Tablets, Teas, Topicals & Tinctures:
An Update on Dietary Supplements

Moving Beyond Cancer to Wellness - 2018
Fred Hutchinson Cancer Research Center
Chad Aschtgen, ND, FABNO
Seattle Integrative Oncology
Gratitude

- Joli Bartell, BS
- Scott Baker, MD
- Our Patients and their Caregivers
- You!
Disclosure

- I am a **clinician**
  - Not an entertainer or comedian
    - Please forgive me my amateur attempts at humor
    - No financial interests today

- In the interest of this non-commercial **educational** presentation, I have included many images or illustrations
  - None of these are my own work, rather have been produced or completed by numerous other talented individuals
Don't take vitamins. (They're bad.) Fix your diet, instead.

By Brennan Kilbane

March 9, 2018
Objectives

- Provide *context* for dietary supplements in the survivorship care plan
- You *don’t need* a multivitamin
- Numerous factors affect *quality* of dietary supplements
  - Tablet / Gummy / Powder / Capsule / Liquid form
  - Active form or not; especially B vitamins, CoEnzyme Q10
  - Part of the plant; herbs, and processing; mushrooms
- Know *why* you are taking each dietary supplement (“Drug”)
- Partner with experts / consult a *professional*
- *Answer your* questions
Naturopathic Medicine
Cancer Survivorship

- Nutrition; sensible and meaningful
  - Consider the microbiome
- Exercise; both aerobic and strength training
  - Weight management; secondary to nutrition & exercise
- Sleep; quality and duration
- Stress management & psychoemotional wellbeing

- Consider the immune system, inflammation & the micro-environment or biological terrain
  - Test where possible
  - Use interventions strategically
- Address symptoms; fatigue, cognitive function, more*
Hallmarks of Cancer

A *Typical* Adult Daily Multivitamin

**Food, Drug, Chemical or ‘Other’?**

**Ingredients:** Calcium Carbonate, Potassium Chloride, Dibasic Calcium Phosphate, Magnesium Oxide, Ascorbic Acid (Vit. C), Microcrystalline Cellulose, dl-Alpha Tocopheryl Acetate (Vit. E), Pregelatinized Corn Starch, Modified Food Starch. **Contains < 2% of:** Acacia, Ascorbyl Palmitate, Beta-Carotene, BHT, Biotin, Boric Acid, Calcium Pantothenate, Calcium Stearate, Cholecalciferol (Vit. D₃), Chromium Picolinate, Citric Acid, Corn Starch, Crospovidone, Cupric Sulfate, Cyanocobalamin (Vit. B₁₂), FD&C Blue No. 2 Aluminum Lake, FD&C Red No. 40 Aluminum Lake, FD&C Yellow No. 6 Aluminum Lake, Folic Acid, Gelatin, Hydrogenated Palm Oil, Hypromellose, Lutein, Lycopene, Manganese Sulfate, Medium-Chain Triglycerides, Niacinamide, Nickelous Sulfate, Phytonadione (Vit. K), Polyethylene Glycol, Polyvinyl Alcohol, Potassium Iodide, Pyridoxine Hydrochloride (Vit. B₆), Riboflavin (Vit. B₂), Silicon Dioxide, Sodium Ascorbate, Sodium Benzoate, Sodium Borate, Sodium Citrate, Sodium Metavanadate, Sodium Molybdate, Sodium Selenate, Sorbic Acid, Sucrose, Talc, Thiamine Mononitrate (Vit. B₁), Titanium Dioxide, Tocopherols, Tribasic Calcium Phosphate, Vitamin A Acetate (Vit. A), Zinc Oxide.

**May also contain < 2% of:** Maltodextrin, Sodium Aluminosilicate, Sunflower Oil.
A *Typical* Adult Daily Multivitamin

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May also contain < 2% of: Maltodextrin, Sodium Aluminosilicate, Sunflower Oil.
FOOD = Vitamins, Minerals & Phytonutrients

- Eat a well-balanced, whole-food and *primarily plant-based* diet
  (Not processed or fast foods)

- **Vegetables** (3-4/day) &
  **Fruits** (1-2/day)

- Herbs & Spices

- Modest, healthy protein intake
  - avoid/minimize processed meats

- Dairy as a condiment only

- Eliminate refined sugar, reduce starch

- Drink water!

