

Albion Holds Its First International Conference on Human Nutrition

On January 21 and 22, 1995, Albion Laboratories sponsored a unique information sharing event. This international conference featured researchers and specially invited guests from Europe, the United Kingdom, Brazil, Chile, Venezuela, Guatemala, Asia, Canada, and throughout the United States. Attendees were there from the natural health food industry, pharmaceutical industry, the multi-level marketing field, food fortification technology, and academia. Over the course of the two day conference, there were eleven presentations given in the area of human nutrition. Many of the presentations were given by some of the world's leading researchers in the field of mineral nutrition. One speaker was noted to comment that there was more knowledge on mineral nutrition collected in that on conference room than anywhere else in the world. This conference was highlighted by the unveiling of new research findings regarding the uses and advantages of Albion's patented chelated minerals which can have great impact on the future of mineral supplementation and fortification worldwide.

It would be impossible to do justice to all of the information that came out at this conference within the text

of this newsletter. Following is a list of the speakers and topics presented at this conference.

Albion International Conference	
Problems and Controversies in Mineral Nutrition	Richard A. Passwater, Ph.D.
Biochemistry and Physiology of Albion [®] Amino Acid Chelates as Proofs of Chelation	Robert B. Jeppsen, Ph.D.
The Use of Iron Amino Acid Chelate in the Treatment of Iron Deficiency and Iron Deficiency Anemia	Oscar Pineda, Ph.D.
Current Directions for Human Copper Amino Acid Chelate Nutritive Research	Robert A. DiSilvestro, Ph.D.
Increased Superoxide Dismutase Activity Resulting from Ingested Amino Acid Chelated Minerals	H. DeWayne Ashmead, Ph.D.
Chromium Chelavite [®] in Animal Nutrition: Potential Applications for Humans	David N. Mowat, Ph.D.
A Double Blind Evaluation of the Nutritional Supplement Endura vs. an Equivalent Number of Calories in the Form of Carbohydrates as a Treatment for Arm Pump in the Motocross Athlete	Stephen M. Paul, Ph.D.
Food Fortification with Amino Acid Chelated Minerals	Jo�e Jo�o Name, Ph.D.
Human Therapeutic Applications of Amino Acid Chelates	Len Mervyn, Ph.D.
The Advantages and Applications of Albion's Amino Acid Chelates	Max R. Motyka, M.S.
Albion Research: Past, Present and Future	Harvey H. Ashmead, Ph.D. Stephen Ashmead, M.S.

At the conference, several new clinical studies were presented which were very significant. In the following abstracts, we will try to share some of these findings. In future Albion® Research Notes, we will summarize additional presentations.

Oscar Pineda, Ph.D.: "The Use of Iron Amino Acid Chelates in the Treatment of Iron Deficiency and Iron Deficiency Anemia"

The results from several recently completed clinical studies were shared with the conference participants. The first study consisted of a group of 40 children ranging from 3 to 36 months of age. These children were admitted to the Nutritional Recovery Unit of the Pediatric Department of the San Juan de Dios General Hospital of Guatemala City. All suffered from protein-energy malnutrition (PEM) and had hemoglobin levels of less than 11 g/dl. In this double blind study, the children were paired as closely as possible in terms of type of malnutrition, age, and hemoglobin levels and then assigned to either of two treatment groups. One group received iron as Albion's patented Ferrochel®, and the other received iron as ferrous sulfate. The protocol called for each of the children to receive 5 mg of iron per kg of body weight, along with equal ratioed increments of folic acid for a period of thirty days. Both groups had significant increases in hemoglobin (Figure 1), but the group receiving Ferrochel showed a significantly higher increase in ferritin levels (Figure 2), with their average ferritin increase being three times that observed with the ferrous sulfate group. This indicated a significant improvement in body stores of iron.

