Nutrition and Immunity: 6

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Water

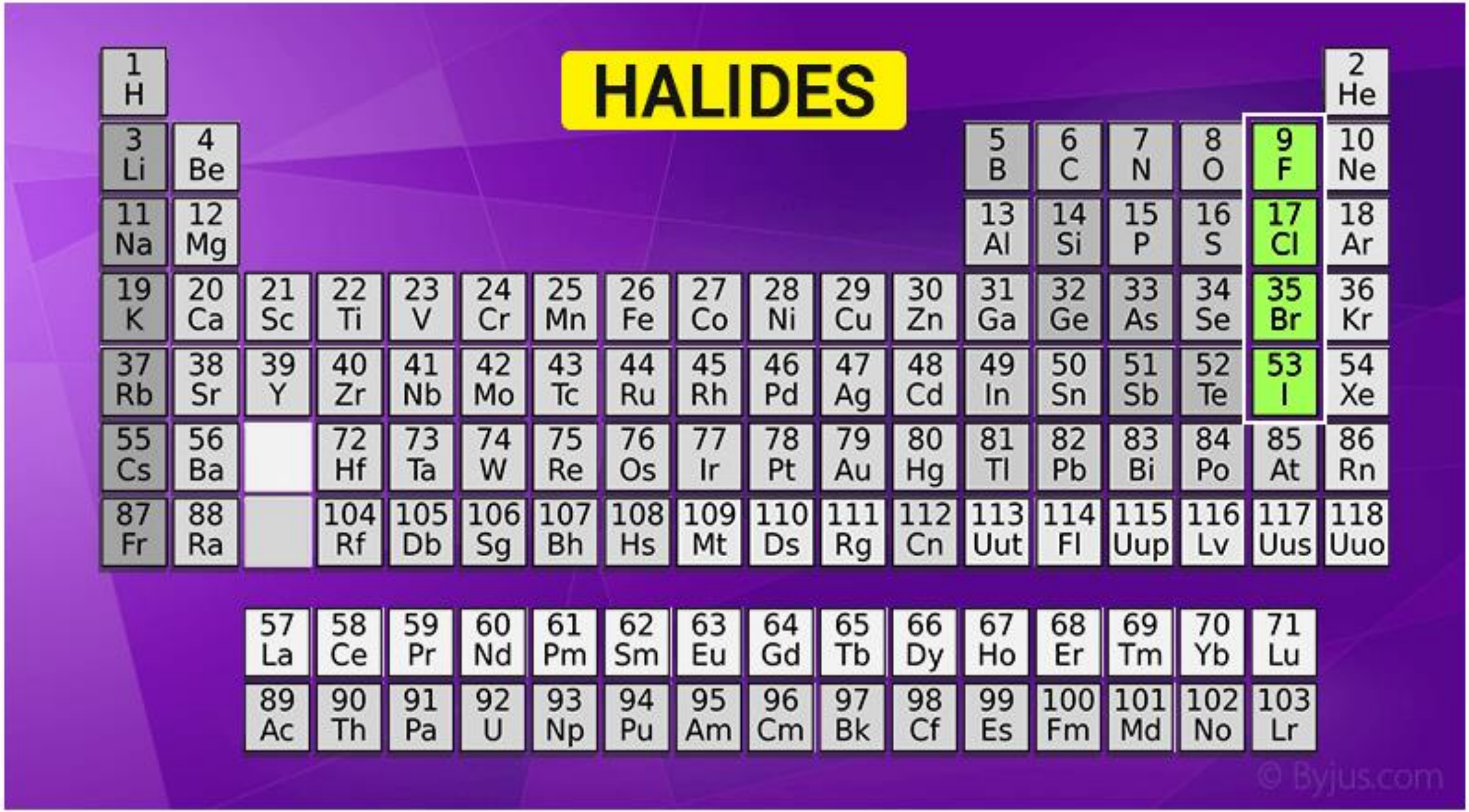
- Makes up 60-70% of body weight
- Regulate body temperature
- Flush out waste
- Transport nutrients
- Lubricate joints
- Prevent constipation
- Maintain blood volume
- And on, and on, and on…..

Water

- Water is the universal solvent
- Pure water absorbs whatever it comes in contact with
- Current water municipalities work to remove heavy metals like lead, add chloramines to manage microbes, and add fluoride (fluorosilicic acid)
- Water may still contain hormones, other medications, pesticides, industrial chemicals, microbes, and other heavy metals

Fluoride

- Added for tooth “health”
- Not an essential nutrient
- Topical use or systemic
- Fluorosilicic acid from phosphate fertilizer manufacturing
- Sodium fluoride used in oral care
- Dental fluorosis (mottling)
- Cause bone lesions
- Decrease uptake and use of iodine in the thyroid gland
- Calcification of pineal gland
- Added to water but not hitting intended target
- How to regulate dose with fluoridation


HALIDES
1 H
2 He
3 Li
4 Be
5 B
6 C
7 N
8 O
9 F
10 Ne
11 Na
12 Mg
13 Al
14 Si
15 P
16 S
17 Cl
18 Ar
19 K
20 Ca
21 Sc
22 Ti
23 V
24 Cr
25 Mn
26 Fe
27 Co
28 Ni
29 Cu
30 Zn
31 Ga
32 Ge
33 As
34 Se
35 Br
36 Kr
37 Rb
38 Sr
39 Y
40 Zr
41 Nb
42 Mo
43 Tc
44 Ru
45 Rh
46 Pd
47 Ag
48 Cd
49 In
50 Sn
51 Sb
52 Te
53 I
54 Xe
55 Cs
56 Ba
72 Hf
73 Ta
74 W
75 Re
76 Os
77 Ir
78 Pt
79 Au
80 Hg
81 Tl
82 Pb
83 Bi
84 Po
85 At
86 Rn
87 Fr
88 Ra
104 Rf
105 Db
106 Sg
107 Bh
108 Hs
109 Mt
110 Ds
111 Rg
112 Cn
113 Uut
114 Fl
115 Uup
116 Lv
117 Uus
118 Uuo
57 La
58 Ce
59 Pr
60 Nd
61 Pm
62 Sm
63 Eu
64 Gd
65 Tb
66 Dy
67 Ho
68 Er
69 Tm
70 Yb
71 Lu
89 Ac
90 Th
91 Pa
92 U
93 Np
94 Pu
95 Am
96 Cm
97 Bk
98 Cf
99 Es
100 Fm
101 Md
102 No
103 Lr
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Water Choices

