



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

Moving Beyond Cancer to Wellness - 2018

Fred Hutchinson Cancer Research Center

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Gratitude

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



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**Seattle
Cancer Care
Alliance**

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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



Health

The Vitamin Supplement Craze Is Mostly Hogwash

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

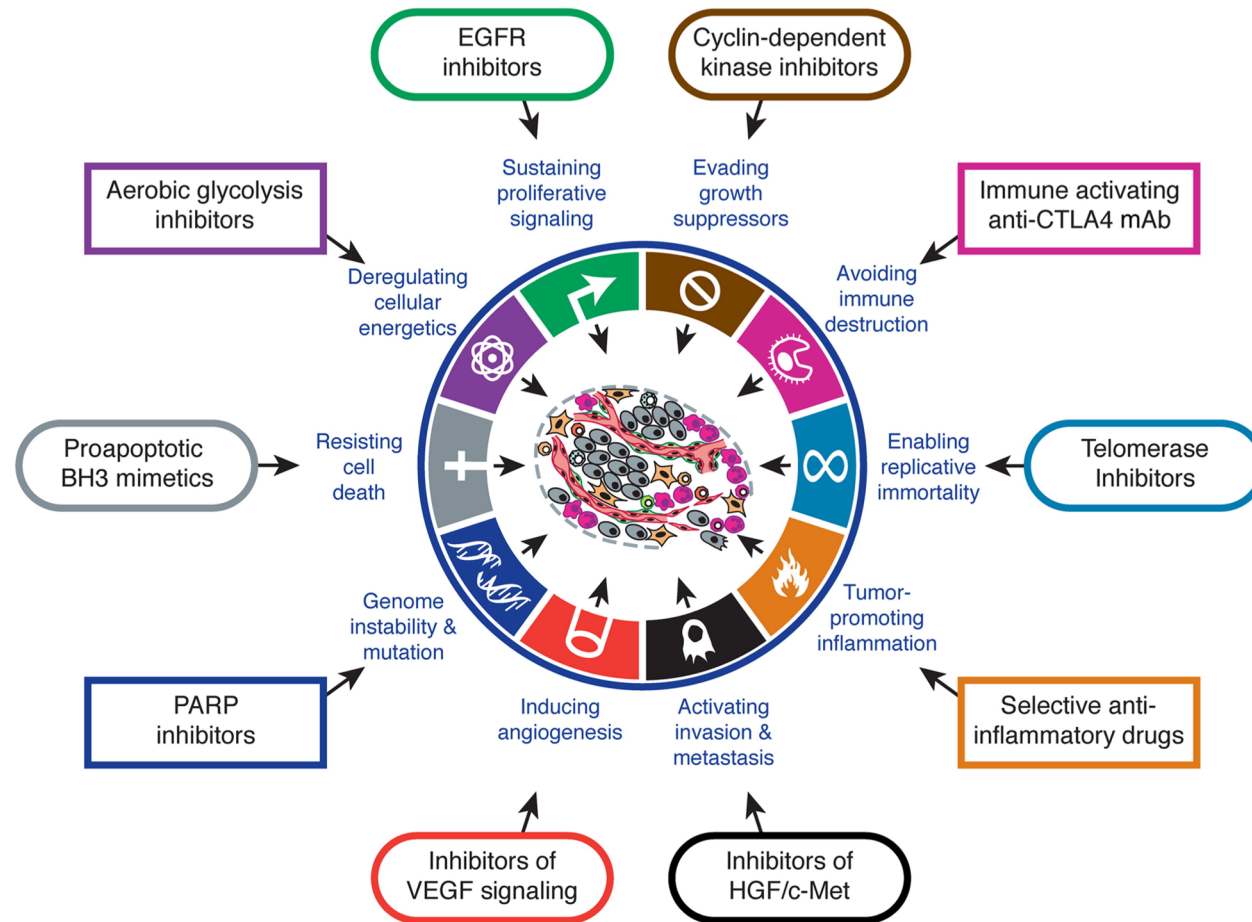
Naturopathic Medicine Cancer Survivorship

- ▶ 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

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**.