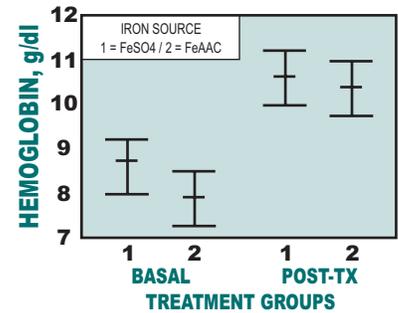
These data demonstrated the superior bioavailability of iron from Ferrochel over ferrous sulfate. In an

iron deficiency state, the absorption of iron from ferrous sulfate is greater during the first 8-10 days of treatment, but it then rapidly decreases to levels in the range of 2%. In treatments of short duration, iron absorbed from ferrous sulfate was enough to increase hemoglobin, but it was not sufficient to insure formation of any body reserve. In reviewing all the parameters that reflect body iron changes, Dr. Pineda found that the bioavailability of iron from Ferrochel was between 70 and 75%, whereas the iron from ferrous sulfate reached a maximum bioavailability of only 25-28%, even in the face of severe anemia.

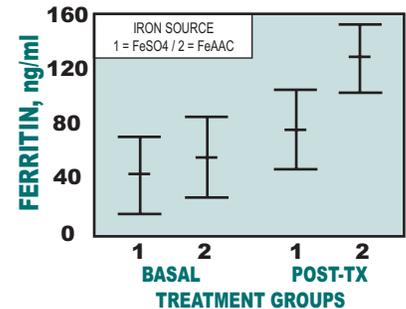
In a second study, Dr. Pineda observed the effects of fortifying cookies with Ferrochel. The cookies were formulated to contain known dietary inhibitors to absorption of non-heme iron, such as fiber, tannins and phenols. Each cookie contained 30 mg of iron from Ferrochel. The cookies were administered once a day to school age children for 30 days. The changes in hemoglobin levels are summarized graphically in Figure 3.

The average hemoglobin level of these students increased by 27 to 30%. A 30% hemoglobin increase after just 30 days with only a 30 mg dose of iron as Ferrochel in the presence of all the known dietary

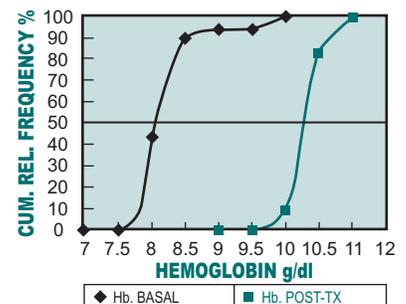
inhibitors of iron absorption is beyond any expectations. Dr. Pineda, et al., concluded that the absorption of iron from Ferrochel was not impeded by dietary factors that typically block the absorption of other forms of iron.



▲ Figure 1. 99% LSD for hemoglobin means in infants treated 4 weeks with 5mg Fe/kg/wt.



▲ Figure 2. 99% LSD for ferritin means in infants treated 4 weeks with 5mg Fe/kg/wt.



▲ Figure 3. Hemoglobin levels of anemic children after treatment with cookies fortified with 30 mg Fe from iron amino acid chelate.

Robert DiSilvestro, Ph.D.: "Current Direction for Human Copper Amino Acid Chelate Nutritive Research"

Professor Robert DiSilvestro, of Ohio State University, recently completed research using Albion's Copper Chelazome® with positive results in raising SOD levels in arthritics. Dr. DiSilvestro reported that he is conducting a study using Albion's Copper Chelazome in patients affected with low level hypercholesterolemia. The study should be finished in the first half of 1995. It was Dr. DiSilvestro's assessment that people with marginal copper status exhibit mild elevation in their serum cholesterol levels. In addition, Dr. DiSilvestro

will be investigating the effects of copper on LDL cholesterol oxidation. Many observers fear that copper supplementation can enhance this LDL cholesterol oxidation, which can contribute to atherosclerosis. *In vitro* studies have shown that *inorganic* copper can oxidize LDL, and that ceruloplasmin (a major serum copper containing compound) can do the same. The laboratories at Ohio State University have found that native ceruloplasmin will not oxidize LDL *in vitro*. Dr. DiSilvestro will be studying the effect of Copper Chelazome supplementation on the susceptibility

of LDL to oxidation.