- Spring Water (Glass)

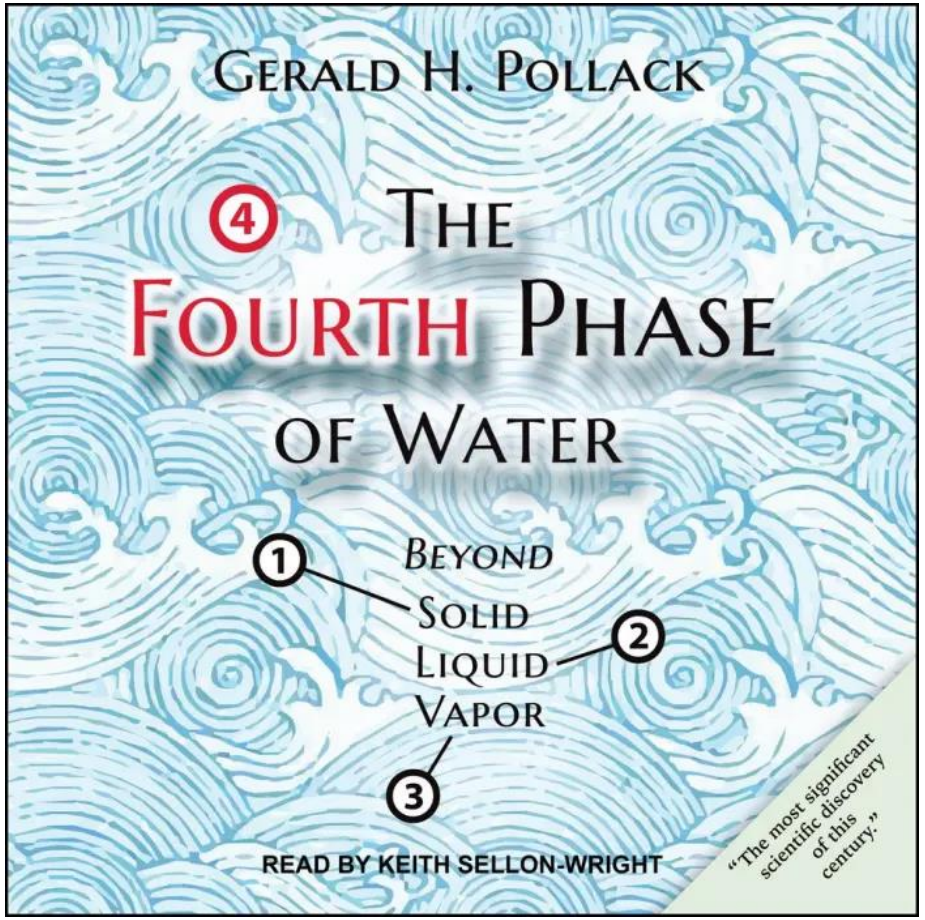
Look for those with silica/magnesium

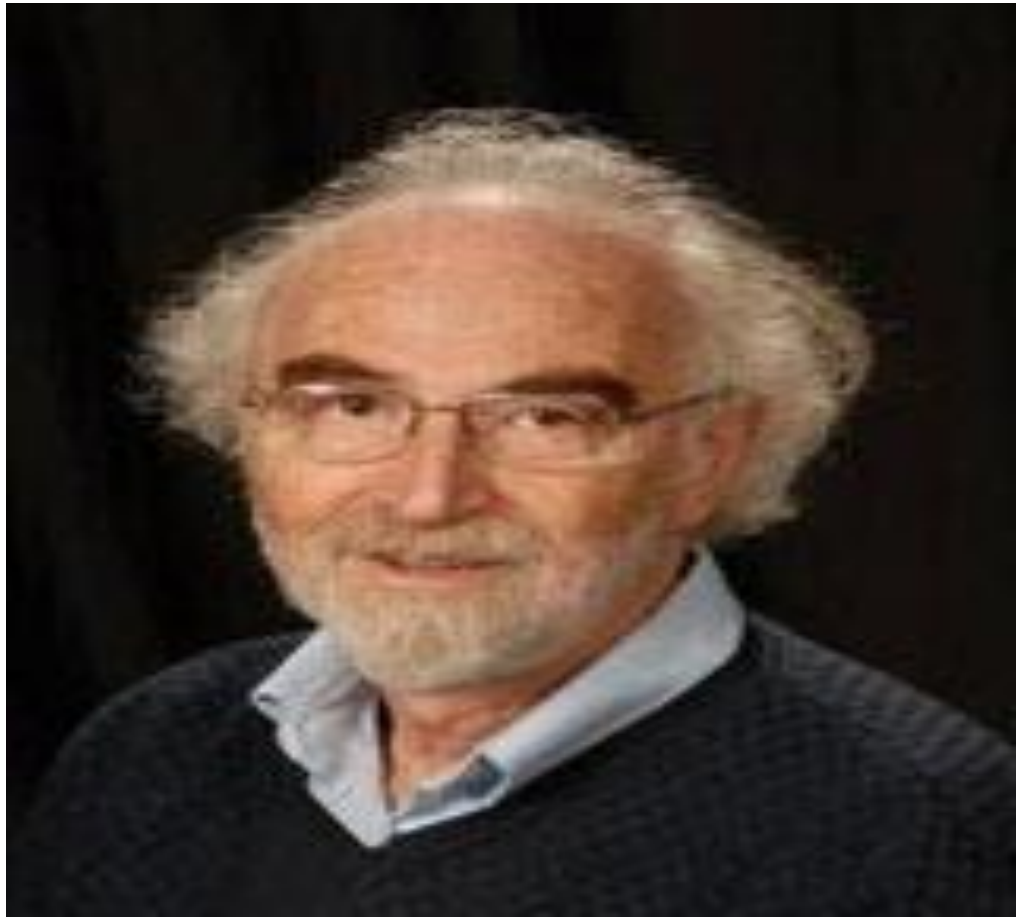
- Distilled
- Reverse osmosis
- Structured/Vortex/ E Z water