Matcha -
the wonderful world of green tea

- **Anti-inflammatory**
- **Anti-angiogenic**
- **Pro-apoptotic**
- The MOST studied herb for anti-cancer action
- Ovarian, head and neck, liver, prostate, breast, bladder, lung, colon, stomach, lymphoma, endometrial and more.
- Studied for both primary prevention, as well as secondarily preventing recurrence of numerous cancer types.
- May also help to improve weight loss
Dietary Supplements = Medicine or Drug

*Use supplements as you would any medicine-for a targeted, therapeutic effect.*

1. Symptom Management
2. Specific Health Promotion/Risk Reduction

*Be conscious of the desired effects and potential risks*

- Is the supplement safe for you?
- Is the supplement likely to be effective?
- Understand appropriate prioritization
- Allergic reaction and drug interactions
A Better Adult Daily Multivitamin
No Copper, Iron, Calcium or Magnesium

Ingredients: Retinyl acetate (Vit. A), Ascorbic Acid (Vit. C), Cholecalciferol (Vit. D₃), Menaquinone-7 (Vit. K₂), Thiamine HCl (Vit. B₁), Riboflavin 5’-phosphate (Vit. B₂), Inositol Hexaniacinate (Vit. B₃), Pyridoxal-5’-phosphate (Vit. B₆), 5-methyltetrahydrofolate glucosamine salt (Folic acid/ B₉), Methylcobalamin (Vit. B₁₂), Biotin (Vit. B₇), Calcium Pantothenate (Vit. B₅), Potassium Iodide, Zinc Citrate, L-Selenomethionine, Sodium Molybdate, Manganese Citrate, Potassium Ascorbate (vitamin C and potassium), Betaine HCl, Mixed Tocopherols, d-Delta and d-Gamma Tocotrienols (Vit. E), Vanadyl Sulfate (vanadium).

Other Ingredients: Microcrystalline Cellulose (capsule), Ascorbyl Palmitate (fat soluble vitamin C) Calcium Silicate, Silicon Dioxide.
Dietary Supplement Considerations

- Quality & Purity is Important
- Specific form of nutrients/botanicals matters
  - Vitamin D₃ vs D₂
  - Fish oil; cod liver oil vs whole fish vs concentrates
  - Root, leaf, flower
- Raw material and finished product source matters
  - Purity, potency and microbial or heavy metal contamination
- Of course “Natural” ≠ Safe or necessarily effective
- Just as Rx ≠ Safe; always have cautions
  - In the US medication errors have been rated as the fourth highest cause of death. Harm 1.5m annually (National Academies; incl. IOM)
Certification? No Unified Standard
B Vitamins / B-Complex Products

The B-50 or B-100 supplement is a very inelegant approach:

**US RDA/DI:**

- Thiamin—1.5 mg/day
- Riboflavin—1.7 mg/day
- Niacin—20 mg/day
- Pantothentic acid—10 mg/day
- Pyridoxine—2 mg/day
- Biotin—300 mcg/day
- Folic acid—400 mcg/day
- Vitamin B12—6 mcg/day

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**Supplement Facts**

**Serving Size 1 Vegetarian Capsule**

<table>
<thead>
<tr>
<th>Supplement</th>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamine (as Thiamine Mononitrate) (B-1)</td>
<td>100 mg</td>
<td>6.667%</td>
</tr>
<tr>
<td>Riboflavin (Vitamin B-2)</td>
<td>100 mg</td>
<td>5.882%</td>
</tr>
<tr>
<td>Niacin (as Niacinamide) (B-3)</td>
<td>100 mg</td>
<td>500%</td>
</tr>
<tr>
<td>Vitamin B-6 (as Pyridoxine HCl)</td>
<td>100 mg</td>
<td>5,000%</td>
</tr>
<tr>
<td>Folic Acid</td>
<td>400 mcg</td>
<td>100%</td>
</tr>
<tr>
<td>Vitamin B-12 (as Cyanocobalamin)</td>
<td>100 mcg</td>
<td>1,667%</td>
</tr>
<tr>
<td>Biotin</td>
<td>100 mcg</td>
<td>33%</td>
</tr>
<tr>
<td>Pantothentic Acid (as Calcium Pantotenate)</td>
<td>100 mcg</td>
<td>1,000%</td>
</tr>
<tr>
<td>PABA (Para-Aminobenzoic Acid)</td>
<td>100 mg</td>
<td>*</td>
</tr>
<tr>
<td>Choline Bitartrate</td>
<td>100 mg</td>
<td>*</td>
</tr>
<tr>
<td>Inositol</td>
<td>100 mg</td>
<td>*</td>
</tr>
</tbody>
</table>

