INE | INSTITUTE OF NUTRITIONAL ENDOCRINOLOGY

Micronutrients: Introduction to Minerals

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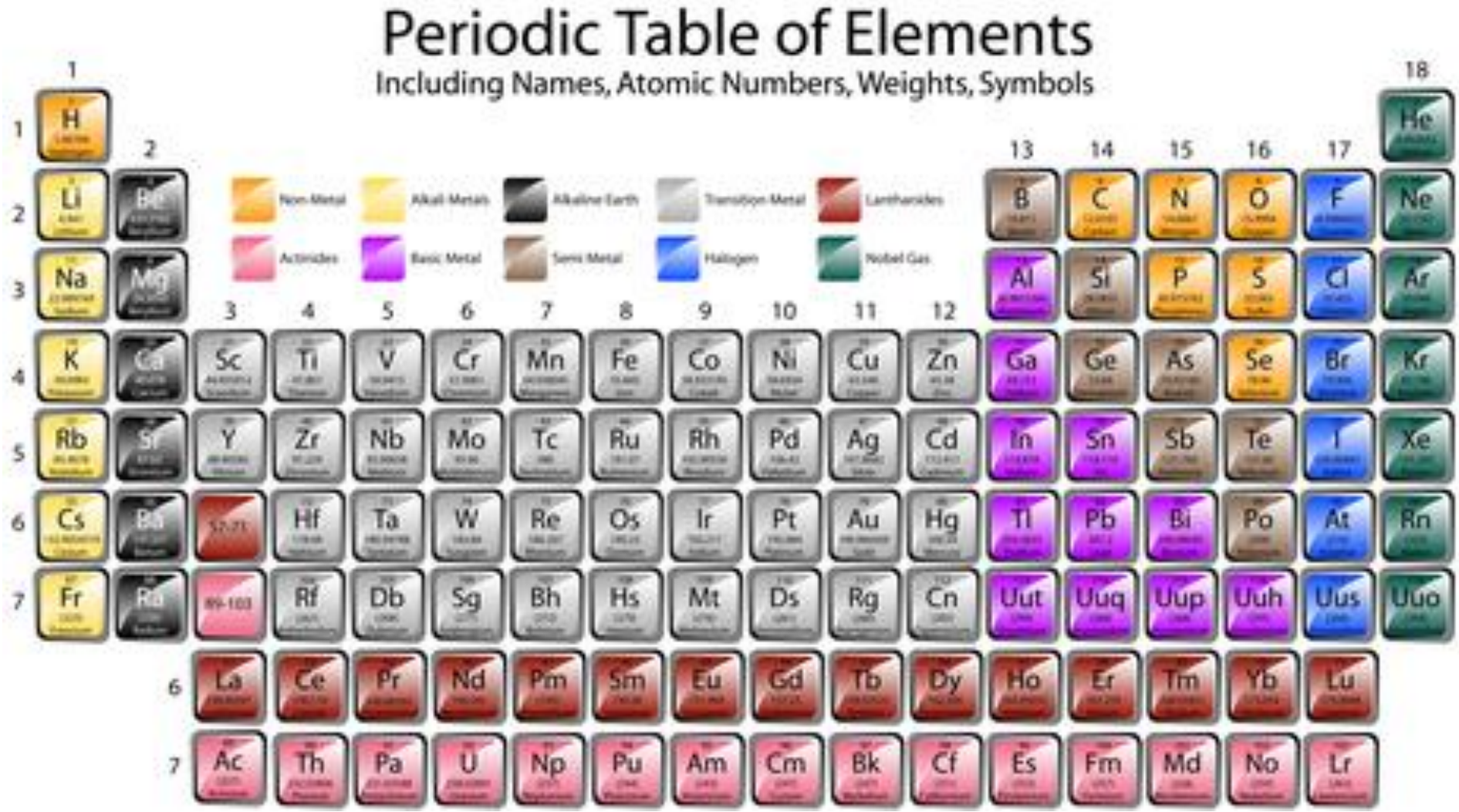
Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

Mineral Facts and Figures

- ✓ They are catalysts that keep the '*battery*' going and hold its '*charge*'
- ✓ They compose about 4% of the human body
- ✓ Can't produce minerals so they must be obtained through food
- ✓ They ultimately come from the earth
- ✓ Good soil is 45% minerals
- ✓ Soils currently depleted
- ✓ Sea vegetables are a reliable source

Minerals



Minerals are essential nutrients needed in small amounts to keep you healthy. Minerals do not give you energy or calories, but can help with other functions in your body. Your body does not make minerals. To meet your daily needs, minerals must be obtained through your diet.

