VITAMINS AND SUPPLEMENTS

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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
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
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
General Well Being Supplements

- Multivitamin (no iron)
- Omega 3 fats (EPA/DHA) - fish or cod liver oil (no plant based omega 3 oils)
- Magnesium
- Vitamin C
- Iodine
- Probiotics
- Vitamin D3 (know lab)
- Vitamin K2
- B Complex
- Digestive enzyme support
Choosing a Multivitamin

- No gummies
- No iron
- No oxide forms of minerals
- No (dl) forms
- Careful with folic acid (MTHFR)
- Check other ingredients
# Thorne Extra Nutrients

## Supplement Facts

**Serving Size:** Eight Capsules  
**Servings Per Container:** 30

<table>
<thead>
<tr>
<th>Eight Capsules Contain:</th>
<th>%DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin A (375 mcg from Beta Carotene and 750 mcg as Palmitate)</td>
<td>1.125 mg 125%</td>
</tr>
<tr>
<td>Vitamin C (as Ascorbic Acid)</td>
<td>950 mg 944%</td>
</tr>
<tr>
<td>Vitamin D (as Vitamin D3) (2,000 IU)</td>
<td>50 mcg 250%</td>
</tr>
<tr>
<td>Vitamin E (200 IU as d-Alpha Tocopherol from Mixed Tocopherols)</td>
<td>134 mg 89.3%</td>
</tr>
<tr>
<td>Vitamin K (50 mcg as Vitamin K1 and 50 mcg as Vitamin K2 as MK-7)</td>
<td>100 mcg 83%</td>
</tr>
<tr>
<td>Thiamin (as Thiamin HCl)</td>
<td>40 mg 3,333%</td>
</tr>
<tr>
<td>Riboflavin (as Riboflavin 5'-Phosphate Sodium)</td>
<td>10 mg 769%</td>
</tr>
<tr>
<td>Niacin (130 mg as Niacinamide and 30 mg as Niacin)</td>
<td>160 mg 1,000%</td>
</tr>
<tr>
<td>Vitamin B6 (as Pyridoxal 5'-Phosphate)</td>
<td>10 mg 588%</td>
</tr>
<tr>
<td>Folate (1 mg as L-5-Methyltetrahydrofolate† from L-5-Methyltetrahydrofolic Acid, Glucosamine Salt)</td>
<td>1.7 mg DFE 425%</td>
</tr>
<tr>
<td>Vitamin B12 (225 mcg as Adenosylcobalamin and 225 mcg as Methylcobalamin)</td>
<td>450 mcg 18,750%</td>
</tr>
<tr>
<td>Biotin</td>
<td>400 mcg 1,333%</td>
</tr>
<tr>
<td>Pantothenic Acid (as Calcium Pantothenate)</td>
<td>450 mg 9,000%</td>
</tr>
<tr>
<td>Choline (as Choline Citrate)</td>
<td>35 mg 6%</td>
</tr>
<tr>
<td>Calcium (as DimaCal® DiCalcium Malate)††</td>
<td>250 mg 19%</td>
</tr>
<tr>
<td>Iodine (as Potassium Iodide)</td>
<td>225 mcg 150%</td>
</tr>
<tr>
<td>Magnesium (as Albion® DiMagnesium Malate)†††</td>
<td>250 mg 60%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Eight Capsules Contain:</th>
<th>%DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc (as TRAACS® Zinc Bisglycinate Chelate)†††</td>
<td>15 mg 136%</td>
</tr>
<tr>
<td>Selenium (as L-Selenomethionine)</td>
<td>200 mcg 364%</td>
</tr>
<tr>
<td>Copper (as TRAACS® Copper Bisglycinate Chelate)††††</td>
<td>1.5 mg 167%</td>
</tr>
<tr>
<td>Manganese (as TRAACS® Manganese Bisglycinate Chelate)††††</td>
<td>6 mg 261%</td>
</tr>
<tr>
<td>Chromium (as Chromium Nicotinate Glycinate Chelate)††††</td>
<td>200 mcg 571%</td>
</tr>
<tr>
<td>Molybdenum (as TRAACS® Molybdenum Glycinate Chelate)††††</td>
<td>100 mcg 222%</td>
</tr>
<tr>
<td>Quercetin Phytosome (Sophora japonica concentrate (leaf) / Phospholipid complex from Sunflower)</td>
<td>100 mg *</td>
</tr>
<tr>
<td>Bilberry extract (fruit) (Vaccinium myrtillus)††††</td>
<td>80 mg *</td>
</tr>
<tr>
<td>Nicotinamide Riboside Chloride†††††</td>
<td>25 mg *</td>
</tr>
<tr>
<td>Trans-Resveratrol</td>
<td>25 mg *</td>
</tr>
<tr>
<td>Mixed Carotenoids (1 mg as Lutein, 1 mg as Astaxanthin, 1 mg as Zeaxanthin, and 1 mg as Lycopene)</td>
<td>4 mg *</td>
</tr>
<tr>
<td>Boron (as Bororganic™ Baron Glycinate Complex)††††††</td>
<td>3 mg *</td>
</tr>
<tr>
<td>Vanadyl Sulfate</td>
<td>250 mcg *</td>
</tr>
</tbody>
</table>