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**Supplement Facts**

**Serving Size: One Capsule**

<table>
<thead>
<tr>
<th>One Capsule Contains:</th>
<th>%DV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamin (as Thiamin HCl)</td>
<td>40 mg</td>
</tr>
<tr>
<td>Riboflavin (25 mg as Riboflavin and 3.6 mg as Riboflavin 5'-Phosphate Sodium)</td>
<td>28.6 mg</td>
</tr>
<tr>
<td>Niacin (as Niacinamide)</td>
<td>80 mg</td>
</tr>
<tr>
<td>Vitamin B6 (20 mg as Pyridoxine HCl and 3.4 mg as Pyridoxal 5'-Phosphate)</td>
<td>23.4 mg</td>
</tr>
<tr>
<td>Folate (200 mcg as Calcium Folate and 200 mcg as L-5-Methyltetrahydrofolate† from L-5-Methyltetrahydrofolic Acid, Glucosamine Salt)</td>
<td>668 mcg DFE</td>
</tr>
<tr>
<td>Vitamin B12 (300 mcg as Adenosylcobalamin and 300 mcg as Methylcobalamin)</td>
<td>600 mcg</td>
</tr>
<tr>
<td>Biotin</td>
<td>80 mcg</td>
</tr>
<tr>
<td>Pantothentic Acid (as Calcium Pantotenate)</td>
<td>45 mg</td>
</tr>
<tr>
<td>Choline (as Choline Citrate)</td>
<td>14 mg</td>
</tr>
<tr>
<td>Daily Value (DV)</td>
<td></td>
</tr>
</tbody>
</table>

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* Daily Value (%DV) not specified in the image.
Medicinal Mushrooms

- Constituents within these mushrooms, namely glucans, can help support the immune system in fighting off cancer cells.
- Immuno-modulatory properties: up or down-regulate the immune response.
- The use of a variety of mushroom extracts have been studied in breast, melanoma, lung, hepatocellular, as well as colorectal cancer.
- The majority of research are on *hot water extracts*.

*Coriolus versicolor*  
*Cordyceps*  
*Ganoderma lucidum*
Probiotics

**PROBIOTIC-RICH FOODS**

- Sauerkraut
- Kombucha
- Yogurt
- Miso
- Kimchi

Keywords:
- Digestive
- Probiotic
- Healthy
- Probiotic-rich foods
- Bacteria
- Digestion
Blood Tests for Nutrient Deficiencies?

Micronutrient Testing:

**Vitamins**
- Vitamin A
- Vitamin B1
- Vitamin B2
- Vitamin B3
- Vitamin B6
- Vitamin B12
- Biotin
- Folate
- Pantothenate
- Vitamin C
- Vitamin D
- Vitamin K

**Minerals**
- Calcium
- Magnesium
- Manganese
- Zinc
- Copper

**Amino Acids**
- Asparagine
- Glutamine
- Serine

**Fatty Acids**
- Oleic Acid

**Antioxidants**
- Alpha Lipoic Acid
- Coenzyme Q10
- Cysteine
- Glutathione
- Selenium
- Vitamin E

**Metabolites**
- Choline
- Inositol
- Carnitine

**Carbohydrate Metabolism**
- Chromium
- Fructose
- Sensitivity
- Glucose-Insulin Metabolism

Does it WORK?
Maybe, but not like you’d hope...
Joint Pains: Glucosamine or Grape Seed Extract?

- Cartilage loss vs
- Subchondral bone expansion
Topicals?

