

## **Select Clinical References for Essential Trace Minerals**

Of the 100+ nutrients currently known to be present in the human body, the largest group, are the minerals. There are at least 75 major and trace minerals involved in the biochemistry of the human body. Of these, the ultra trace minerals are most often deficient or missing completely from the diet. The best way to safely ingest these trace elements is in an organic, plant derived form. Since our soils have become so depleted, these minerals need to be supplemented in order to keep the delicate bioelectrical balance in the body. This formula provides trace minerals exclusively from organic, plant sources, so they are not only very absorbable, but completely safe as well. Plant derived trace minerals **MUST** be maintained in a liquid suspension in order to preserve their bioelectrical properties. Following are quotes from some of the many studies we researched:

“Observations have been made covering four generations of animals receiving 2 mg of organic aluminum... The aluminum fed animals show a greater growth rate than the control group.” *Journal of Biological Chemistry 1928:3*

“...it was reported that lead deprivation in the diet depressed growth, disturb iron metabolism and altered the activities of several enzymes and the liver concentrations of several metabolites. These studies show that lead is necessary for optimal iron metabolism. “*Essential and Toxic Trace Elements in Human Health & Disease 1993: Vol. 380*

“...While many publications on cadmium deal with its toxicity in excess amounts, it cannot be excluded that this element has essential tasks as well. Growth is improved in both animals and humans by supplementing the diet with 50 to 100 mcg of organic cadmium.” *Trace Element-Analytical Chemistry in Medicine and Biology, 1984: 3*

“...arsenic has an essential role in the human biochemistry in the conversion of methionine to its metabolites.” *FASEB 1991:5*

“...organic forms of ultra trace minerals such as arsenic and aluminum, that occur naturally in foods, are virtually nontoxic at any dose because the body has the ability to eliminate excess very effectively.” *Present Knowledge In Nutrition 6<sup>th</sup> ed. 1990 pp. 194-307*

The following are additional references of clinical studies used in our research:

1. Brenner, A. Brief Clinical and Laboratory Observations. ( Pub. The CV Mosby Co) 944-945.

2. Anke, M. et al. 4<sup>th</sup> Trace Element Symposium Marx University, Leipzig.
3. Pihl, RO., et al. eds. Hair, Trace Elements and Human Illness. Praeger Scientific, New York.
4. Mertz W., The scientific and practical importance of trace elements. *Phil Trans R Soc Lond* 294: 9-18.
5. Parr, RM. Recommended dietary intakes of trace elements: Some observations on their definition and interpretation in comparison and actual levels of dietary intake. In: "Proceedings of the Second Meeting of the International Society for Trace Element Research In Humans" Tokyo, Japan
6. Hamilton EI., In: Newton KI (ed.) "The chemical elements and man: Measurements, perspectives and Applications. Springfield, Il: CC Thomas 19-25.
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8. Brossart B. et al. The effect of silicon deficiency on the mineral composition of bone. *Proc ND Acad Sci* 44: 95.
9. Carlisle EM, *Biochemistry of the Essential Ultra Trace Elements*: New York, Plenum
10. Kirchgessner, M and Reichlmyr-Lais , A., Lead deficiency and its effects on growth and metabolism. In: *Trace Element Metabolism in Man and Animals*. Australian Academy of Science, 390-393.
11. Uthus, EO., et al. Magnesium affects the response of rats to arsenic deprivation. *FASEB J* 4: A778.
12. Yokoi, K., et al. Effect of dietary tin deficiency on growth and mineral status in rats. *Biol Trace Elem Res* 24: 223-231.
13. Zhu, L., Oxidant stress and a cardiomyopathy related to selenium deficiency. *J Tr Elem Exp Med* 2: 84.
14. Hock, A., et al. Trace element concentration in human brain. Activation analysis of cobalt, iron, rubidium, selenium, zinc, chromium, silver, cesium antimony and scandium. *Brain* 98: 44-64.
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16. Prohaska, JR., Functions of trace elements in brain metabolism. *Physiol. Rev* 67: 858-901.