Macrominerals

Needed in large amounts – measured in mg

- Calcium
- Phosphorus
- Magnesium
- Sodium
- Potassium
- Chloride
- Sulfur

Microminerals

Needed in small amounts – measured in mcg or small # of mg

- Iron
- Zinc
- Manganese
- Chromium
- Molybdenum
- Copper
- Iodine
- Cobalt
- Fluoride
- Selenium

Functions of Minerals

- ✓ Act as co-factors for enzyme reactions.
- ✓ Maintain the pH balance within the body
- ✓ Facilitate the transfer of nutrients across cell membranes
- ✓ Maintain proper nerve conduction
- ✓ Help to contract and relax muscles
- ✓ Help to regulate tissue growth
- ✓ Structural and functional support

What You Need to Know About Minerals

- ✓ How to look for deficiency signs
- ✓ What happens when excess is consumed
- ✓ How to help your clients choose the best food sources
- ✓ When to supplement
- ✓ How to choose supplements
- ✓ Factors that help or hinder absorption
- ✓ When to use lab testing

Mineral	Actions	RDA/Deficiency/Notes
Calcium	Bones, teeth, muscle contraction	1000mg/osteoporosis, osteomalacea, tetany
Chloride	Enzyme activation, pH, stomach acid	1.8-2.3g/Loss of appetite, weakness, lethargy, acidosis
Magnesium	Nerve impulse, protein synthesis, muscle relaxation, 325 enzymes	350 - 400mg/neuromuscular hyperexcitability, muscle weakness
Phosphorus	Component of bone, phospholipids, ATP, pH regulation	700mg/Neuromuscular, skeletal and heart symptoms
Potassium	Water, electrolyte and pH balance	4.7g/Weakness, apathy, arrhythmias, fragile bones
Sodium	Water, pH and electrolyte, nerve transmission, muscle contraction	<1900mg/Anorexia, nausea, muscle atrophy, weight loss
Sulfur	Part of sulfur containing vitamins and lipoic acid	800-1000mg/inefficient detoxification, methylation
Chromium	Blood Sugar	25-35mcg/Insulin resistance, diabetes
Copper	Neurotransmitter synthesis, pigment	900mcg/anemia, neutropenia, bone irregularities
Iodine	Thyroid hormone, breast health	150mcg/Thyroid dysfunction, increased blood lipids
Iron	Oxygen carrying - hemoglobin	8-18mg/Fatigue, palpitations
Manganese	Collagen, brain, glucose metabolism	2.3mg/Impaired growth, slow repair
Molybdenum	Purine, pyrimidines, pterines, aldehyde	45mcg/Buildup of sulfur by products
Selenium	Free radical protection, convert T4->T3	55mcg/Myopathy, cell fragility, pancreas degeneration
Silica	Bones, teeth, hair and nails	9-14mg/Osteoporosis, weak skin and nails, brittle hair
Zinc	Energy, protein, sex hormones, digestion	11g/Poor wound healing, anorexia, hormone imbalance

Mineral Chart Resources

- ✓ Dr. Decuypere's Nutrient Charts™
  http://www.drritamarie.com/go/DrDecuypereMineralCharts
- ✓ Advanced Nutrition and Human Metabolism
  http://www.drritamarie.com/go/AdvancedNutritionHumanMetabolism