- **Radiation dermatitis**
  - Petroleum Jelly
  - Aloe vera
  - Ointments or emollients
  - Calendula, comfrey, aloe, cocoa butter, Manuka honey

- **Surgical scars**
  - Mixed Tocopherols (*fancy* vitamin E)

- **Tea Tree oil**
  - Anti-Microbial

- **Other essential oils**
  - Caution mints and kidney function
Questions?

THANK YOU!
Common Post-Treatment Symptoms

**Fatigue**
- Sleep • 7-8 hrs/night
- Protein • 25g/ meal
- Hydration • 64oz/day (½oz/lb body wt)

Whey Protein - choose a highly concentrated product; 90% Pure Protein

L-carnitine - 4-6g twice daily
- well tolerated; odor, GI upset
- Caution: thyroid medication
Common Post-Treatment Symptoms

**Fatigue** - What is the cause?

CoEnzyme Q\textsubscript{10} - 100mg twice daily
- well tolerated; GI upset
- ubiquinol or ubiquinone
- caution: warfarin, some heart medications

Ashwagandha - 500mg twice daily
- well tolerated
- caution: pregnancy, hyperthyroidism

Photo credit - cliff1066 @ flickr.com
Common Post-Treatment Symptoms

**Insomnia** - sleep hygiene

**Melatonin (CR) - 0.5-3mg at bedtime**
- well tolerated; drowsiness, GI upset
- caution: nifedipine, sedatives, anti-depressants

**Valerian root - 500mg at bedtime**
- well tolerated; drowsiness, GI upset
- caution: prior liver toxicity, upcoming surgery

Photo credit: oKikos @ flickr.com
Common Post-Treatment Symptoms

Mental fogginess - ‘Chemo Brain’

See Fatigue and Insomnia

Acetyl L-Carnitine - 1.5-3g twice daily
  May cause GI upset, tart flavor (powder)
  caution: hemodialysis, attention deficit disorder

Rhodiola - 100mg 2-3x daily
  May cause irritability, insomnia, dry mouth
  caution: numerous potential drug interactions

Photo credit - Michael Wolf @ wikipedia.com
Common Post-Treatment Symptoms

**Constipation**

- High fiber foods • 30-40g/d
  - Hydration • 64-96oz/day
  - Physical activity • walking 30-45m/day

Fiber supplement - 5-15g in 8-12oz water at bedtime
  - Pectin, inulin, psyllium, prune or beet powder
  - well tolerated; gas, bloating, loose stool, urgency

Senna based tea - one cup 1-2x daily
  - with licorice, fennel, ginger, etc

Photo credit - Ahmad Fuad Morad @ flickr.com
Common Post-Treatment Symptoms

**Diarrhea**

Probiotics - one capsule/tablet daily
use a high-potency product
containing numerous strains:
Lactobacilli & Bifidobacteria
well tolerated; possible GI upset

L-glutamine - 5g 2-3x/day
very well tolerated
mix in warm water to dissolve

Common Post-Treatment Symptoms

**Hot flashes**

Vitamin E - 400IU 2-3x/daily  
warning: bleeding, GI upset, rash  
caution: blood thinners

Hesperidin Methyl Chalcone - 500mg 2-3x daily  
well tolerated; GI upset, rash  
caution: blood thinners

Photo credit - Carla Zagni @ flickr.com
Common Post-Treatment Symptoms

**Peripheral neuropathy**

Alpha-lipoic acid - 600mg 2-3x/daily
very well tolerated; GI upset, hypoglycemia
Targeted Risk Reduction

- Fish oil - 2-5g daily
- Green tea - 500mg of EGCG 2-3x/d
- Curcumin - 3-6g daily; highly absorbable form
- Boswellia - 400-800mg twice daily
- Vitamin E succinate - 400IU daily
- Resveratrol - 175-200mg twice daily
- Vitamin D - 1,000-5,000IU daily as per results
- Coriolus mushroom - 600mg three times daily
  *Hot water extracts only!*
Practical Nutrition for Better Health

- Matcha - 2-3 cups a day
- Salad - every day
  - Include mushrooms
- Berries - a handful daily
- Nuts - just 2oz every day
- Less meat & dairy as a condiment
- Avoid or minimize alcohol