Vitamins
Form & Function

September/October 2017
Vitamins – Form

- Vital organic compound/nutrient
- A “vitamin” – cannot be synthesized in the body in sufficient amounts
  - must be obtained through the diet
- 13 nutrients classified as true vitamins
  - Vitamin A
  - Vitamin B1, B2, B3, B5, B6, B7, B9, B12
  - Vitamin C
  - Vitamin D
  - Vitamin E
  - Vitamin K
Vitamins – Function

- Vitamins are essential for the normal growth and development of multicellular organisms.

- A fetus begins to develop, at the moment of conception, from the nutrients it absorbs through the placenta.
  - These nutrients facilitate the chemical reactions that produce among other things, skin, bone, and muscle.
  - Deficiency in one or more of these nutrients may develop a deficiency disease.
  - Minor deficiencies may cause permanent damage.
Vitamins Function

- Vitamins remain essential nutrients for healthy maintenance of:
  - cells / tissues (growth and repair)
  - organs
  - bones
  - digestion
  - energy production / metabolism
  - immune support
  - cognitive function
  - maintenance of homeostasis
Vitamins – Function

- For the most part, vitamins are obtained with food however some are obtained by other means
  - microorganisms in the intestine; "gut flora" — produce vitamin K and biotin
- The initial form vitamin D is synthesized in the skin with the help of the natural ultraviolet sunlight and then it is sent to the liver and kidneys for conversion.
- Humans can produce some vitamins from precursors
  - vitamin A produced from beta carotene
  - Niacin from the amino acid tryptophan
### Vitamin Susceptibility to Nutrient Loss - Food Sourced

<table>
<thead>
<tr>
<th>Vitamin</th>
<th>Soluble in Water</th>
<th>Exposure to Air</th>
<th>Exposure to Light</th>
<th>Exposure to Heat</th>
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</thead>
<tbody>
<tr>
<td>Vitamin K</td>
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<td>no</td>
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<td>no</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Vitamin C</td>
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<tr>
<td>Vitamin B6</td>
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<td>?</td>
<td>yes</td>
<td>?</td>
</tr>
<tr>
<td>Vitamin B12</td>
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<td>?</td>
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<td>no</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>no</td>
<td>partially</td>
<td>partially</td>
<td>relatively stable</td>
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<tr>
<td>Thiamine (B1)</td>
<td>highly</td>
<td>no</td>
<td>?</td>
<td>&gt; 100 °C</td>
</tr>
<tr>
<td>Riboflavin (B2)</td>
<td>slightly</td>
<td>no</td>
<td>in solution</td>
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<tr>
<td>Pantothenic Acid (B5)</td>
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<td>yes</td>
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<tr>
<td>Niacin (B3)</td>
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<td>no</td>
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<tr>
<td>Folic Acid (B9)</td>
<td>yes</td>
<td>?</td>
<td>when dry</td>
<td>at high temp</td>
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<tr>
<td>Biotin (B7)</td>
<td>somewhat</td>
<td>?</td>
<td>?</td>
<td>no</td>
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</table>
Vitamin Supplementation – Why?

- Vitamin status depleted due to:
  - levels of nutrients in food
    - modern farming practices
    - cooking methods
    - processed foods
    - diet choices
  - health status of individual
    - gut health
      - Leaky gut, malabsorption
    - illness
    - autoimmune
  - older adults
  - young children

- Supplementation serves as an effective method to:
  - Reach optimal levels of vitamins
  - maintenance of health status
RDA – Living on the Verge of Disease

![Graph showing the relationship between intake and health effect, with Optimal, Deficiency, and Toxicity areas.]
Vitamin A

- Vitamin A is a group of fat soluble nutritional organic compounds:
  - retinol, retinal, retinoic acid
  - several pro-vitamin A carotenoids
    - alpha-carotene, beta-carotene, gamma-carotene
    - beta-carotene is the most important

- Multiple functions
  - growth and development
  - immune system
  - good vision
    - vitamin A is needed by the retina of the eye in the form of retinal
    - retinal combines with protein opsin to form rhodopsin, the light-absorbing molecule
      - necessary for both low-light (scotopic vision) and color vision
Vitamin A

- Vitamin A as retinoic acid (an irreversibly oxidized form of retinol), a hormone-like molecule growth factor for epithelial and other cells