Use caution with high alkaline water

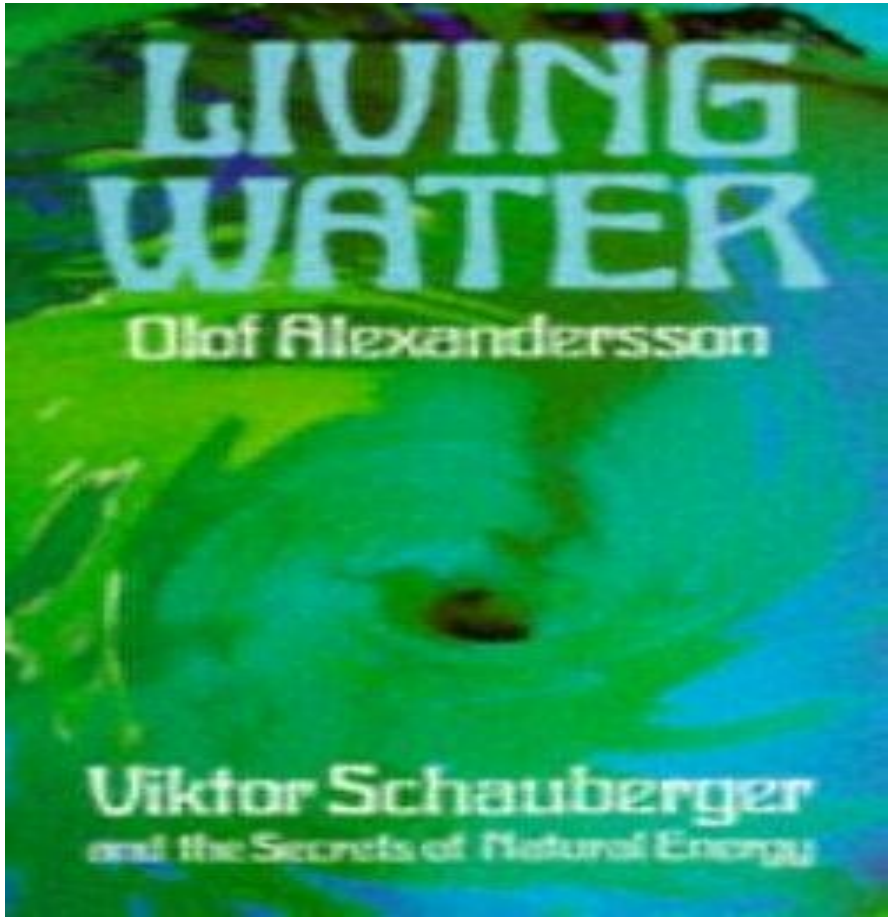
www.findaspring.com

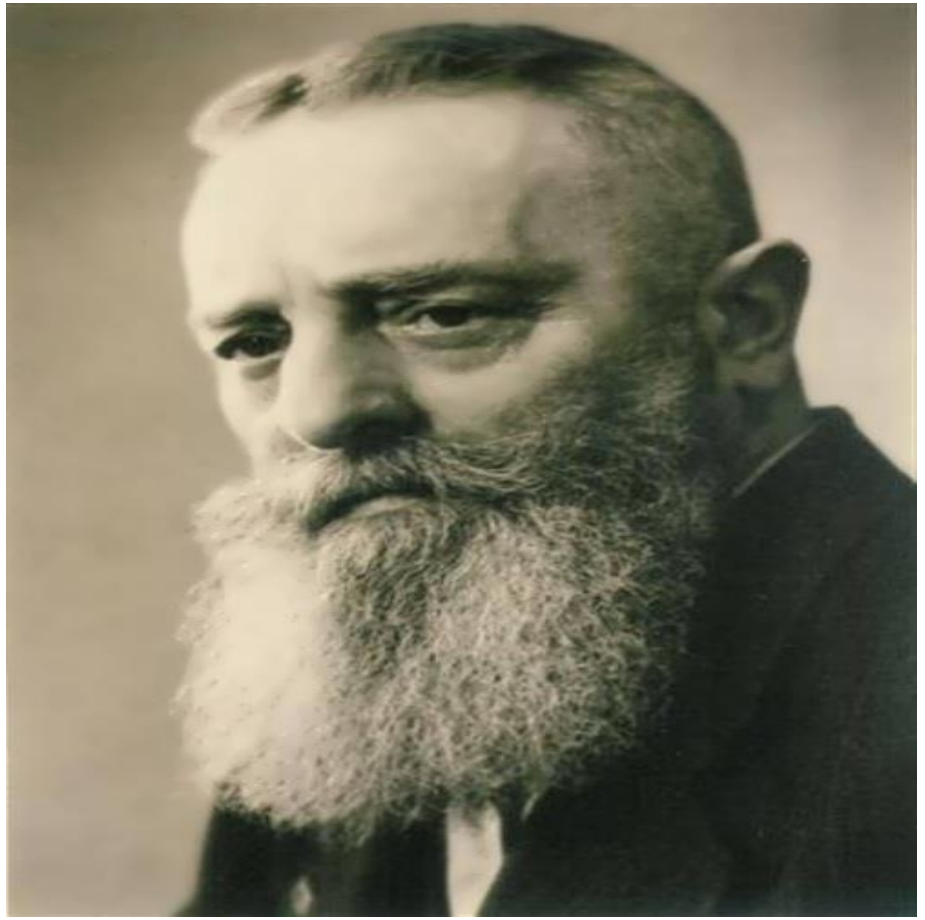
Dr. Gerald Pollack





Viktor Schauberger





Top 10 Purchased Items in Grocery Stores

1. Soda
2. Milk
3. Bread
4. Beer
5. Salty Snacks
6. Cheese
7. Frozen entrees
8. Cold cereal
9. Wine
10. Cigarettes

Grocery Store Index 2016

<u>Priority is fast, tasty and convenience</u>

Processed Foods are the Number 1 Problem

- Main Ingredients:
  - White flour, or other processed flour
  - High omega 6 vegetable oils
  - Sugar in many forms
  - Preservatives
  - Colors and flavors