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



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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
- Pantothenic acid—10 mg/day
- Pyridoxine—2 mg/day
- Biotin —300 mcg/day
- Folic acid—400 mcg/day
- Vitamin B12—6 mcg/day

Supplement Facts

Serving Size 1 Vegetarian Capsule

	Amount Per Serving	% Daily Value
Thiamine (as Thiamine Mononitrate) (B-1)	100 mg	6,667%
Riboflavin (Vitamin B-2)	100 mg	5,882%
Niacin (as Niacinamide) (B-3)	100 mg	500%
Vitamin B-6 (as Pyridoxine HCl)	100 mg	5,000%
Folic Acid	400 mcg	100%
Vitamin B-12 (as Cyanocobalamin)	100 mcg	1,667%
Biotin	100 mcg	33%
Pantothenic Acid (as Calcium Pantothenate)	100 mg	1,000%
PABA (Para-Aminobenzoic Acid)	100 mg	*
Choline Bitartrate	100 mg	*
Inositol	100 mg	*

SUPPLEMENT FACTS

Serving Size: One Capsule

One Capsule Contains:		%DV
Thiamin (as Thiamin HCl)	40 mg	3,333%
Riboflavin (25 mg as Riboflavin and 3.6 mg as Riboflavin 5'-Phosphate Sodium)	28.6 mg	2,200%
Niacin (as Niacinamide)	80 mg	500%
Vitamin B6 (20 mg as Pyridoxine HCl and 3.4 mg as Pyridoxal 5'-Phosphate)	23.4 mg	1,376%
Folate (200 mcg as Calcium Folate and 200 mcg as L-5-Methyltetrahydrofolate† from L-5-Methyltetrahydrofolic Acid, Glucosamine Salt)	668 mcg DFE	167%
Vitamin B12 (300 mcg as Adenosylcobalamin and 300 mcg as Methylcobalamin)	600 mcg	25,000%
Biotin	80 mcg	267%
Pantothenic Acid (as Calcium Pantothenate)	45 mg	900%
Choline (as Choline Citrate)	14 mg	3%
Daily Value (DV)		