**Metabolic function**
- Vision
- Gene transcription
- Immune function
- Embryonic development and reproduction
- Bone metabolism
- Hematopoiesis (making red blood cells)
- Skin and cellular health
- Antioxidant activity
NOW® Vitamin A

- NOW80330  Vit A 10,000 IU 100gel
- NOW80350  Vit A & D 10,000IU / 400IU 100gel
- NOW80320  Beta Carotene 25,000IU Natural D. Salina 90gel
- NOW81740  Cod Liver Oil Double Strength Vit A&D 100gel
B Complex

- There are eleven B vitamins that are collectively called the B-Complex:
  - B1, B2, B3, B5, B6, Biotin, Folic Acid, B12, (Choline, Inositol, PABA)

- Energy vitamins:
  - Involved in cellular energy metabolism
    - glycolytic, Krebs cycle and pentose pathways
  - Act as cofactors in converting carbohydrates into glucose which the body burns to produce energy
**B Complex and Energy**

- **Glycolysis** converts energy stored as glycogen into glucose molecules
  - requires vitamin B-6 and biotin.

- **Krebs cycle** - the first step in this energy metabolism is the conversion of pyruvate (a metabolite of glucose) to acetyl coenzyme A
  - requires B-5 and further metabolism requires biotin, B-2 and B-3
B Complex

- B vitamins are vital in the metabolism of fat and protein.
- Necessary for normal functioning of the nervous system
- Important factor for the health of the nerves
- Referred to as “the beauty vitamins”
  - essential for healthy hair, skin and nails
- During stressful situations the nervous system can become depleted of B vitamins.
  - missing or low levels result in fatigue, lethargy, depression, and a cascade of other health issues
NOW® B Complex

- NOW80420  B-50 Complex 100vcap
- NOW80422  B-50 Complex 250vcap
- NOW80410  B-50 Complex with 250mg Vit C 100cap
- NOW80436  B-100 Complex 100vcap
- NOW80438  B-100 Complex 250vcap
- NOW80439  B-100 Sustained Release 100tab
B-Vitamins – B1 – Thiamine

- **Energy Production**
  - Plays a central role in the generation of energy from carbohydrates
  - Active form is a coenzyme called thiamine pyrophosphate (TPP)
    - Krebs cycle - takes part in the conversion of pyruvate to acetyl CoA in metabolism.

- **Necessary for key metabolic processes**
- **Supports adrenal function**
- **Necessary for growth, fertility, lactation, and normal functioning of the heart and nervous system**
- **Mood support**
B Vitamins - B2 – Riboflavin

- **Energy involvement**
  - electron transport chain
  - citric acid cycle
  - catabolism of fatty acids (beta oxidation)

- **Recycling of Glutathione**
  - facilitates the conversion of oxidized glutathione into reduced glutathione

- **Metabolism of Iron**
  - vitamin B2 is necessary to mobilize iron from storage to incorporate into cells
  - vitamin B2 deficiency may impair iron absorption
B Vitamins – B3 – Niacin

- Two structures:
  - nicotinic acid and nicotinamide
- Two co-enzyme forms of niacin
  - nicotinamide adenine dinucleotide (NAD)
  - nicotinamide adenine dinucleotide phosphate (NADP)
- Both play an important role in energy transfer reactions in the metabolism of glucose, fat and alcohol
- Reduces cholesterol
- Treatments for:
  - circulation problems, migraine headache, dizziness

Reduce flush by taking at end of meal or recommend non-flush niacin
B Vitamins – B 5 – Pantothenic Acid

- Critical to the manufacture of red blood cells, as well as sex and stress-related hormones produced in the adrenal glands
- Involved in the oxidation of fatty acids and carbohydrates
- Important in maintaining a healthy digestive tract
- Supports the utilization of other vitamins, particularly B2
- Used in the synthesis of Co A
  - synthesis of amino acids, fatty acids, ketones, cholesterol, phospholipids, steroid hormones, neurotransmitters (such as acetylcholine), and antibodies
B Vitamins – B6 – Pyridoxine, Pyridoxal (P5P), Pyridoxamine

- Pyridoxal 5’-phosphate (PLP) = active form
- 140 P5P-dependent activities
- Co-factor in amino acid metabolism and the biosynthesis of neurotransmitters
  - Dopamine, GABA
- Reduces homocysteine (with B12 and Folic Acid)
- PMS and menopause for both emotional and physical symptoms
- Morning sickness,
- Carpel tunnel, edema (anti-inflammatory)
- Deficiencies caused by birth control pills
B Vitamins – B7 – Biotin