It is of major interest to note that, according to Dr. DiSilvestro: "The enzyme diamine oxidase has been found to be a very good indicator of marginal copper status in rats, as well as a good indicator of spontaneous copper deficiency in humans. Diamine oxidase is not influenced directly by inflammation in the way that ceruloplasmin is." Further studies are needed, but Dr. DiSilvestro felt that diamine oxidase may be valuable in evaluating marginal copper status in humans.

Jo e Jo o Name, M.D.: "Food Fortification with Amino Acid Chelated Minerals"

Dr. Jo e Name, a medical doctor renowned for his clinical nutrition research in Brazil, reported on his findings in the use of Ferrochel in several innovative food fortification studies. In his work, Dr. Name investigated the fortification of milk, corn flour, and margarine with Albion's patented iron amino acid chelate - Ferrochel. The fortification of milk and margarine with iron had been thought to be out of the question, for a variety of reasons, and thus, Dr. Name's findings were indeed revolutionary.

Cow's milk has been long known to interfere with dietary absorption of iron. It has also been observed that iron in cow's milk has low bioavailability. In fact, as little as 50 ml of milk has

been seen to inhibit the absorption of up to 90% of the iron ingested as ionic iron. The phosphates in the milk's casein and the calcium content of milk are the two main inhibitors of ionic iron absorption. Consequently, to be successful as a milk fortifier, the source of iron must:

- Cause no taste or color change in the milk
- Not cause fat oxidation
- Endure the pasteurization process
- Have high bioavailability
- Not be affected by dietary inhibitors in the milk

Other forms of iron, such as ferrous sulfate, ferrous fumarate, reduced iron, poly-maltose iron, etc., all were

tested and failed. All of the ionic iron sources, due to pro-oxidative properties, reacted with the fats in the milk which led to a spoiled or 'off flavor' taste.

In Dr. Name's study, Ferrochel was added to milk at the rate of 3 mg of elemental iron per liter of milk. It was found that the Ferrochel did not alter the taste or the color of the milk. It did not oxidize any of the milk components, even when subjected to high temperatures. This is a major scientific breakthrough. All other forms of iron are known for their tendency to oxidize milk components - especially the fats.

A clinical study was conducted over the course of one year, in the city of Angatuba (Brazil). From the

(Continued on page 4)

(Continued from page 3)

outset, each of the 269 children in the study was given one liter of the Ferrochel fortified milk per day. The results of the study showed a significant reduction of anemia, even though the dose was less than 3 mg of elemental iron from Ferrochel per day. After one year, Dr. Name's study showed a 58% reduction in anemia (See Table 1 below).

TABLE 1 - Reduction in Anemia

Age (Months)	% Decrease in Anemia	Increase of Hemoglobin (g/dl)
6-12	56.0	0.9
12-23	70.3	1.5
24-35	55.0	1.0
36-48	50.0	0.3
Total	58.0	1.1

NOT ENOUGH SPACE

There is just not enough space in this newsletter for all the great new information that was presented at Albion's International Conference on Human Nutrition. As seen in this edition, researchers at this conference have completed studies that document several superior advantages of Albion's Ferrochel:

- Tremendous bioavailability
- Freedom from dietary interactions
- Charge neutrality and chemical stability
- Reduction of lipid peroxidation
- Heat stability
- Longer shelf life
- High tolerance
- High safety margin

These advantages make Ferrochel the iron of choice for all nutritional supplement or food fortification applications.

Additional new information on copper came from Dr. DiSilvestro. Dr. Len Mervyn provided an overview of the clinical applications of Albion's mineral chelates. Dr. Stephen Paul of Metagenics summarized research findings on the use of Albion's Magnesium Chelazome® in a patented electrolyte replacement formula. His research report showed the benefits of this magnesium form to endurance in athletic events. New findings on the positive effects of Chromium Chelavite® in stress came from Professor David Mowat. Dr. Richard Passwater showed that the findings of the infamous "Finnish study" on iron research.

The list of exciting information that was presented at Albion's conference doesn't end here. As space permits in the future, we will try to bring you more excerpts from this notable conference.

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