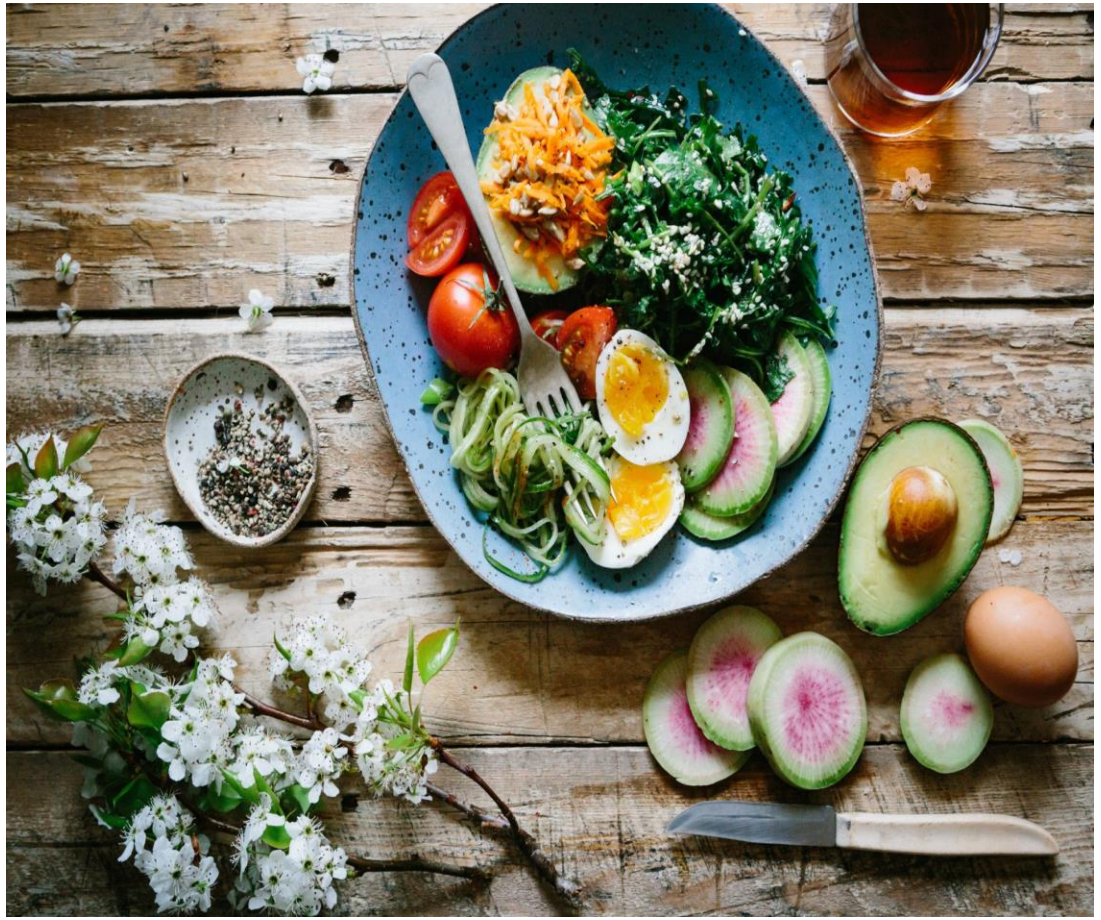
~ 70% of American diet is Processed Foods