- A water-soluble vitamin necessary for normal growth and body function
  - key regulatory element in gluconeogenesis
- Glucose synthesis via amino acid precursors in fasting state = ATP production
  - fatty acid synthesis
  - metabolism of some amino acids.
  - enhances the synthesis of certain proteins
  - promotes normal immunity
  - plays a critical role in skin health
- Supports amino acid production and metabolism
- Cofactor in CO₂ transfer in four enzymes
Folate is necessary for the production and maintenance of new cells, for DNA & RNA synthesis - prevents changes to DNA

- Needed for normal cell division
- As a THF (tetrahydrofolate) derivative in the metabolism of nucleic acids and amino acids
- Works closely with B12 in red blood cell formation and to facilitate the action of iron

There can be a genetic fault that reduces the ability to convert Folate to the active form of Methylfolate
B Vitamins - B12

- Cobalamin = B12 - Water soluble vitamin
  - Cyanocobalamin
    - Not found in nature – commercial form converts to both coenzyme forms
  - Hydroxocobalamin
  - Methylcobalamin - active form of vitamin B12 co-enzyme or reduced form – can absorb via diffusion
  - Adenosylcobalamin - active form of vitamin B12 – only made from Cyanocobalamin

- Bound to protein and released in stomach
  - HCL & Intrinsic Factor

- Absorbed in ilium of the small intestine

- Stored in the liver
  - 24 months
B12 & Metabolism

- Function
  - normal function of the brain
    - synthesis of neurotransmitters
    - regulates mood – methylation
  - nervous system
    - preservation of the myelin sheath
  - vital in the formation of DNA & red blood cells
  - amino acid production
  - homocysteine regulation
  - folate and B12 work together to produce SAMe, thus supporting immune and mood function
  - essential in the synthesis of succinyl-CoA; a Krebs Cycle intermediate
Instant Energy B12 Powder Packets

- Free of caffeine and other stimulants
- Supports Energy Production
- Fast-acting and Long-lasting
- No jolt and crash effect
- Two forms of B12 (2,000 mcg)
  - Cyanocobalamin (1.4 mg)
  - Methylcobalamin (600 mcg - Co-enzyme form)
- Convenient Single-serve Packets
  - Mix with water or consume directly
- Refreshing Natural Citrus Taste
- No Artificial Flavours
- Sweetened with Xylitol
- Only 2 calories per packet
- Low Cost per Day - ~ 27¢
  (based on $19.99 MSRP)
Instant Energy B12 Extreme Liquid Shots

- Free of caffeine and other stimulants
- Supports Energy Production
- Helps build red blood cells
- Fast-acting and Long-lasting
- No jolt and crash effect
- Features 10,000 mcg of Vitamin B12 – Cyanocobalamin – stable; enough to make both active forms
- Convenient ready-to-drink Liquid shots
- Refreshing Natural Berry Taste
- No Artificial Flavours
- Sweetened with Xylitol
- Only 30 calories per shot
For Healthy Energy...there's NO comparison.

<table>
<thead>
<tr>
<th>Energy Products</th>
<th>Format</th>
<th>B12 Dosage (mcg)</th>
<th>Dual form B12</th>
<th>Caffeine</th>
<th>Natural Sweeteners</th>
<th>Health Food Exclusive</th>
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<tbody>
<tr>
<td>NOW Instant Energy B12 powder-packets</td>
<td>powder</td>
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<td>NO</td>
<td>Xyitol</td>
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<tr>
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<td>Genuine Health Extra Energy - Tablet</td>
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<tr>
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<td>NO</td>
<td>YES</td>
<td>Stevia, Lactose</td>
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</tbody>
</table>

**NOW Advantage**

- Instant Energy B12 Extreme Shots provides highest B12 dosage
- Instant Energy B12 Powder Packets ONLY product with a DUAL-Source of Vitamin B12 - features active coenzyme form methylcobalamin
- Instant Energy Products do NOT contain caffeine
- No Artificial Sweeteners - Instant Energy are ONLY products using XYLITOL
- Health Food Exclusive products
Instant Energy B12 - POS

