

# Micronutrients: Essentials About Minerals



**Dr. Ritamarie Loscalzo**

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# Mineral Facts and Figures

- They are catalysts that keep the '*battery*' going and hold its '*charge*'
- They compose about 4% of the human body mass
- 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





# PERIODIC TABLE OF THE VEGETABLES

## KEY TO CHART

Vegetable number	50	56	Calories
Symbol	Sn		per 100 grams
Latin name	Phaseolus sativus		Illustration

KEY TO CHART																																			
<p>Vegetable number Symbol</p> <p>Latin name</p>																		<p>Calories</p> <p>Illustration</p>																	
<p>Sn</p> <p>Pease sativum</p>																																			

# PERIODIC TABLE OF THE FRUITS AND NUTS

**KEY TO CHART**

Fruit/Not number  
Symbol

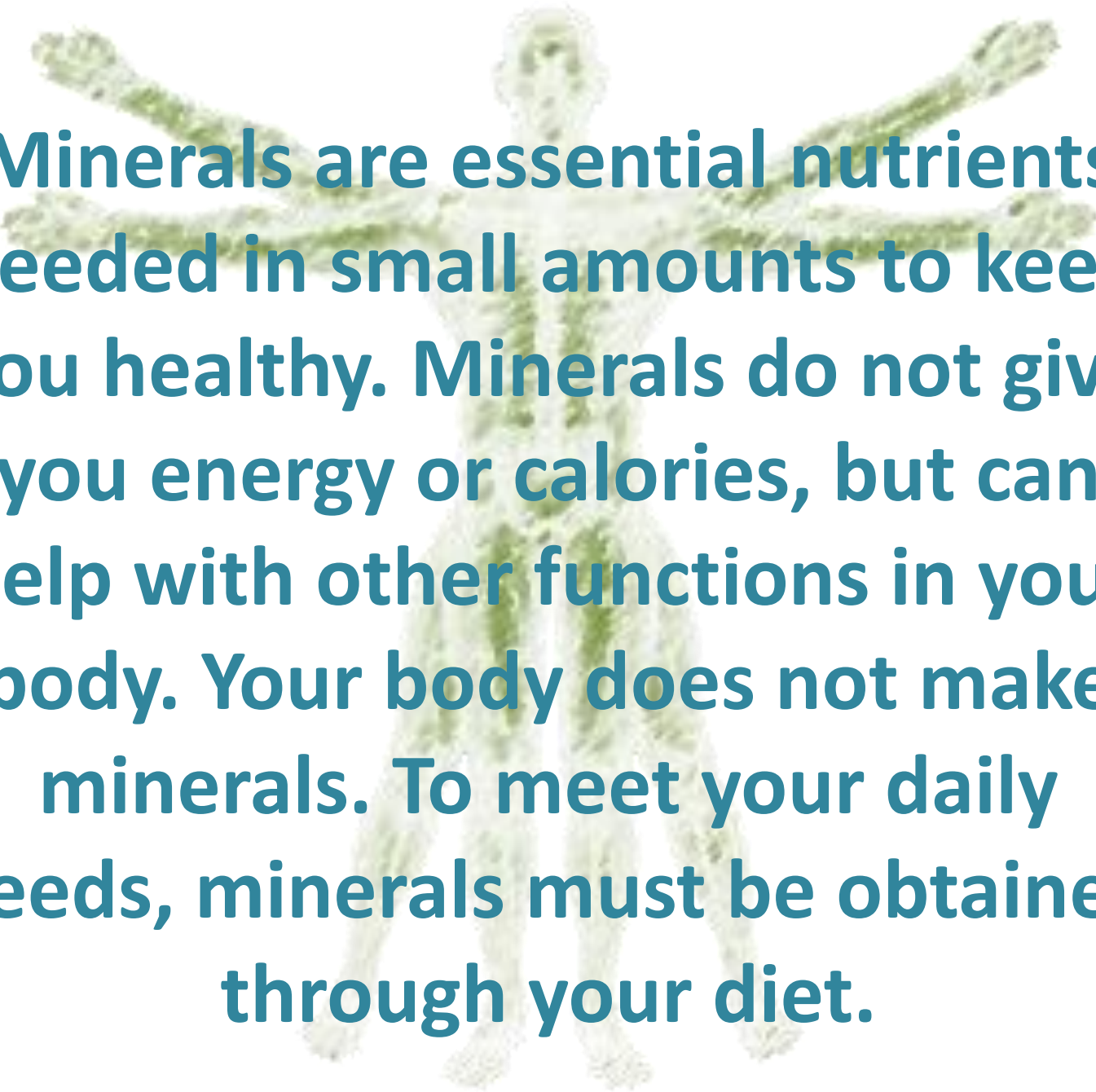
Calories  
in 100 grams

Illustration

Latin name

1 Apple  
2 Intermediate fruit  
3 Berry  
4 Strawberry  
5 Citrus orange  
6 Citrus  
7 Raspberry  
8 Elder  
9 Fig  
10 Peach  
11 Pear  
12 Walnut  
13 Sweet orange  
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<b>H</b> Hydrogen 1 0	<b>Li</b> Lithium 3 0	<b>Be</b> Beryllium 4 0	<b>KEY TO CHART</b>																<b>B</b> Boron 5 0	<b>C</b> Carbon 6 0	<b>N</b> Nitrogen 7 0	<b>O</b> Oxygen 8 0	<b>F</b> Fluorine 9 0	<b>Ne</b> Neon 10 0
<b>Na</b> Sodium 11 0	<b>Mg</b> Magnesium 12 0																	<b>Al</b> Aluminum 13 0	<b>Si</b> Silicon 14 0	<b>P</b> Phosphorus 15 0	<b>S</b> Sulfur 16 0	<b>Cl</b> Chlorine 17 0	<b>Ar</b> Argon 18 0	
<b>K</b> Potassium 19 0	<b>Ca</b> Calcium 20 0	<b>Sc</b> Scandium 21 0	<b>Ti</b> Titanium 22 0	<b>V</b> Vanadium 23 0	<b>Cr</b> Chromium 24 0	<b>Mn</b> Manganese 25 0	<b>Fe</b> Iron 26 0	<b>Co</b> Cobalt 27 0	<b>Ni</b> Nickel 28 0	<b>Cu</b> Copper 29 0	<b>Zn</b> Zinc 30 0	<b>Ga</b> Gallium 31 0	<b>Ge</b> Germanium 32 0	<b>As</b> Arsenic 33 0	<b>Se</b> Selenium 34 0	<b>Br</b> Bromine 35 0	<b>Kr</b> Krypton 36 0							
<b>Rb</b> Rubidium 37 0	<b>Sr</b> Strontium 38 0	<b>Y</b> Yttrium 39 0	<b>Zr</b> Zirconium 40 0	<b>Nb</b> Niobium 41 0	<b>Mo</b> Molybdenum 42 0	<b>Tc</b> Technetium 43 0	<b>Ru</b> Ruthenium 44 0	<b>Rh</b> Rhodium 45 0	<b>Pd</b> Palladium 46 0	<b>Ag</b> Silver 47 0	<b>Cd</b> Cadmium 48 0	<b>In</b> Indium 49 0	<b>Sn</b> Tin 50 0	<b>Sb</b> Antimony 51 0	<b>Te</b> Tellurium 52 0	<b>I</b> Iodine 53 0	<b>Xe</b> Xenon 54 0							
<b>Cs</b> Cesium 55 0	<b>Ba</b> Barium 56 0	<b>La</b> Lanthanum 57 0	<b>Hf</b> Hafnium 58 0	<b>Ta</b> Tantalum 59 0	<b>W</b> Tungsten 60 0	<b>Re</b> Rhenium 61 0	<b>Os</b> Osmium 62 0	<b>Ir</b> Iridium 63 0	<b>Pt</b> Platinum 64 0	<b>Au</b> Gold 65 0	<b>Hg</b> Mercury 66 0	<b>Tl</b> Thallium 67 0	<b>Pb</b> Lead 68 0	<b>Bi</b> Bismuth 69 0	<b>Po</b> Polonium 70 0	<b>At</b> Astatine 71 0	<b>Rn</b> Radon 72 0							
