinc was elevated and subjects with low insulin-like growth factor (IGF) values experienced increases in these values on the zinc amino acid chelate. Low IGF values can pose a high risk for diabetic complications.

Dr. DiSilvestro concluded by stating that there is reason to believe that many types of people could benefit by increasing their consumption of zinc and copper. The potential benefits are very broad, and could enhance the usefulness of other micronutrients and even phytonutrients.

Bioavailability and Efficacy of Iron From Ferrochel

In his presentation, Dr. Haile Mehansho, who has conducted several studies on Albion's patented amino acid chelates on behalf of Proctor and Gamble Company, reported research done under the direction of Dr. M. Latham of Cornell University with help and support from Dr. Mehansho and Proctor & Gamble. The first part of the study evaluated the bioavailability of Ferrochel in animals by

using hemoglobin depletion-repletion assay. The 14 day trial showed hemoglobin gains of from 3.9 to 4.4 g/dL, which were very significant. In the second part of the study, the impact of the iron on school age children (740 children, 6-12 years) was evaluated. Each child received 6.3 mg of iron (from Ferrochel) per day (5 days per week) for 6 months. There was a significant improvement in the iron

status of the children who were anemic at baseline. There was a 1.3 g/dL increase in the Ferrochel group, while the placebo group experienced only a 0.14 g/dL increase. In addition, a smaller unfinished study was done on pregnant women who received 10.8 mg of iron (from Ferrochel). After 2.7 months, an increase in mean hemoglobin was seen of from 10.2 g/dL to 12.1 g/dL, which again, was very significant. The researchers concluded that Ferrochel has excellent bioavailability and efficacy.

Many More Highlights to Come

Unfortunately, space limits amount of the conference that can adequately be covered in the course of a single newsletter. In light of this, and not wishing to slight any of the other presenters at the conference, additional highlights will come in future issues, or if one is interested in the text of a particular presentation, requests for reprints can be made to Albion Laboratories.

In Conclusion

Albion wishes to thank all those present at the conference (attendees and presenters alike). Many new findings about the benefits, advantages, and potential applications for Albion's totally reacted, nutritionally functional mineral amino acid chelates were dealt with in depth. The accumulation of research in support of Albion's patented mineral technology continues to grow. No other provider of mineral chelates has come

forward with any research to support their ingredients. Only Albion Laboratories, over the course of several decades, has invested in the research needed to show the advantages of their unique and patented mineral chelate technology. If you want a mineral delivery system that makes a difference in a nutritional product, Albion Laboratories is the only real answer.



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