LIT92118
B12 Instant Energy Poster 11x17
Affiche 11x17 Energie Instantane B12

LIT92119
Affiche 11x17 Energie Instantane B12 FR
B12 Instant Energy Poster 11x17

LIT92117 B12 Instant Energy Brochure 25pk
NOW® B Vitamins

- NOW80446 B-1 100mg 100tabs
- NOW80447 B-2 100mg caps 100cap
- NOW80483 Niacin Flush Free 250mg 90vcap
- NOW80498 Niacin Flush Free 500mg 90vcap
- NOW80481 Niacin 500mg 100cap
- NOW80478 Niacinamide 500mg 100cap
- NOW80486 Pantothenic Acid 500mg 100cap
- NOW80488 Pantothenic Acid 500mg 250cap
- NOW80487 Pantethine 300mg (CoenzymeA) 60gel
- NOW80456 B-6 100 mg caps 100cap
- NOW80460 P-5-P 50mg Coenzyme B-6 Complex 60tabs
**NOW® B Vitamins**

- **NOW80476** Folic Acid 800mcg + B-12 25mcg 250tabs
- **NOW80491** Methylfolate 1,000 mcg 90tab
- **NOW80466** B-12 1000mcg+Folic Acid 100mcg 100chews
- **NOW80468** B-12 1000mcg+Folic Acid 100mcg 250chews
- **NOW80495** Brain B-12 Methyl form 1000mcg 100Loz
- **NOW80496** B-12 Methyl form 5000mcg 60Loz
- **NOW80462** B-12 5000mcg + Folic Acid 60Loz
- **NOW80464** B-12 Liq, B-Complex 60mL
- **NOW80465** B-12 Liq, B-Complex 237mL
- **NOW80452** B-12 Liq, Ultra B-Complex 118mL
- **NOW90497** B12 Instant Energy (2000 mcg)Packets 75/Box
- **NOW80453** B12 Instant Energy Extreme (10,000mcg) 15mL*12 shots
NOW® B Vitamins

- NOW92079 Biotin 500mcg 120cap
- NOW80469 Biotin 1,000mcg 100cap
- NOW80471 Biotin 5,000mcg 60vcap
- NOW80474 Biotin 5,000mcg 120vcap
- NOW80479 Biotin 10,000mcg 120vcap
- NOW80475 Inositol 500mg 100cap
- NOW80527 Inositol Powder 113g
- NOW80528 Inositol Powder 227g
- NOW80470 Choline/Inositol 250mg/250mg 100cap
- NOW90485 PABA 500mg w/ Vit C 100vcap
Vitamin C

- Water-soluble vitamin, regular consumption through food and/or supplements is vital
  - typically remains in bloodstream for no longer than 1 hour
- Strong anti-oxidant function
  - Reducing free radical damage
- Supports the immune system
  - found in high concentrations in immune cells, and is consumed quickly during infections
- Increases the integrity of the artery walls and connective tissue.
  - necessary for maintaining all collagen structures
- Promotes wound healing
- Supports strong bones and teeth
- Maintains healthy gums
Vitamin C

- Adrenal Glands - vitamin C is required for healthy production of steroid hormones
  - the outer cortex manufactures the following steroid hormones
    - Cortisone
    - Hydrocortisone
    - Testosterone
    - Estrogen
    - 17-hydroxy-ketosteroid
    - DHEA and DHEA sulfate
    - Cholesterol
    - Pregnenolone
    - Aldosterone
    - Androstenedione
    - Progesterone
    - a variety of intermediary hormones
Vitamin C

- Depression
  - norepinephrine deficiency from inadequate conversion of dopamine to norepinephrine

- Liver detoxification
  - phase I (intermediate) antioxidant
  - phase II helps in the removal of toxins, such as cigarette smoke, carbon monoxide, etc.