Deficiency Signs

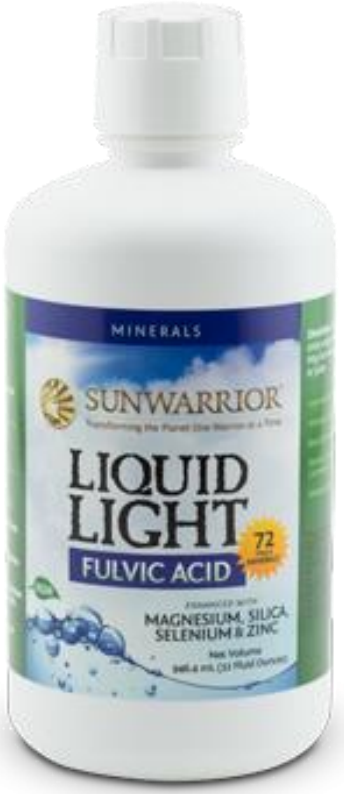
- ✓ Hormone imbalance
- ✓ Fatigue
- ✓ Osteoporosis
- ✓ Anemia
- ✓ Digestive upset
- ✓ Immune problems
- ✓ Allergies
- ✓ Depression
- ✓ Anxiety
- ✓ Skin problems
- ✓ Neuropathy
- ✓ Inflammation

To Supplement or Not to Supplement?

- As insurance for an already healthy diet
- When symptoms of deficiency in conjunction with a healthy diet
- Under adverse conditions that increase need for specific minerals, i.e. a cold, injury, infection
- NOT as a substitute for eating well
- NOT to “make up for” deliberate binges

Hierarchy of Ways to Supplement

- Whole food concentrates
- Liquid minerals from concentrated whole food sources
- Ionic liquid minerals
- Powders that can be dissolved in water or green juice
- Capsules without excipients
  - Amino acid chelates
  - Organic salts
- Tablets without binders and preservatives



Ingredients to Avoid in Supplements

- ✓Hydrogenated oil
- ✓Talc
- ✓Sugar
- ✓Artificial sweeteners
- ✓FD&C colors
- ✓Stearates
- ✓Sodium Benzoate
- ✓Titanium Dioxide

Magnesium Stearate

- ✓ A lubricant so that the vitamins don't stick to one another or the equipment being used
- ✓ Safety is controversial
- ✓ One study links this compound to creating a suppressed immune system
- ✓ Other studies show that this 'chalk' will create a biofilm in the body that blocks absorbing any of the needed nutrients

Testing Mineral Status

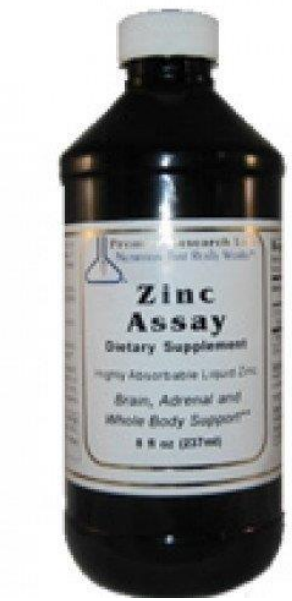
- ✓ Symptoms that can be observed and recorded on questionnaires (scorecards resource)
- ✓ Exam findings
- ✓ Lab testing
  - ➢ Direct measurement
  - ➢ Functional assessment

Functional Tests for Mineral Status

- ✓ Mean Corpuscular Volume (MCV)- (Fe)
- ✓ TIBC (Fe)
- ✓ Uric Acid (Mb, Cu)
- ✓ Hemoglobin (Fe)
- ✓ Ferritin (Fe)
- ✓ GGT (Mg)
- ✓ Alkaline Phosphatase (Zn)
- ✓ Organic Acids: All
  - ➢ Genova/Metametrix
  - ➢ Great Plains
- ✓ NutrEval®
- ✓ Spectracell

Other Tests for Mineral Status

- ✓ Urine toxic and essential elements
- ✓ Stool testing for toxic minerals
- ✓ Hair analysis
- ✓ Lingual testing



Blood Tests for Mineral Status

- ✓ Iron
- ✓ Calcium
- ✓ Potassium
- ✓ Sodium
- ✓ Chloride
- ✓ Phosphorus
- ✓ Magnesium (RBC)
- ✓ Copper

Additional Resources About Minerals

- ✓ *Advanced Nutrition and Human Metabolism*
  – Gropper, Smith and Groff
  http://www.drritamarie.com/go/AdvancedNutritionHumanMetabolism
- ✓ World's Healthiest Foods
  http://www.drritamarie.com/go/WHFoodsEssentNut
- ✓ Linus Pauling Institute
  http://www.drritamarie.com/go/LPIMinerals