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I. MINERALS – A STOREHOUSE OF WEALTH FOR THE BODY

- A. Widespread mineral deficiencies are pandemic in human and animal populations.
- B. Mineral deficiencies are linked to many chronic illnesses including diabetes, hearth arrhythmias, cancer, fibrocystic breast disease, heavy metal toxicity, osteoporosis, leg cramps and many more.
- C. Adequate mineral replacement is critical for optimal health and wellness.

II. WHO ARE THEY AND WHERE DO THEY COME FROM?

- A. **Boron** – an element critical for bone and muscle health. Source include: apples, carrots, dark green leafy veggies, nuts and whole grains.
- B. **Calcium** is vital for healthy bone, teeth and gums. It is important for heart rhythm, nerve conduction and many cellular processes are calcium channel dependent. Calcium prevents lead toxicity. If deficient, may lead to arthritis, insomnia, heart palpitations, hypertension, muscle cramps. Source: dairy, seafood, green leafy veggies, almonds, cruciferous vegetables.
- C. **Chromium** – is critical for glucose metabolism, cholesterol, fat and protein synthesis. At least 10% of population is deficient. Sources: Brewer’s yeast, beans, liver, whole grains and eggs.
- D. **Copper** – aides in the formation of bone, hemoglobin, healing/repair, energy production and joints/nerve function. Sources: almonds, avocados, beans, garlic, liver, seafood and dark green leafy veggies.
- E. **Iodine** – essential for thyroid function. Deficiency has also been linked to breast cancer. Sources: seafood sea vegetables; **NOT IODIZED SALT!**

- F. **Iron** – creates hemoglobin molecule in red blood cell for oxygen delivery. Sources: eggs, fish, liver meat, dark green leafy veggies, **NOT ENRICHED FOODS!** This is the wrong type of iron can be toxic. Only take extra iron if diagnosed with a deficiency.
- G. **Magnesium** – a critical element to balance calcium and over 300 biochemical reactions in the body. Estimates suggest 90% of population is deficient. Sources: dairy, fish, meat, nuts, seeds, green leafy veggies.
- H. **Manganese** – aids in insulin production, immune system function. Deficiency is rare. Sources: nuts, seeds, seaweed, eggs and beans.
- I. **Phosphorous** – is necessary for blood clotting, bone and tooth formation. Sources: dairy, beans, nuts, meat and whole grains.
- J. **Potassium** – is critical for nervous system (especially vagus nerve, heart rhythm). May prevent hypertension and stroke. Sources: dairy, fish, beans meat, dulse, avocados, and spinach.
- K. **Selenium** – inhibits oxidations of fats, decreases free radical formation, regulates thyroid, and decreases cancer risk and heart diseases. Sources: dairy, meat, Brewer's yeast, kelp, garlic, and brown rice.
- L. **Sulfur** – is essential for detoxification of many toxic compounds, and heavy metals. Also radiation exposure. Sources: beans, onions, brussel sprouts, kale, turnips and garlic.
- M. **Zinc** – is involved with immune function, prostate health, taste and smell. Insulin and metallothionein. Prevents free radical formation. Sources: dulse, egg yolks, fish, kelp, lamb, beans, meats, nuts, and seeds.

III. HOW DO WE ABSORB THEM AND CAN WE MONITOR LEVELS?

- A. Absorption is dependent on good gut ecology.
 - 1. Need adequate pre and probiotics
 - 2. Lacto fermented foods
- B. Absorption and utilization may be blocked by fluoride, heavy metals, infections like candida, gut dysbiosis, parasites, and chronic diarrhea.
- C. Monitor levels through RBC mineral analysis or simply first morning urine pH.