- Cellular demand increased
  - stress
  - infection
  - intense exercise
Quercetin and Bromelain

- Helps relieve the pain of nonbacterial chronic prostatitis
- Supports Healthy Seasonal Immune Function
- Natural Anti-histamine
  - Reduces any type of allergic reaction
  - Reduces sinusitis symptoms
- Powerful antioxidant
- Quercetin (400mg) + Bromelain (82.5 mg)
- Citrus-free
- Vegetarian / Vegan
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>NOW80670</td>
<td>C-500 with 40mg Rose Hips (citrus free) 100tabs</td>
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<td>NOW80672</td>
<td>C-500 with 40mg Rose Hips (citrus free) 250tabs</td>
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<tr>
<td>NOW80630</td>
<td>C-500 Orange Chewable 100Loz</td>
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<tr>
<td>NOW80685</td>
<td>C-1000 w/ RoseHip &amp; Bioflavs 100tabs</td>
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<tr>
<td>NOW80690</td>
<td>C-1000 with 100mg Bioflavonoids 100vcap</td>
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<td>NOW80692</td>
<td>C-1000 with 100mg Bioflavonoids 250vcap</td>
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<tr>
<td>NOW80680</td>
<td>C-1000 Sustained release (citrus free) 100tab</td>
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<td>NOW80682</td>
<td>C-1000 Sustained release (citrus free) 250tab</td>
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<tr>
<td>NOW80608</td>
<td>Ascorbyl Palmitate 500mg 100vcap</td>
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<td>NOW80716</td>
<td>AlphaSorb C 500mg + Biofl 90vcap</td>
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<td>NOW80717</td>
<td>AlphaSorb C 500mg + Biofl 180vcap</td>
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<td>NOW80725</td>
<td>AlphaSorb C 1000mg 60tabs</td>
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<td>NOW80726</td>
<td>AlphaSorb C 1000mg 120tabs</td>
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<tr>
<td>NOW83070</td>
<td>Quercetin with Bromelain 120 vcap</td>
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<tr>
<td>NOW83071</td>
<td>Quercetin with Bromelain 240 vcap</td>
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</tbody>
</table>
NOW® Vitamin C Powder

- NOW80740  Acerola 4:1 Extract Pwd 171g
- NOW80790  Ascorbic Acid (100% Pure Vit. C) Pwd 227g
- NOW80791  Ascorbic Acid (100% Pure Vit. C) Pwd 454g
- NOW80770  Buffered C-Complex Pwd 227g
Vitamin D

- Vitamin D is a fat soluble vitamin
- Vitamin D is unique among nutrients although primarily obtained from internal synthesis – skin
- It is somewhat available through the diet although in very limited in food sources
  - fortified foods
  - naturally occurring in oily fish sources
**Vitamin D**

- In the skin, UVB radiation exposure converts cholesterol to pre-vitamin D3, which then converts to vitamin D3 (cholecalciferol)
- Calcitriol \([1,25(OH)2D]\) is the active metabolite of vitamin D formed primarily in the kidneys
- Several factors limit skin production
  - high latitudes
  - winter months
  - darker skin pigmentation
  - avoidance of sun (sunblocks, indoors, clothing)
Vitamin D

- Vitamin D promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal mineralization of bone and to prevent hypocalcemic tetany.

- It is needed for bone growth and bone remodeling by osteoblasts and osteoclasts.
  - Without sufficient vitamin D, bones can become thin, brittle, or misshapen.
  - Vitamin D sufficiency prevents rickets in children and osteomalacia in adults.
Vitamin D

- Vitamin D has multiple metabolic roles in the body
  - including modulation of cell growth
  - neuromuscular and immune function
  - reduction of inflammation
  - modulations of many genes encoding proteins that regulate
    - cell proliferation, differentiation, and apoptosis (cell death)
  - conversion to active vitamin D
    - many cells have vitamin D receptors, and some convert 25(OH)D to 1,25(OH)2D
  - natural killer cells are activated by vitamin D and lay dormant if there are insufficient levels
“Vitamin D deficiency has been linked to many diseases and conditions in addition to bone diseases, including many types of cancer, several bacterial and viral infections, autoimmune diseases, cardiovascular diseases, and adverse pregnancy outcomes”

NOW® Vitamin D

- NOW80368  Vit D-2 1,000 IU Dry Vegan 120vcap
- NOW80364  Vit D-3 400 IU 180gel
- NOW80363  Vit D-3 1,000 IU 90gel
- NOW80365  Vit D-3 1,000 IU 180gel
- NOW80375  Vit D-3 1,000 IU 360gel
- NOW80357  Vit D-3 1,000 IU Chewable 180 Loz
- NOW80370  Vit D-3 Kids’ Liquid Drops 100 IU/drop 60mL
- NOW80371  Vit D-3 Liquid Extra Strength 1,000 IU/drop 30mL
- NOW80369  Vit D-3 1,000 IU & K2 45mcg 120vcap
- NOW80383  Vit D-3 Pwd 1,000 IU/1/8 tsp w/Cal Citrate 113g
Vitamin E