*Daily Value (DV) not established.

Other Ingredients: Hypromellose (derived from cellulose) capsule, Microcrystalline Cellulose, Calcium Laurate, Silicon Dioxide.
Omega 3 Fats

- 3 types:
  - ALA- alpha-linolenic acid (primarily plant form)
    18 carbons
  - EPA- eicosapentenoic acid (animal form)
    20 carbons
  - DHA- docosahexanoic acid (animal form)
    22 carbons

- Humans have an enzyme called delta-6 desaturase which elongates each omega 3 to the longer form
- Omega 6 fats compete for the use of delta-6 desaturase
- 1-3gms omega 3’s per day
- Mild blood thinning effect
Cod Liver Oil

Supplement Facts

Serving Size 1 Teaspoon (5 mL)
Servings Per Container 100

<table>
<thead>
<tr>
<th>Amount Per Teaspoon</th>
<th>% DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calories</td>
<td>45</td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>45</td>
</tr>
<tr>
<td>Total Fat</td>
<td>5 g</td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1 g</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>20 mg</td>
</tr>
<tr>
<td>Vitamin A (from cod liver oil)</td>
<td>850 IU</td>
</tr>
<tr>
<td>Vitamin D3 (from cod liver oil)</td>
<td>400 IU</td>
</tr>
<tr>
<td>Vitamin E (as d-alpha tocopherol &amp; mixed tocopherols)</td>
<td>10 IU</td>
</tr>
<tr>
<td>100% Norwegian Cod Liver Oil</td>
<td>4.6 g</td>
</tr>
<tr>
<td>Omega-3 Fatty Acids*</td>
<td>1,100 mg</td>
</tr>
<tr>
<td>DHA (Docosahexaenoic Acid)*</td>
<td>500 mg</td>
</tr>
<tr>
<td>EPA (Eicosapentaenoic Acid)*</td>
<td>400 mg</td>
</tr>
</tbody>
</table>

** Percent Daily Values are based on a 2000 calorie diet.
† Daily Value (DV) not established. *Reported as triglycerides.

Other Ingredients: Natural lemon flavor. Contains fish (cod).
Fish oil

Supplement Facts

<table>
<thead>
<tr>
<th>Serving Size</th>
<th>1 Teaspoonful (5 ml)</th>
<th>Servings Per Container</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each Teaspoonful Contains</td>
<td>% D.V.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calories (energy)</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calories from Fat</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Fat</td>
<td>4 g</td>
<td>6% ★</td>
<td></td>
</tr>
<tr>
<td>Saturated Fat</td>
<td>1 g</td>
<td>5% ★</td>
<td></td>
</tr>
<tr>
<td>Polyunsaturated Fat</td>
<td>2 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monounsaturated Fat</td>
<td>1 g</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cholesterol</td>
<td>15 mg</td>
<td>5% ★</td>
<td></td>
</tr>
<tr>
<td>Vitamin E Natural (d-Alpha Tocopherol)</td>
<td>10 IU</td>
<td>33%</td>
<td></td>
</tr>
<tr>
<td>Omega-3 Fatty Acids</td>
<td>1,600 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPA (Eicosapentaenoic Acid)</td>
<td>800 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DHA (Docosahexaenoic Acid)</td>
<td>500 mg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Omega-3 Fatty Acids</td>
<td>300 mg</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

★ Percent Daily Value is based on a 2000 calorie diet
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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, and glycinate are best forms
- Magnesium oxide poorest form
Vitamin C

- Formation of collagen
- Formation of carnitine
- Formation of norepinephrine, adrenaline,
- Formation of peptide hormones (insulin, leptin), and bile acid
- Water soluble antioxidant
- Formation of immune cells
- Anti-viral
- Humans are one of a few species that cannot make vitamin C from glucose
Vitamin C