Very few micronutrients/highly toxic

Micronutrient Dense Whole Foods

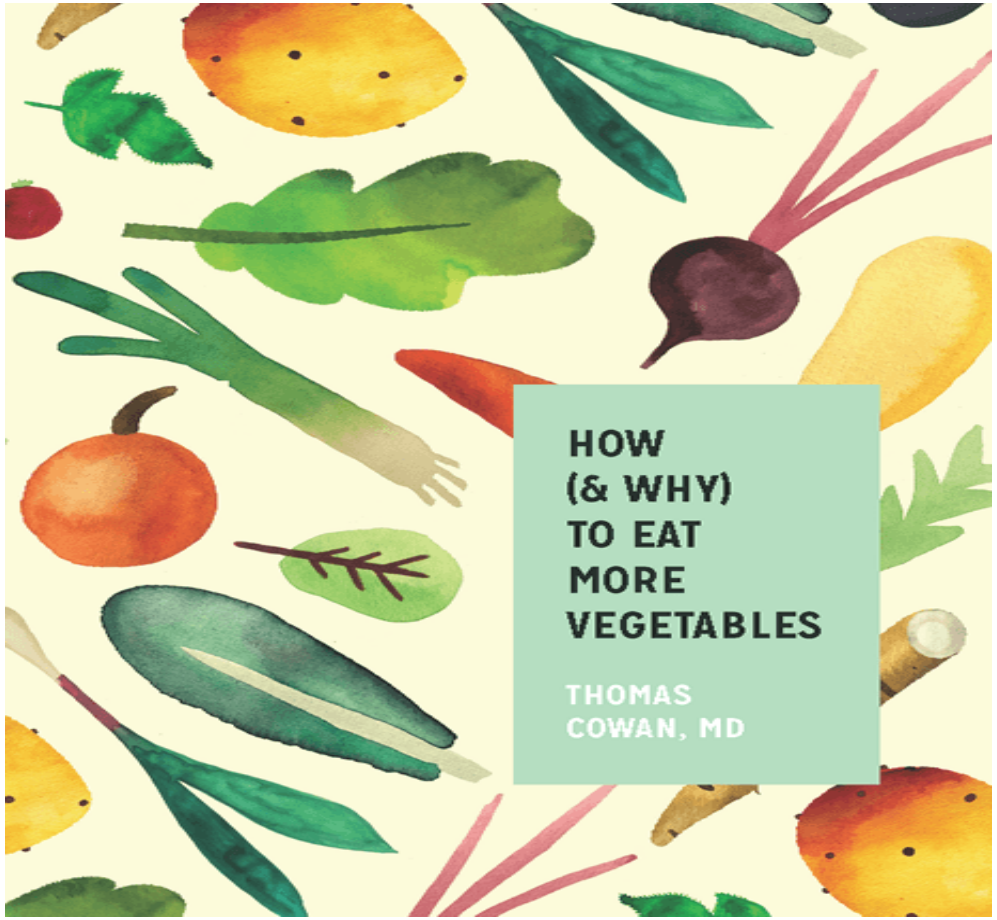
Immune Supporting Diets

- At least 50% veggies (above ground preferably, below ground if no metabolic damage like obesity , diabetes, high triglycerides, etc.
- Protein sources (preferably wild or pastured)
- Healthy fats supplying the fat soluble vitamins A, D, and K
- Whole fruits
- Healthy plant fats: nuts, seeds, avocadoes, etc.
- Grains and beans sparingly if prepared correctly by sprouting and/or fermenting



The Importance of Vegetables

- Consume a variety of types and colors
- Colors are nutrients for animals but are produced by plants to attract insects for reproduction
- Colors are produced by chlorophyll, carotenoids, polyphenols, etc.
- Red, blue, and purple plants contain anthocyanins
- Orange and yellow contain carotenoids
- White plants contain polyphenols like anthoxanthin
- Green plants have chlorophyll which is a major detoxifier for humans and contain magnesium
- Book on drcowansgarden.com



Perennials and Wild Vegetables

- Micronutrient dense giants
- Perennials do not produce seeds so they live many years
- Perennials produce rhizomes (root) which causes a new plant to grow (ginger and turmeric)
- Produce food year after year with little work and are very hardy
- Ashitaba and tree collards
- Wild vegetables include burdock root, dandelion, and nettles
- Theses micronutrient powerhouses are less sweet and slightly bitter compared to their cultivated cousins

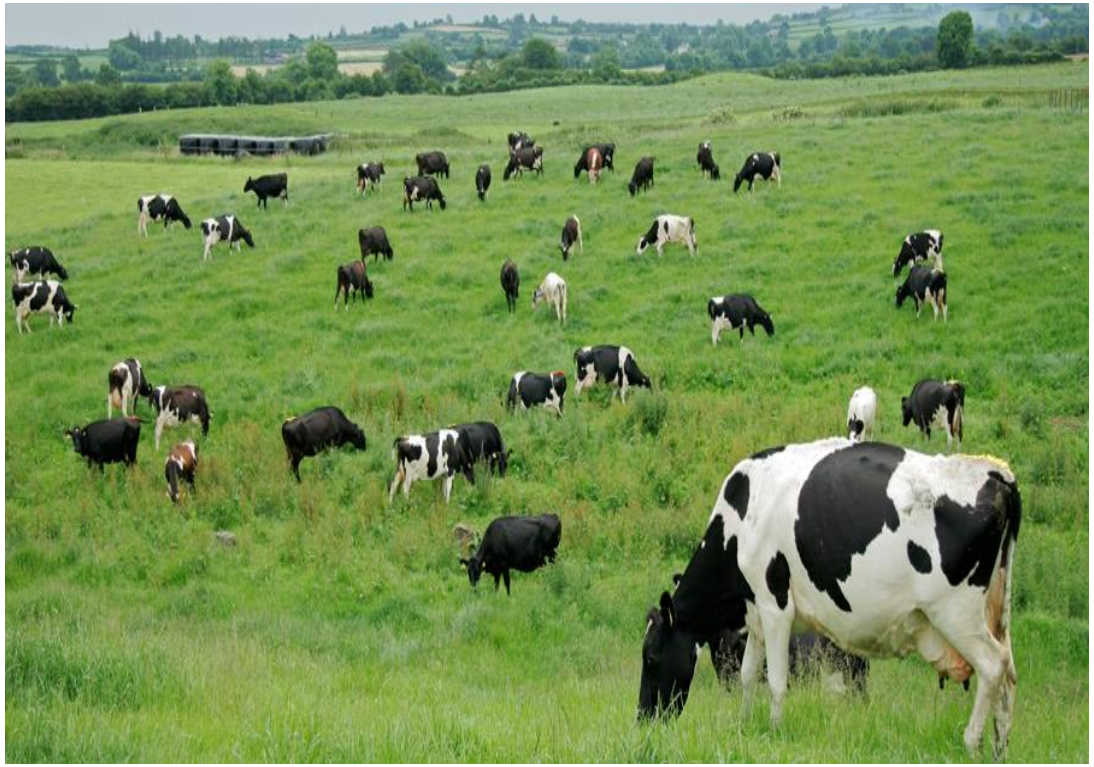
Is There A Difference?

Polyculture

Monoculture

Is There A Difference?

Pastured



Feedlot

Is There A Difference?

Pastured

Caged

Is There A Difference?

Wild

Farmed

Is There A Difference?

The Bread of Yesterday

The Bread of Today

Preparation Is the Key

- Modern Processing:

Stone grinding, soaking, and fermenting has been replaced by high temperature drying, chemical extraction, added preservatives, added synthetic vitamins and minerals, and added refined ingredients.

Sourdough Culture

Bread Comparison

Sara Lee 100% Whole Wheat	Whole Wheat Flour, Water, High Fructose Corn Syrup, Wheat Gluten, Sugar, Yeast. Contains 2% or less of each of the following: Soybean Oil, Calcium Sulfate, Salt, Dough Conditioners (May Contain One or More of the Following: Mono- and Diglycerides, Ethoxylated Mono-and Diglycerides, Sodium Stearoyl Lactylate, Calcium Peroxide, Datem, Ascorbic Acid, Azodicarbonamide, Enzymes), Wheat Bran, Guar Gum, Distilled Vinegar, Calcium Propionate (Preservative), Yeast Nutrients (Monocalcium Phosphate, Calcium Phosphate, Ammonium Phosphate), Corn Starch, Vitamin D3, Soy Lecithin, Milk, Soy Flour.	