- Powerful fat soluble antioxidant compounds
  - tocopherols and tocotrienols
  - alpha*, beta, gamma, delta
  - Collectively “tocochromanols”

- Absorbed in the intestines transported to liver
  - \( \alpha \)-tocopherol is preferentially utilized and re-exported through LDL and HDL for transport to other tissues

- Transfer of tocopherols from the lipoproteins to peripheral tissues promoted by the enzyme
  - lipoprotein lipase

- Concentrations of tocopherols can vary appreciably amongst tissues
  - most in adipose tissue and adrenals, less in kidney, heart and liver, and least in the erythrocytes
Vitamin E Function

- Critical for the proper function of the immune system
- Functions at the cellular level, where it traps and neutralizes free radicals, helping to stabilize and protect cell membranes.
- Particularly important for the healthy maintenance of tissues that are most vulnerable to oxidative stress
  - red blood cells
  - blood vessels
  - eyes
  - lungs
Vitamin E Food Facts

- Vitamin E is removed from commercially manufactured vegetable oils and sold to the supplement industry
- Vitamin E degrades over time in stored foods
  - Wheat flour – 1 year – loses 1/3
  - Olive Oil – closed stored oil - 3-6 months with 20-30% loss, bottle open 100% loss in 3-4 months
  - Oil heated over 340 degrees F - degrades levels of vitamin E

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Vitamin E Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat germ oil, 1tbs</td>
<td>20 mg</td>
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<tr>
<td>Fruit of 1 avocado, 16 oz</td>
<td>12 mg</td>
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<tr>
<td>Tomatoes, 1 cup</td>
<td>11 mg</td>
</tr>
<tr>
<td>Sunflower seeds, 1/4 cup</td>
<td>8.3 mg</td>
</tr>
<tr>
<td>Almonds, 1 oz – 24 nuts</td>
<td>7.4 mg</td>
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<tr>
<td>Spinach, 1 cup cooked</td>
<td>6.7 mg</td>
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<tr>
<td>Hazelnuts, 1 oz</td>
<td>4.3 mg</td>
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<tr>
<td>Peanut butter, 2 tbs</td>
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<tr>
<td>Canned blue crab, 1 cup</td>
<td>2.5 mg</td>
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<tr>
<td>Mango, 1 fruit</td>
<td>2.3 mg</td>
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<tr>
<td>Peanuts, dry roasted, 1 oz</td>
<td>2.2 mg</td>
</tr>
<tr>
<td>Olive oil, 1 tbsp</td>
<td>1.9 mg</td>
</tr>
</tbody>
</table>
NOW® Vitamin E

- NOW80837 E400 IU d-Alpha Tocopheryl 100gel
- NOW80892 E400 IU Mixed Tocopherols 100gel
- NOW80894 E400 IU Mixed Tocopherols 250gel
- NOW80935 SUN E-400 IU (Non GMO Sunflower) 60gel
- NOW80906 E400+ 20% Mixed & Selenium 100gel
- NOW80810 Gamma E Complex (Tocopherols/Tocotrienols) 60gel
- NOW83081 Red Palm Tocotrienols 50mg 60gel
Vitamin K

- Vitamin K refers to a group of structurally similar fat-soluble vitamins that complete the synthesis of the proteins that are required for blood coagulation.
- Without vitamin K, blood coagulation is seriously impaired, and uncontrolled bleeding occurs.
- Utilizes proteins to manipulate the binding of calcium in bone and other tissues.
  - The vitamin K-related modification of the proteins allows them to bind calcium ions, which they cannot do otherwise.
- Low levels of vitamin K also weaken bones and promote calcification of arteries and other soft tissues.
Vitamin K1

- Also known as phylloquinone, phytomenadione, or phytonadione, is synthesized by plants, and is found in highest amounts in green leafy vegetables because it is directly involved in photosynthesis.

- Traditionally known for blood coagulation – Synthesis in many blood coagulation factors.

- Needed in infants to prevent bleeding disorders.

- May also convert to vitamin K2.