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



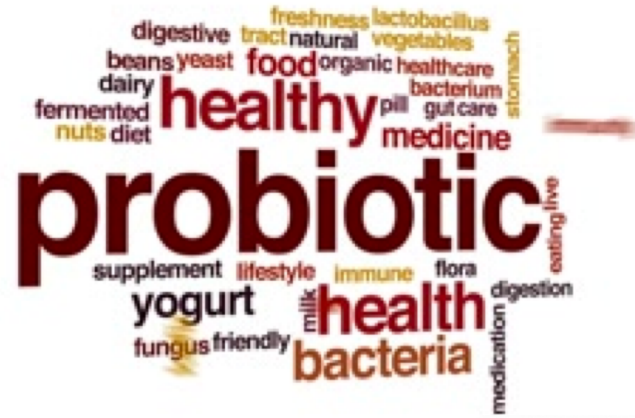
Cordyceps



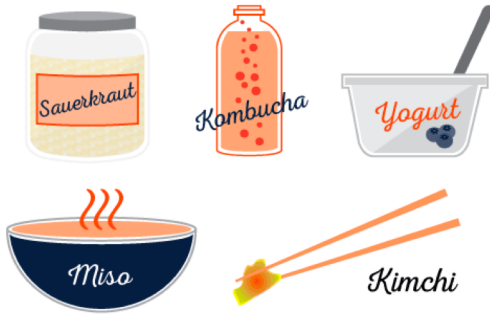
Ganoderma lucidum



Probiotics



PROBIOTIC-RICH FOODS



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
-

Carbohydrate Metabolism

- Chromium
- Fructose Sensitivity
- Glucose-Insulin Metabolism

Metabolites

- Choline
- Inositol
- Carnitine

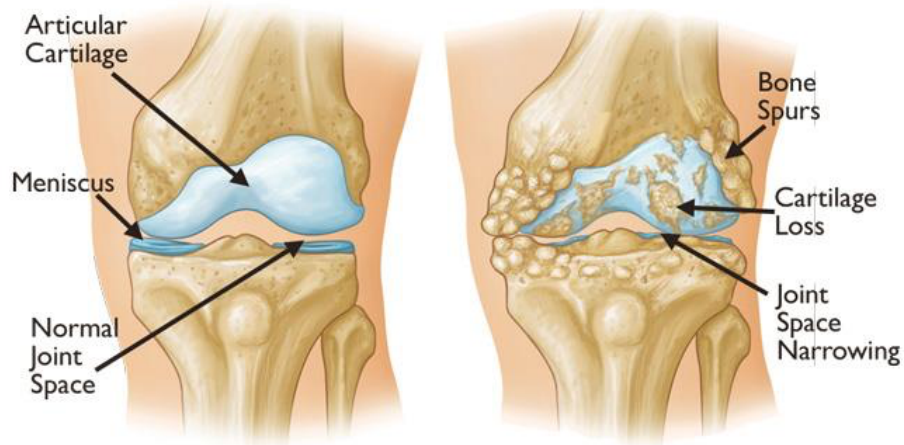
Total Antioxidant Function

Immune Response Score

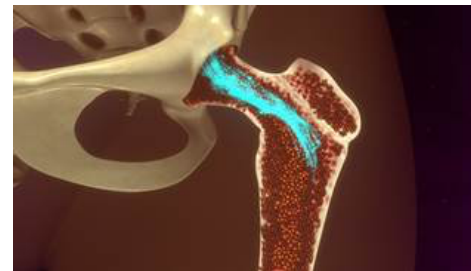
Does it WORK?

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

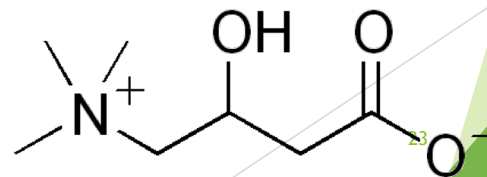
Hydration • 64oz/day (½oz/lb body wt)

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 Q₁₀ - 100mg twice daily

well tolerated; GI upset

ubiquinol or ubiquinone

caution: warfarin, some heart medications

Ashwagandha - 500mg twice daily

well tolerated

caution: pregnancy, hyperthyroidism

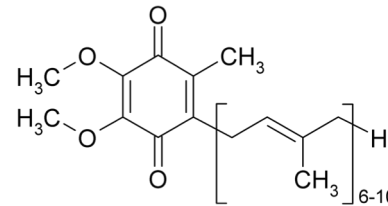


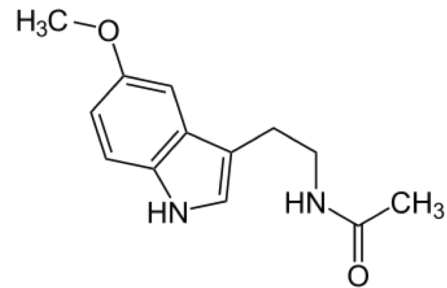
Photo credit - cliff1066 @ flickr.com

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



Common Post-Treatment Symptoms

Mental foginess - '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

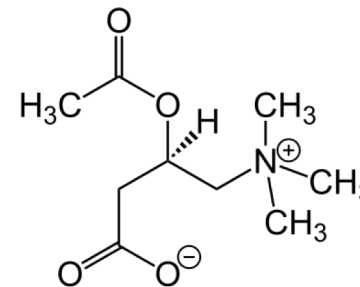


Photo credit - Michael Wolf @ wikipedia.com

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

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Common Post-Treatment Symptoms

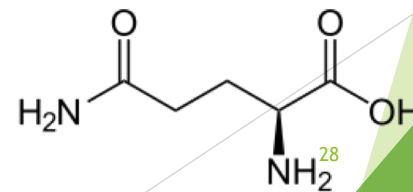
Diarrhea

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

<http://nccam.nih.gov/health/probiotics/introduction.htm>



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

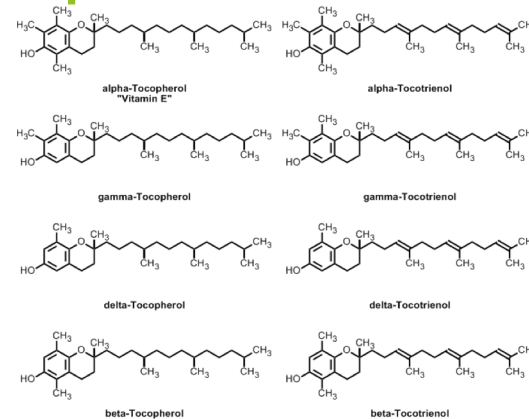


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Common Post-Treatment Symptoms

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