Ezekiel 4:9® Sesame Sprouted Grain Bread

100% Flourless, Complete Protein — *Item #123*

Serving Size:	1 Slice (34g)	Potassium:	75mg
Carlories:	80	Carbohydrates:	14g
Total Fat:	0.5g	Dietary Fiber:	3g
Cholesterol:	0mg	Protein:	4g
Sodium:	80mg	Net Wt:	24 oz (680g)

INGREDIENTS: Organic Sprouted Wheat, Filtered Water, Organic Sprouted Barley, Organic Sprouted Millet, Malted Barley, Organic Sprouted Lentils, Organic Sprouted Soybeans, Organic Sprouted Spelt, Fresh Yeast, Organic Wheat Gluten, Sea Salt. Rolled in Organic Unhulled Sesame Seeds.

The New Farm

- Farming techniques
  - *chemical fertilizers*
  - *pesticides*
  - *genetic engineering*
  - *polyculture to monoculture*

GMO (GE) crops

* First introduced in 1996
- No human studies
- Corn, soybeans, canola, Sugar beet, alfalfa, cotton are major crops
- Wheat? GE wheat found in Oregon and Washington
- Most GE crops have been modified to be resistant to herbicides like glyphosate or glufosinate
- Glyphosate disrupts shikimate pathway in plants and bacteria
- Glyphosate was patented as an antibiotic in 2010
- Banned in many industrialized countries
- Patented

GMO Wheat

- **USDA investigates unapproved GMO wheat found in Washington state**
- Reuters June 2019
- 3 Min Read
- CHICAGO (Reuters) - The U.S. Department of Agriculture has confirmed the discovery of unapproved, genetically modified (GM) wheat plants growing in an un-planted agricultural field in Washington state.
- There was no evidence the wheat had entered the food supply, the USDA's Animal and Plant Health Inspection Service said in a statement on Friday. The wheat is resistant to glyphosate, a widely used herbicide commonly referred to as Roundup.
- There are currently no commercially approved genetically modified wheat varieties, and incidences of rogue plants are rare. However, unapproved plants were found in 2018 in Alberta, Canada, in 2016 in Washington state, in 2014 in Montana and in 2013 in Oregon.

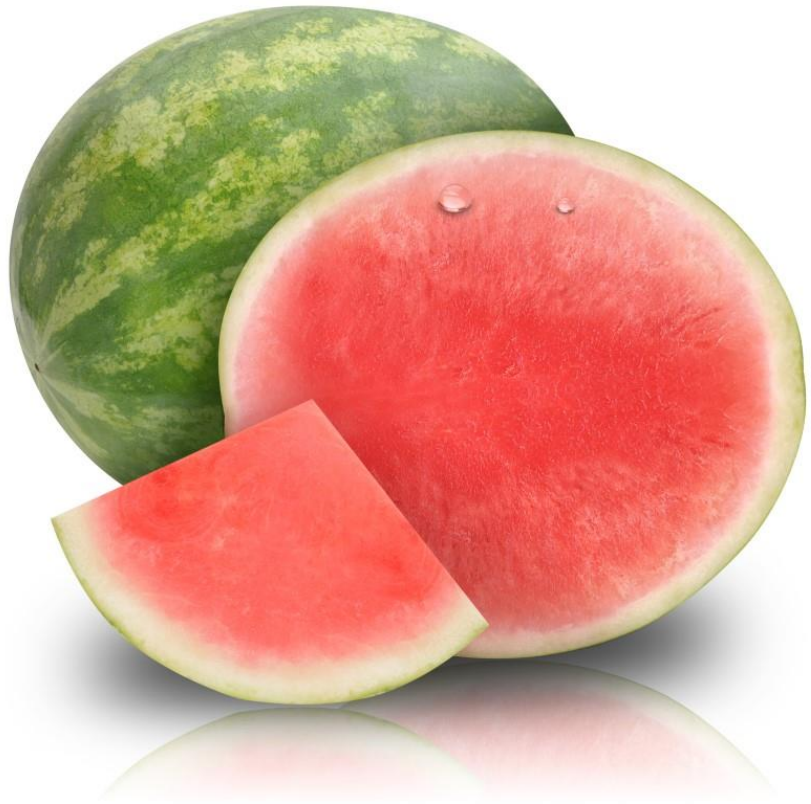
- **Genetically Altered Wheat Flagged; Thailand Detects Shipment Not Cleared for Commercial Sales**
- Oct 18, 1999
- Spokesman Review (Spokane, WA) | October 14, 1999 | Hannelore Sudermann, Staff writer
- Scientists in Thailand claim they found genetically modified wheat in a recent grain shipment from the Pacific Northwest.
- The discovery may jeopardize Northwest wheat exports at a time when a growing number of foreign governments and consumers are rejecting genetically altered products.
- "This is not good for the two countries at all," said Prakarn Virakul, minister for agriculture with the Royal Thai Embassy in Washington, D.C.
- The Thai government hasn't said what it plans to do with the suspect shipment. But the country wants to work with U.S. grain marketers to ensure that genetically modified wheat, called transgenic wheat, isn't shipped again, he said.
- The news shocked Northwest agricultural interests because transgenic wheat hasn't been approved for commercial sales and is grown only in test plots.

Improvement?

- Hybridization

  Breed out characteristics we don't want (bitterness, seeds, tough skins, etc.) for characteristics we do want (sweetness, size, high yield)

We have bred out many of the beneficial nutrients.



Pastured

- You are what you eat and what it eats
- Healthier animals produce healthier dairy and meat
- Grass finished and pastured has more omega 3 fats, vitamins, and antioxidants (carotenoids)
- Grain feeding herbivores can create health issues in the animal
- Feedlot and confined animals need more antibiotics

Pastured

- Commercial feed has pesticides
- Growth Hormones in cows
- Breeding practices to get more meat, dairy, and eggs
- Organic animal products over organic plant foods?