- $\frac{1}{2}$ life 2 hours.
Vitamin K2

- MK7 - M = menaquinone, the K = vitamin K, 7 = the number of isoprenoid side chain residues
- Bone and vascular health
- Activates Carboxylation; activates proteins - Matrix GLA Protein (MGP) which prevents the build-up of calcium in the tissue and arteries
- Directs misguided calcium from tissue and arteries back into the bones
- Protects against dental cavities, osteoporosis, heart disease, cancer and more
- Made in intestinal track from K1 - Sourced from diet and gut bacteria
- Food source – NATTO 90% MK7
- ½ life 48 hours
NOW® Vitamin K2 – Mk-7

- NOW80992  MK-7 Vitamin K-2 100mcg 60vcap (From Non-GMO Natto)
- NOW80990  Vit K2 100 mcg (with 250 mg of Alfalfa) 100vcap
- NOW80369  Vit D-3 & K2 120vcap
BE AN ANGEL!
HELP US PROVIDE VITAMINS TO CHILDREN AND MOMS IN NEED.

NOW® is proud to be a founding supporter of Vitamin Angels®, a non-profit organization that provides vitamins and minerals to children and mothers in need, all around the world.

Our program includes:
• Vitamin Angels Awareness Campaign • Donation Drive
• Display Contest • POS and Communication Tools

For every NOW® Vitamin sold in September and October, we’ll donate 25¢ to help provide one at-risk child with a year’s worth of life changing vitamins.

Help us reach our goal of helping 40,000 children.
VITAMIN ANGELS® AWARENESS CAMPAIGN DETAILS

Participation:

1. Simply order any NOW® Vitamin sku during the month of September and October and we will make a donation of 25¢ to Vitamin Angels (maximum donation of $10,000). See our NOW vitamin listings in the catalogue for all products that are part of this campaign.

2. Get more involved and help us build awareness of this valuable organization by ordering some of our FREE Vitamin Angels POS materials including an empty floor display with a Vitamin Angels header that you can fill with your favourite NOW vitamins. 

   Kits are limited, so pre-booking with your sales rep will ensure you receive one.

3. Become a true champion of the Vitamin Angels’ cause by building a feature display in your store and entering our contest for a chance to win cash prizes.
BE AN ANGEL!
HELP US PROVIDE VITAMINS TO CHILDREN AND MOMS IN NEED.

2017 Awareness Campaign

NOW Vitamin Angels Display Contest

Prizes will be awarded for the 3 best in-store displays.

1st prize - $500 (cash or credit)
2nd prize - $350 (cash or credit)
3rd prize - $200 (cash or credit)

10 consolation prizes of: Vitamin Angels coffee table book and recycled cotton canvas tote bag

Displays will be judged on creativity using NOW vitamins, our Vitamin Angels POS materials and other items of your choosing. Please send your display photos to Jody Tonin (jody.tonin@puresource.ca) by November 15, 2017 to be eligible.

Winners will be announced December 1, 2017.
NOW® Continuing Education Programs

- NOW® University / NOW® Product-ology
- Exclusive to NOW® Retailers
- NOW® Product-ology incorporates 60-minute training sessions on a variety of healthy topics and ingredients, ranging from Amino Acids to Xylitol. It is free to all NOW® Retailers

To register for the NOW® Product-ology program, [https://nowuniversity.litmos.com/self-signup/](https://nowuniversity.litmos.com/self-signup/)
Fill in required information
Your Code is PS100
You will be sent 2 emails; 1 with password information & 1 welcome email
Ongoing access to courses, go to: [https://nowuniversity.litmos.com](https://nowuniversity.litmos.com)
Lead Contact – brett.kelly@puresource.ca
Complimentary Products

- NOW80330  Vit A 10,000 IU 100gel
- NOW80350  Vit A & D 10,000 IU / 400 IU 100gel
- NOW80320  Beta Carotene 25,000 IU Natural D. Salina 90gel
- NOW81740  Cod Liver Oil Double Strength Vit A&D 100gel
- NOW80420  B-50 Complex 100vcap
- NOW80410  B-50 Complex with 250mg Vit C 100cap
- NOW80436  B-100 Complex 100vcap
- NOW80439  B-100 Sustained Release 100tab
Complimentary Products - continued