- Not just ascorbic acid
- In foods vitamin C is ascorbic acid and:
  - rutin
  - bioflavonoids
  - factor K
  - factor P
  - factor J
  - ascorbinogen
  - tyrosinase
Vitamin C

- Whole food sources are best to get full spectrum vitamin C
- Freeze dried powder supplements of: camu camu acerola

Vitamin C is not heat stable
Taken to bowel tolerance
Iodine

• Essential for thyroid health
• Along with selenium is needed to make T3
• Stimulates growth of myelin sheath, neurotransmitters and axion growth in embryos
• Fuels immune cells
• Powerful antimicrobial agent
• Fluoride, chlorine, bromide are antagonists
Halides
Iodine

- Seaweed is richest source: most sheets of seaweed contain about 50mcg of iodine
- Seafood
- 225-1,000mcgs daily
- Allergy issues
- Autoimmune thyroid issues (Hashimoto’s and Grave’s) need to use caution
Vitamin K

- Vitamin K1 - clotting (plant form-dark greens)
- Vitamin K2 - Primarily calcium regulation
- 2 forms of Vitamin K2:
  - MK-4: human and animal form
  - MK-7: bacterial fermentation
MK-4 is found primarily in eggs and liver especially from those raised on pasture
MK-7 is found in fermented foods like natto and some cheeses including Gouda, Brie, and Edam
Vitamin K2

- Vitamin K2 prevents calcification of soft tissue.
- Soft tissue calcification leads to kidney stones, cataracts, bile stones, bone spurs, wrinkled skin, and atherosclerosis
- Calcification is an end process of inflammation
- Bacteria create biofilm (plaque) made of calcium to hide from our immune system
- Statins inhibit the synthesis of vitamin K2
Vitamin K2

- Vitamin K2 prevents calcification of soft tissue.
- Soft tissue calcification leads to kidney stones, cataracts, bile stones, bone spurs, wrinkled skin, and atherosclerosis.
- Calcification is an end process of inflammation.
- Bacteria create biofilm (plaque) made of calcium to hide from our immune system.
- Blood thinning drug Coumadin accelerates osteoporosis and arterial calcification by being an antagonist to vitamin K2.
- Vitamin K2 has been shown in studies for 30 years to have potent anti-cancer effects by regulating cell growth.
- Vitamin K2 maintains calcium metabolism primarily by activation of GLA proteins to keep calcium out of soft tissue and placing it in bones and teeth.
- Vitamin K2 prevents vitamin D toxicity.
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
Probiotics

• Best from foods
• Vegetable sources:
  - sauerkraut
  - kim chi
  - pickles
• Dairy sources:
  - yogurt
  - kefir
Choosing a Probiotic

- Bifidobacteria are best
- Lactobacillus are fine for most
- Other strains may be problematic for those with digestive issues
- An infant formula may be best to start with
- Careful with those that have prebiotics like FOS
Probiotics

Supplement Facts
Serving Size: 1g (approx. 1/2 level tsp)
Servings Per Container: 85 (approx.)

<table>
<thead>
<tr>
<th>Amount per Serving</th>
<th>%DV†</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Carbohydrate</strong> less than 1g</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Dietary Fiber less than 1g</td>
<td>3%</td>
</tr>
<tr>
<td>Vitamin C 13mg</td>
<td>20%</td>
</tr>
</tbody>
</table>

*Bifidobacterium bifidum* 2 billion cfu
Super Strain Malyoth

†Percent Daily Values are based on a 2,000 calorie diet.
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B vitamins

- B6, B9, and B12 are synergistic
- B6-pyridoxal-5-phos
- B9-methylfolate over folic acid (MTHFR)
- B12- methylcobalamin or adenosylcobalamin over cyanocobalamin
- Get b12 levels checked
- Sublingual forms are safest bet
Omega 3 fats (EPA/DHA) 1gm/day
CoQ10 (Ubiquinol)  
100-200mgs/day  
Magnesium 200-600mgs/day  
Vitamin D 2000-5000iu/day  
Vitamin K2 (MK-7)  
45-200mcgs/day  
B complex B6, B9(folate), B12  
R-Lipoic acid 50-100mgs/day
Bone and Joint Health

- Vitamin K2(MK-7) 45-200mcgs/day
- Vitamin D 2000-5000iu/day
- Magnesium 200-800mgs/day
- Protein minimum 75gms/day
- Omega 3 fats
- Calcium*
- Glucosamine sulfate (not hcl)
- MSM
- Boswellia
- Exercise
Conclusion

• 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