Seafood

- Farmed fish topped farmed beef in production in 2012
- Alaskan over wild over farmed
- Farmed fish tend to have fewer omega 3 fats and more omega 6 fats (grain feeding)
- Depleting smaller fish like anchovies and sardines
- Mercury? Selenium to the rescue
- All seafood tends to be mineral dense

Farm Raised

- Higher fat (mostly omega 6), lower protein
- “Wild” labeling is only half truth as many are born and partially raised in hatcheries
- Studies show higher levels of PCB’s (polychlorinated biphenyls) and other contaminates in farmed fish due to fishmeal
- Sea lice treated with pesticides or pressure washing
- GMO fish

What To Do

- Buy local (Farmers Markets)
- Grow your own
- Choose fresh or frozen
- Choose organic (animal/plant)
- Choose pastured
- Confirm if it is wild
- Proper storing techniques
- Better preparation and cooking techniques

Why Supplements **MAY** Be Warranted

Farming Techniques

- Monoculture vs. Polyculture
- Quality vs. Quantity

Food Quality

Food Anti-nutrients

- phytates, enzyme inhibitors (reduced by soaking, sprouting, fermenting)

Food Processing

- -Nutrients removed

Food Preservation

- Many preservatives can block nutrient absorption

Storage

- Loss during storage

Why Supplements **May** Be Warranted- cont.

Genetics

e.g. MTHFR mutation

Gender

e.g. male/zinc, female/mag.

Current health status

e.g. no gall bladder

Lifestyle Habits

e.g. sun avoidance,

personal tastes, diet choice

Exercise (Stress)

Medication Interaction

Diagnosed deficiency (labs)

e.g. Vit. D, B12

Why Supplements **May Not** Be Warranted

Current health condition-

- severe kidney disease (minerals)

Medication Interaction-

- blood thinners (vitamin K)
-potassium sparing diuretics

Allergy

- iodine
-milk, wheat, etc

High Lab Value

- vitamin D

Medication Interactions

Acid Reflux drugs-

zinc, magnesium, B12,

folate, etc

Anti-Hypertensives-

potassium, magnesium,

zinc, B vitamins, Vit. C

Cholesterol reducers (statins)-

CoQ10, vitamin K2

Antibiotics-

Most minerals, B vitamins

Oral hypoglycemics-

B12, folate, magnesium

Hormone replacement-

B6, folate, B12, magnesium

Choosing a Multivitamin

- No gummies
- No iron
- No oxide or acetate forms (synthetic)
- Ratios are important: Calcium to Magnesium ratio should be close to 1:1
- No (dl) forms
- Careful with folic acid (MTHFR)
- Check other ingredients
- My favorites: Thorne, Pure Encapsulations, Metageniics

VitaFusion MultiVites®

Suggested use: As a dietary supplement, take two (2) gummy vitamins per day.

Supplement Facts

Serving Size 2 Gummy Vitamins
Servings Per Bottle 35

Amount Per Serving		% Daily Value
Calories 15		
Total Carbohydrate	3 g	1%†
Sugars	3 g	**
Vitamin A (as retinyl palmitate)	2500 IU	50%
Vitamin C (as ascorbic acid)	30 mg	50%
Vitamin D (as cholecalciferol)	800 IU	200%
Vitamin E (as dl-alpha-tocopheryl acetate)	15 IU	50%
Niacin (as inositol niacinate)	10 mg	50%
Vitamin B-6 (as pyridoxine HCl)	4 mg	200%
Folic Acid	400 mcg	100%
Vitamin B-12 (as cyanocobalamin)	12 mcg	200%

Amount Per Serving		% Daily Value
Biotin	15 mcg	5%
Pantothenic acid (as calcium d-pantothenate)	10 mg	100%
Chromium (as chromium picolinate)	120 mcg	100%
Molybdenum (as molybdenum citrate)	37.5 mcg	50%
Choline (as choline bitartrate)	40 mcg	**
Inositol (as inositol niacinate)	3 mg	**
Lutein	275 mcg	**
Boron (as boron citrate)	150 mcg	**

†Percent Daily Values are based on a 2,000 calorie diet.
**Daily Value not established.

Other ingredients: Glucose syrup, sucrose, gelatin, natural flavors, citric acid, lactic acid, colors (carrot and blueberry juices, annatto extract) fractionated coconut oil and beeswax.

This product contains natural colors and flavors. Contains no wheat (gluten), milk, eggs, peanuts or soy.

Thorne Advanced Nutrients

SUPPLEMENT FACTS

Serving Size: Eight Capsules
Servings Per Container: 30

Eight Capsules Contain:		%DV
Vitamin A (375 mcg from Beta Carotene and 750 mcg as Palmitate)	1.125 mg	125%
Vitamin C (as Ascorbic Acid)	850 mg	944%
Vitamin D (as Vitamin D3) (2,000 IU)	50 mcg	250%
Vitamin E (200 IU as d-Alpha Tocopherol from Mixed Tocopherols)	134 mg	893%
Vitamin K (50 mcg as Vitamin K1 and 50 mcg as Vitamin K2 as MK-7)	100 mcg	83%
Thiamin (as Thiamin HCl)	40 mg	3,333%
Riboflavin (as Riboflavin 5'-Phosphate Sodium)	10 mg	769%
Niacin (130 mg as Niacinamide and 30 mg as Niacin)	160 mg	1,000%
Vitamin B6 (as Pyridoxal 5'-Phosphate)	10 mg	588%
Folate (1 mg as L-5-Methyltetrahydrofolate† from L-5-Methyltetrahydrofolic Acid, Glucosamine Salt)	1.7 mg DFE	425%
Vitamin B12 (225 mcg as Adenosylcobalamin and 225 mcg as Methylcobalamin)	450 mcg	18,750%
Biotin	400 mcg	1,333%
Pantothenic Acid (as Calcium Pantothenate)	450 mg	9,000%
Choline (as Choline Citrate)	35 mg	6%
Calcium (as DimaCal® DiCalcium Malate)††	250 mg	19%
Iodine (as Potassium Iodide)	225 mcg	150%
Magnesium (as Albion® DiMagnesium Malate)†††	250 mg	60%
Zinc (as TRAACS® Zinc Bisglycinate Chelate)††††	15 mg	136%
Selenium (as L-Selenomethionine)	200 mcg	364%
Copper (as TRAACS® Copper Bisglycinate Chelate)††††	1.5 mg	167%
Manganese (as TRAACS® Manganese Bisglycinate Chelate)††††	6 mg	261%
Chromium (as Chromium Nicotinate Glycinate Chelate)††††	200 mcg	571%
Molybdenum (as TRAACS® Molybdenum Glycinate Chelate)††††	100 mcg	222%
Quercetin Phytosome (*Sophora japonica* concentrate (leaf) / Phospholipid complex from Sunflower)	100 mg	*
Bilberry extract (fruit) (*Vaccinium myrtillus*)†††††	80 mg	*
Nicotinamide Riboside Chloride††††††	25 mg	*
Trans-Resveratrol	25 mg	*
Mixed Carotenoids (1 mg as Lutein, 1 mg as Astaxanthin, 1 mg as Zeaxanthin, and 1 mg as Lycopene)	4 mg	*
Boron (as Bororganic™ Boron Glycinate Complex)†††††††	3 mg	*
Vanadyl Sulfate	250 mcg	*