- NOW80446  B-1 100mg 100tabs
- NOW80447  B-2 100mg caps 100cap
- NOW80483  Niacin Flush Free 250mg 90vcap
- NOW80498  Niacin Flush Free 500mg 90vcap
- NOW80481  Niacin 500mg 100cap
- NOW80478  Niacinamide 500mg 100cap
- NOW80486  Pantothenic Acid 500mg 100cap
- NOW80456  B-6 100 mg caps 100cap
- NOW80460  P-5-P 50mg Coenzyme B-6 Complex 60tabs
Complimentary Products - continued

- NOW92079  Biotin  500mcg  120cap
- NOW80469  Biotin  1,000mcg  100cap
- NOW80471  Biotin  5,000mcg  60vcap
- NOW80479  Biotin  10,000mcg  120vcap
- NOW80475  Inositol  500mg  100cap
- NOW80527  Inositol Powder  113g
- NOW80470  Choline/Inositol  250mg/250mg  100cap
- NOW90485  PABA  500mg w/ Vit C  100vcap
Complimentary Products - continued

- NOW80476  Folic Acid 800mcg + B-12  25mcg 250tabs
- NOW80491  Methylfolate 1,000 mcg 90tab
- NOW80466  B-12 1000mcg+Folic Acid 100mcg 100chews
- NOW80468  B-12 1000mcg+Folic Acid 100mcg 250chews
- NOW80495  Brain B-12 Methyl form 1000mcg 100Loz
- NOW80496  B-12 Methyl form 5000mcg 60Loz
- NOW80462  B-12 5000mcg + Folic Acid 60Loz
- NOW80464  B-12 Liq, B-Complex 60mL
- NOW80452  B-12 Liq, Ultra B-Complex 118mL
- NOW90497  B12 Instant Energy (2000 mcg)Packets 75/Box
- NOW80453  B12 Instant Energy Extreme(10,000mcg) 15mL*12 shots
Complimentary Products - continued

- NOW80670 C-500 with 40mg Rose Hips (citrus free)-100tabs
- NOW80630 C-500 Orange Chewable 100Loz
- NOW80685 C-1000 w/ RoseHip & Bioflavs 100tabs
- NOW80690 C-1000 with 100mg Bioflavonoids 100vcap
- NOW80680 C-1000 Sustained release (citrus free) 100tab
- NOW80608 Ascorbyl Palmitate 500mg 100vcap
- NOW80716 AlphaSorb C 500mg + Biofl 90vcap
- NOW80725 AlphaSorb C 1000mg 60tabs
- NOW83070 Quercetin with Bromelain 120 vcap
- NOW80740 Acerola 4:1 Extract Pwd 171g
- NOW80790 Ascorbic Acid (100%PureVit.C) Pwd 227g
- NOW80770 Buffered C-Complex Pwd 227g
Complimentary Products - continued

- NOW80368 Vit D-2 1,000 IU Dry Vegan 120vcap
- NOW80364 Vit D-3 400 IU 180gel
- NOW80363 Vit D-3 1,000 IU 90gel
- NOW80357 Vit D-3 1,000 IU Chewable 180 Loz
- NOW80370 Vit D-3 Kids’ Liquid Drops 100 IU/drop 60mL
- NOW80371 Vit D-3 Liquid Extra Strength 1,000 IU/drop 30mL
- NOW80369 Vit D-3 1,000 IU & K2 45mcg 120vcap
- NOW80383 Vit D-3 Pwd 1,000 IU/1/8 tsp w/Cal Citrate 113g
Complimentary Products - continued

- NOW80837 E400 IU d-Alpha Tocopheryl 100gel
- NOW80892 E400 IU Mixed Tocopherols 100gel
- NOW80894 E400 IU Mixed Tocopherols 250gel
- NOW80935 SUN E-400 IU (Non GMO Sunflower) 60gel
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- NOW80992 MK-7 Vitamin K-2 100mcg 60vcap (From Non-GMO Natto)
- NOW80990 Vit K2 100 mcg (with 250 mg of Alfalfa) 100vcap
- NOW80369 Vit D-3 & K2 120vcap
NOW® Complimentary Product Request

- To receive your complementary product
- Please send an email to tina.drake-smith@puresource.ca with the following information
  1. Your store name and telephone phone number
  2. Your name
  3. The phone number that you called from when you called into the tele-training
  4. The name of the tele-training session i.e. Nutritional Fats, Cognitive Health etc.
  5. The name and/or sku number of the product that you are requesting
  6. The password given during the training
Thank you for Attending