THINK ZINC

The Power of Zinc for Human Health

Role of Zinc in Acrodermatitis Enteropathica (AE)

Zinc is an essential trace element needed for many functions in various human biological processes. But in some people, the absorption mechanism for zinc is distorted as seen in patients with AE. This group relies on long-life zinc supplementation.

Zinc is an essential micronutrient required for the proper function of various metabolic and biochemical pathways. The human body is not capable of producing zinc, so the diet is an important source to help meet required levels. The uptake of zinc from food takes place in the small intestine of the gastrointestinal tract. This is regulated by zinc-buffering proteins such as metallothioneins (MTs) and ZIP4 intracellular protein transporters. The genes associated with this transporter are activated in periods of dietary zinc deficiency, making it a powerful way to keep zinc in cells at required levels. However, mutations in gene coding of the transporter protein can happen and this prevents the absorption of zinc from the diet in the small intestine, causing a zinc deficiency.

Untreated AE is fatal within the first few years of life

Mutation in the Zinc Transporter

AE is a form of zinc deficiency caused by a mutation in the ZIP4 transporter first described by Brandt in 1936 and later identified as a distinct disease by Danbolt and Closs. The disease is hence also called the Danbolt-Closs syndrome and Brandt syndrome. Primary AE is an inherited zinc transporter defect, and usually presents itself in the infant stage. The acquired form of AE can manifest at any age and may be caused by reduced zinc intake, increased demand, malabsorption or may rarely be associated with certain metabolic disorders (1). People with AE disease suffer from periorificial dermatitis, alopecia diarrhea and secondary bacterial and fungal infections (2). Untreated AE is fatal within the first few years of life. Treatment of AE requires lifelong zinc supplementation. If followed as prescribed, the prognosis for patients is excellent, with an expected response rate of 100% (3).

Zinpro Zinc LG for Better Absorption

It is important that the zinc supplement chosen for AE patients uses a transporter route in the intestine that is not affected by the mutation. Bioavailability is also important and can vary between zinc sources. Zinc sources that use organic ligands (bonds) such as amino acids (ZnAA) use an amino acid transporter (AA) in the intestine, which is a different and less competitive transporter route in the intestinal tract, compared to the far busier transporter system used by other zinc sources. By using a different transport system, the absorption rate of zinc is less affected by other nutrients and minerals that compete for absorption. A study showed that enterocytes from AE patients were unable to absorb the required levels of zinc when taking an inorganic zinc in the form of zinc chlored. On the contrary, the uptake of organic zinc from ZnAAs was not blocked by cells in AE patients. (4). This suggests that ZnAAs may possess an advantage over classical zinc supplements because they use the AA transporter route and may increase the bioavailability of zinc and are less affected by antagonistic factors in the diet.

Why Choose Zinc from Zinpro®?

When deciding on supplementation, it is important to choose a source that can be easily absorbed by the human body. Organic zinc sources are stable in the gastrointestinal tract, which results in better absorption than their inorganic counterparts. For over 52 years, Zinpro has been a pioneer in the research and development of performance trace minerals and innovative nutritional solutions. The company's dedication to improving health and wellbeing has led to the development of the patented Zinpro® Zinc LG, a new generation of zinc, marked by a unique combination of an organic zinc source with glutamic acid (Glu) and lysine (Lys). This ensures superior zinc uptake, which could lead to more efficient uptake of zinc and increased zinc levels in humans with AE.

Learn more at
zinpro.com/zinc

ZINPRO® ZINC LG

Three Main Takeaways

1. AE is a form of zinc deficiency caused by a mutation in the ZIP4 transporter
2. Organic zinc sources bound to amino acids (ZnAA) may possess an advantage over classical zinc supplements, because they are more bioavailable and are less affected by antagonistic factors in the diet
3. Because AE patients require lifelong zinc supplementation, it is important to choose a zinc source that can be absorbed efficiently, despite the mutation

References available upon request