

Elementary Deficiencies: Trace Minerals and Missing Materials

April 2016

Michael Cheikin MD
 Holistic Medicine and Psychiatry
www.cheikin.com 610-239-9901

Chemical elements are the building blocks of matter, and therefore life. Certain elements that are essential for life are needed in trace amounts, as little as one-millionth the weight of required protein, fat, carbohydrates, water or carbon. Without them, there is no life. PBS's recent Nova entitled "Earth's Rocky Start" explored the intimate connection between earth's minerals and the creation of life.

Elements are delivered from the soil and earth as minerals, rock-like molecular mixtures. When we use the term "Vitamins and Minerals", we really mean "Vitamins and Elements". Vegetables combine the minerals from the ocean and soil with sunlight and water to form molecules that animals eat, and who are in turn eaten by other animals; therefore all animals get their minerals from the earth.

Deficiencies and Toxicities

For some elements there is a very narrow range of optimal value. For example too little or too much iron rapidly becomes problematic. Other elements, such as magnesium, zinc, chromium and selenium have wider tolerances. *Mal-nutrition* refers to low input, which can be

insufficient, or worse, deficient. In *mal-absorption* there is sufficient input, but digestion is impaired by stress, foods, medications (e.g. antibiotics and ant-acids), and other factors. If most of the population is deficient in a critical nutrient, typical levels are not optimal. Policy based on research with such "normal" groups can be flawed!

Measuring Elements

Within the body, the elements reside in different compartments. Evaluating a person's wealth by looking only in their wallet will not produce an accurate assessment. Likewise, assessing a person's elemental resources by looking only in the blood can miss deficiency. For example, most potassium and magnesium reside within cells, while most calcium resides within our bones--the blood tests rarely find deficiency. Testing requires the proper strategy.

Soils and Supplementation

With mass-produced food for a growing world population, deficiencies will become more apparent. Even organic farms require fertilizer; how much of each mineral for each crop is not known. Known deficiencies, even in the USA, contribute to the root causes of several epidemics, such as diabetes (chromium), heart diseases (magnesium), as well as brain dysfunctions manifesting as autism, anxiety, dementia, addiction and violence. Supplementation with minerals at levels refined since the 1900's RDA's (for the reasons discussed above) can be an essential part of healing and prevention. Proper guidance and testing as well as agents to repair or enhance absorption can optimize results.

IMPORTANT NOTES:

1. **This educational material may not be used to influence medical care without supervision by a licensed practitioner.**
2. These contents are ©2016 by Michael Cheikin MD and may not be reproduced in any form without express written permission.
3. Dr. Cheikin's website has more information and articles such as "What We Need", "Magnesium", "Iodine" and many others.

Michael Cheikin MD is a holistic physician, Board Certified in Physical Medicine and Rehabilitation ("Physiatry"), Pain Management, Spinal Cord Medicine and Electrodiagnostic Medicine and licensed in Medical Acupuncture. Dr. Cheikin has extensively studied yoga, diet and metabolism, Ayurvedic, Chinese and energy medicine and other alternative modalities for over 30 years. He specializes in obscure, chronic and severe problems that have not responded satisfactorily to other methods of healing.
www.cheikin.com 4/22/16 a13.doc

Element/Mineral Factoids
Elements are key components of enzymes and are critical for hundreds of biologic processes.
ALL vitamins require elements for manufacture and utilization
Measuring element levels in soil and in the human body is a rudimentary science.
Recommended Daily Allowances (RDA's) for many nutrients set in the early 1900's have not been updated
The World Health Organization has identified world-wide deficiencies of several elements, such as iodine and iron.
Many of the Earth's elements came from the explosion of nearby stars, not the Earth itself

Essential Trace Elements ¹⁻³		
Element	Symbol	Functions
Boron	B	utilization of vitamin D; bone formation; immune system; inflammation
Calcium	Ca	bone & tooth formation; heart, muscle, and hormonal signaling function
Chloride	Cl	muscle and nerve signals, kidney
Chromium	Cr	glucose metabolism; heart function
Cobalt	Co	vit. B12, nerve function, detoxification
Copper	Cu	red blood cell production; skeletal, heart & muscle function
Iodine	I	thyroid, metabolism, sex and adrenal hormones, immune, brain, hair
Iron	Fe	oxygen carrying, immune, hair, sleep
Lithium	Li	nerve function, autophagy, detoxification, fatty acid metabolism
Magnesium	Mg	energy, nerves, heart, enzyme activation, muscle relaxation, bone strength
Manganese	Mn	detoxification, hormones, bone
Molybdenum	Mo	amino acids metabolism, esp. sulfur
Nickel	Ni	red blood cell production, fetal growth, RNA, certain enzymes
Phosphorus	Ph	energy, bones/teeth, B vitamin activation
Potassium	K	pH balance, nerve and muscle function
Selenium	Se	liver, thyroid, hormones, detox
Sodium	Na	nerve function, signaling, blood pressure
Silicon	Si	possible role for bone
Strontium	Sr	possible role for bone
Sulfur	S	Detoxification, DNA, proteins, enzymes
Vanadium	V	glucose metabolism
Zinc	Zn	immune, hormones, skin and hair