*Daily Value (DV) not established.

Other Ingredients: Hypromellose (derived from cellulose) capsule, Microcrystalline Cellulose, Calcium Laurate, Silicon Dioxide.

B vitamins

- B6, B9, and B12 are synergistic
- B6-pyridoxal-5-phosphate
- B9-methylfolate over folic acid (MTHFR)
- B12- methylcobalamin or adenosylcobalamin over cyanocobalamin
- Get b12 levels checked
- High homocysteine levels are a marker for low intake of these B's
- Sublingual forms are safest bet

Vitamin C

- Formation of collagen (bone)
- Formation of carnitine
- Anti-histamine
- Formation of norepinephrine, adrenaline,
- Formation of peptide hormones (insulin, leptin), and bile acid
- Water soluble antioxidant
- Formation of immune cells
- Used by immune cells to make oxidative compounds to fight infection
- Humans are one of a few species that cannot make vitamin C from glucose

1992 Apr;11(2):172-6.

Antihistamine effect of supplemental ascorbic acid and neutrophil chemotaxis

Journal of American College of Nutrition

- **Renewed interest in the antihistamine action of ascorbic acid has emerged with the recently recognized immunosuppressive role of histamine.** We examined the antihistamine effect of acute and chronic vitamin C (VC) administration and its effect on neutrophil chemotaxis in healthy men and women. In the chronic study, 10 subjects ingested a placebo during weeks 1, 2, 5 and 6, and 2 g/day of VC during weeks 3 and 4. Fasting blood samples were collected after the initial 2-week period (baseline) and at the end of weeks 4 and 6. Plasma ascorbate rose significantly following VC administration compared to baseline and withdrawal values. Neutrophil chemotaxis rose 19% (NS) during VC administration, and fell 30% after VC withdrawal, but these changes were not correlated to plasma ascorbate levels ($r = 0.01$). Chemotaxis was inversely correlated to blood histamine ($r = -0.32$, $p = 0.045$), and, **compared to baseline and withdrawal values, histamine levels were depressed 38% following VC supplementation**. Blood histamine and neutrophil chemotaxis did not change 4 hours following a single 2 g dose of ascorbic acid, although plasma ascorbate rose 150%. **These data indicate that VC may indirectly enhance chemotaxis by detoxifying histamine in vivo.**

Vitamin C

- Whole food sources are best to get full spectrum vitamin C
- Mineral ascorbates work well
- Freeze dried powder supplements of:

  camu camu

  acerola

  amla berry

Taken to bowel tolerance

Some research shows recommended dose of 2-4 grams/day increased in times of stress

Not effective if taken with sugar or blood sugars are elevated

Ascorbates


NOW
Magnesium Ascorbate
ANTIOXIDANT PROTECTION*
100% Pure Buffered Vitamin C Powder
Net Wt. 8 oz. (227 g)
A Dietary Supplement
Vegetarian Product
GMP
Supplement Facts


NOW
Pure, Buffered
Sodium Ascorbate
Antioxidant Protection*
Vitamin C Powder
Net Wt. 8 oz. (227 g)
A Dietary Supplement
Vegetarian/Vegan
Non-GMO

Vitamin K2 and Vitamin D

- Vitamin D levels should be checked to figure out optimal dose
- Choose vitamin D3 (cholecalciferol) over vitamin D2 (ergocalciferol)
- An upper dose of K2 has not been established, no known toxicity
- Work with physician if on blood thinners (Coumadin)

Magnesium

- Involved in over 1,000 enzymatic reactions
- Critical to balance with calcium
- “relaxing” mineral
- Magnesium required for chlorophyll production

  (dark greens)
- 200-800 mgs/ daily

  (bowel tolerance)
- Malate, taurate, glycinate, and chloride are best forms
- Magnesium oxide poorest form

Mushrooms

- Mushrooms have many immune enhancing functions:
  - Shitake
  - Maitake
  - Turkey tail
  - Reishi
  - Cordyceps
  - Lion's mane

Most mushrooms contain glycoproteins which are involved in cellular communications. Cells use these glycoproteins to tell other cells when they are damaged, infected, etc.

Nutrient Dense Superfoods

- Bone and gelatin broths
- Liver- from healthy animals
- Eggs- from healthy animals
- Fermented vegetables- sauerkraut, kim chi, etc.
- Wild oily fish- sardines, anchovies, wild salmon
- Dark green leafy veggies
- Brewer's yeast
- Raw local honey
- Blackstrap molasses
- Herbs and Spices

  turmeric, cinnamon, black pepper, coriander, sage, etc

Supplements

- Focus should be on eating right first
- Go for food sources first
- Be aware of supplement interactions
- Watch combinations of multiple supplements: A good multi may provide everything
- Get the right form
- Get a good brand:
    - Thorne
    - Pure Encapsulations
    - Designs for Heath
    - Biotics Research
    - Jarrow

Summary

- Drink clean water
- Eat real food
- No grain and seed oils
- Minimize refined carbohydrates
- Focus on nutrient dense foods
- Minimize toxin exposure
- Sleep
- Activity
- Spend time with loved ones
- Spend time outside