

Strengthening the Inside

By Lenore S. Hodges, PhD, RD, CSO, LD
General Conference Nutrition Council

Overview of Inside Strength

- Nutrients for strength from inside
 - Calcium
 - Vitamin D
 - Omega 3 fatty acids
- Roles they play in
 - Osteoporosis
 - Cancer
 - Heart disease

Introduction

- Several nutrients keep us strong – in different ways
- These nutrients are widely available
 - With little overdose potential

What Nutrients – What Action

Nutrient of Concern: Calcium

- Function
 - Bones and teeth
 - Nerve conductivity + function
 - Normal muscle contract/relax
 - Chemoprevention of colon Ca
 - Monitor blood pressure
- Sources
 - Milk, cheese, yogurt
 - Broccoli, greens, legumes
 - Calcium set tofu, fortified soy milk

Nutrient of Concern: Calcium



- Deficiency
 - Body sends **no** signals
 - Bone loss (Osteoporosis, osteopenia)
 - Stunted growth (Rickets, osteomalacia)
 - High blood pressure
 - Calcium tetney
- Toxic
 - Almost impossible
 - Calcium not absorbed in GI
 - (Kidney stones – not calcium)

Nutrient of Concern: Calcium

Comparison Lists

- Sources of calcium, calories, and protein
- Calcium absorbability
- Milk, SoyMilk, RiceMilk, and HempMilk

See Handouts


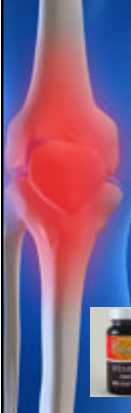

Nutrient of Concern: Vitamin D

Function

- Calcium absorption, component of bone, assists with solidity
- Autocrine function in all cells
 - Waits in VDR for "orders"
- Chemoprevention in all cells

Sources

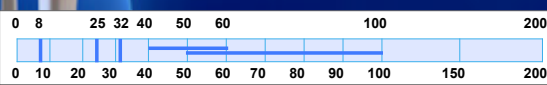


- Sun (10am-2pm, 50% expose)
 - 5-15 min only – then sunscreen
- Supplements – Best is D3
- Fortified food - milk

Lab Measurement

<u>Deficiency</u>	<u>Recent Normal</u>
• 8 ng/mL	• 25- 70 ng/mL
• <20 nmol/L	• 62-175 nmol/L
<u>Old Values Normal</u>	<u>Proposed Normal</u>
• 12-28 ng/mL	• 40 - 60 ng/mL
• 25 -70 nmol/L	• 100 - 150 nmol/L

(ng/mL x 2.5 = nmol/L) Need 3500-6000 IU/day to support

Nutrient of Concern: Vitamin D

Deficiency

- Ricketts, osteomalacia
- Osteopenia, osteoporosis
- Decreased immunity
- Cancer, heart disease
- Autoimmune diseases

Toxic

- Hypercalcemia
 - Can deposit in soft tissue

Everyone needs Vitamin D








Nutrient of Concern: Omega 3 Fatty Acids

Function

- Anti-inflammatory, suppress COX-2: Omega 3 prostaglandins
- Inhibit NF-kB, allow apoptosis, inhibit cachexia

Sources

- Fish
- EPA – made from ALA
- DHA – Algal oil


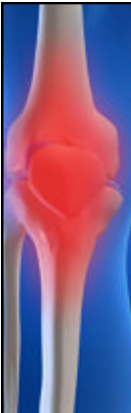

Nutrient of Concern: Omega 3 Fatty Acids

Deficiency

- Memory, nerve development
- Nerve conductivity
- Mental deficiency, irritation, agitation, depression,
- DHA – ADHD and autism

Toxic

- No known toxicity
- Possibly easier to bleed



Osteoporosis

Nutrient	Assistance	Additional
Calcium	Provide raw material for bones and teeth; without calcium, bones can not be repaired	Absorption better when by self. Best taken at bedtime
Vitamin D	Assists calcium absorption and forming of bones	Without D, can not make bones and osteoporosis continues even with lots of calcium
Omega 3 Fatty Acids	May improve bone mineral density; acts as anti-inflammatory	Omega 3 help????? Omega 6 interfere

Vanek C, Connor WE. Do n-3 fatty acids prevent osteoporosis? Editorial, Am J Clin Nutr, 2007, vol. 85, pp. 647-648

Cancer

Nutrient	Assistance	Additional
Calcium	May reduce the risk of cancer, especially the digestive track, and CRC	
Vitamin D	Help cell behave; fill immune system to provide natural antibiotic	Prevention more than treatment. Amount needs to be determined
Omega 3 Fatty Acids	Maintain appetite and weight; act as anti-inflammatory; inhibit cancer cachexia	

Heart Disease



Nutrient	Assistance	Additional
Calcium	Help reduce some blood pressure, especially in AA	
Vitamin D	Helps cells stay quiescent and do as directed; is anti-inflammatory; slows development of atherosclerosis	
Omega 3 Fatty Acids	Help reduce triglycerides and protect against heart attack, is anti-inflammatory	




- ## Bottom Line: Foods to Include
- Carbohydrates - mostly whole grains, legumes, fruit, vegetables, dairy
 - Protein – dairy, eggs, legumes, seeds, nuts, peanut butter, soy, fish and some poultry
 - Fat – chose only canola and olive oil, nuts, olives, avocado

Bottom Line: Foods to Exclude

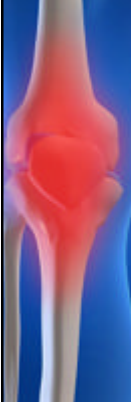

- Fats and oils
 - All other oils or fats
- Protein
 - Red meat, processed meats
 - Grilled, burned, charred meat
- Carbohydrates
 - Excess sugars

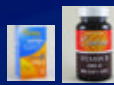
Supplements: Calcium



- 1200 to 1500 mg/day for PM
- Take one at night because nocturnal mineral
- Do not use shells, coral or bones
- Bone Density test or DEXA


Supplements: Vitamin D



- 2000 IU during treatment
 - Loading dose of more IU for 3 months and then back to 2000
- Softgel or drops
- May take everyday or take all week's dose at one time
- Ask MD for blood level of vitamin D – 25(OH)D

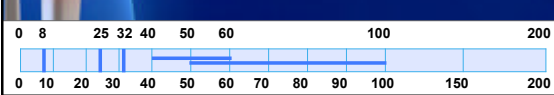
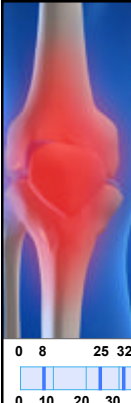



Lab Measurement



<u>Deficiency</u>	<u>Recent Normal</u>
• 8 ng/mL	• 25- 70 ng/mL
• <20 nmol/L	• 62-175 nmol/L
<u>Old Values Normal</u>	<u>Proposed Normal</u>
• 12-28 ng/mL	• 40 - 60 ng/mL
• 25 -70 nmol/L	• 100 - 150 nmol/L

(ng/mL x 2.5 = nmol/L) Need 3500-6000 IU/day to support

Supplements: Omega 3 Oil



- Fish oil
 - 1000 mg EPA + DHA each day
 - Usually means 3 softgels
 - If burp – put in freezer
- Vegetarian
 - ALA in plants make EPA
 - Flax, soy, walnuts, canola,
 - DHA from Algal oil




Strengthening the Inside

Lenore S. Hodges, PhD, RD, CSO, LD
Out-patient Oncology + Renal Dietitian

M. D. Anderson Cancer Center and NutritionSense
Orlando, FL

Lenore@Hodgesphd.com