<b>Fr</b> Francium 73 0	<b>Ra</b> Radium 74 0	<b>Ac</b> Actinium 75 0																						



**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
- ✓ Fluorine
- ✓ 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 tell if you are deficient
- What happens if you take too much
- How to choose the best food sources
- When to supplement
- How to choose supplements
- Factors that help or hinder absorption



Mineral	Actions	RDA/Deficiency/Notes
Calcium	Bones, teeth, muscle contraction	1000mg/osteoporosis, osteomalacia, 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, cardiovascular disease
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, pterins, aldehyde	45mcg/buildup of sulfur byproducts
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	11mg/poor wound healing, anorexia, hormone imbalance, immune system

# General Mineral Deficiency Signs

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



# Food Sources of Minerals:

## WHFoods.com

**Calcium:** <http://www.drritamarie.com/go/WHFCalcium>

**Chromium:** <http://www.drritamarie.com/go/WHFChromium>

**Copper:** <http://www.drritamarie.com/go/WHFCopper>

**Iodine:** <http://www.drritamarie.com/go/WHFlodine>

**Iron:** <http://www.drritamarie.com/go/WHFIron>

**Magnesium:** <http://www.drritamarie.com/go/WHFMagnesium>

**Manganese:** <http://www.drritamarie.com/go/WHFManganese>

**Molybdenum:** <http://www.drritamarie.com/go/WHFMolybdenum>

**Phosphorus:** <http://www.drritamarie.com/go/WHFPhosphorus>

**Potassium:** <http://www.drritamarie.com/go/WHFPotassium>

**Selenium:** <http://www.drritamarie.com/go/WHFSelenium>

**Zinc:** <http://www.drritamarie.com/go/WHFZinc>



# Other Resources that List Food Sources of Minerals

- **USDA Official Nutrient Database:**  
<http://www.drritamarie.com/go/USDANutrientDatabase>
- <http://www.drritamarie.com/go/DrDecuyperNutrientCharts>



# 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



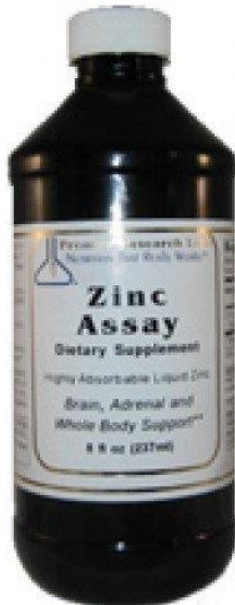
# Functional Tests for Mineral Status

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



# Other Tests for Mineral Status

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



<http://www.drritamarie.com/go/PRLZincAssay>



<http://www.drritamarie.com/go/MineralTests>

Use code **fresh1** to access DrRitamarie account to order

# Blood Tests for Mineral Status

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



# Additional Resources About Minerals

- World's Healthiest Foods:  
<http://www.drritamarie.com/go/WHFEssentialNutrients>
- Linus Pauling Institute:  
<http://www.drritamarie.com/go/LPIMinerals>
- Dr. Decuypere's Nutrient Charts:  
<http://www.drritamarie.com/go/DrDecuypereNutrientCharts>

