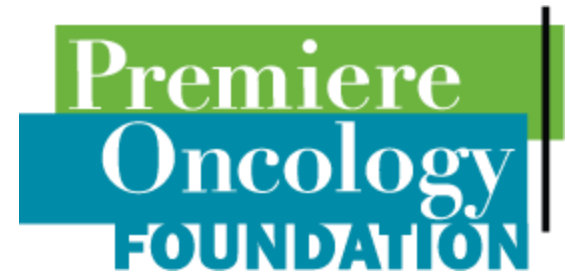


WHEN EATING IS A CHALLENGE

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WHAT SHOULD I EAT DURING TREATMENT?

- How might my diet affect my body during treatment?
- Are there any foods I should avoid?
- Are there some foods that will help me?
- What about antioxidants? Is there an optimum amount?
- Are juicing or fasting helpful or harmful?
- What about soy and estrogens in food
- Other questions you may have

WHAT ARE *YOUR* NUTRITION HEALTH ISSUES?

- Do you know your family's medical history?
- Do you have a record of your adult weight and its fluctuations? Have you gained more than 20 lbs since 30?
- Do you know what you weigh today? Your BMI?
- What is your LDL Cholesterol level? (ideally <100 mg/dl)
- What about your fasting glucose? (or Hemoglobin A1C)
- Do you know your waist or neck measurement?
- Have you ever had your body fat estimated?
- How has your diagnosis affected your nutritional health?

Visit My Family Health History at www.hhs.gov

WHAT SHOULD I EAT DURING TREATMENT?

- A diet rich in nutrients improves your overall health and ideally enhances your therapy
- Most people find small, frequent intakes of calories easier to tolerate than a few large meals
- Protein needs are increased (add a serving or 2 half smoothie portions – one in the afternoon and one at bed time)
- Soft textures are gentler on delicate mouth and upper digestive system tissues which are more sensitive during treatment
- Avoid highly spiced or acidic items

BARRIERS TO EATING HEALTHILY

- If your mouth is sore
- If you have little or no appetite
- If you are constipated
- If you have diarrhea
- If there is no one to prepare food and you are too fatigued
- If you are depressed
- If you are exhausted due to lack of sleep

We need to address each of these important barriers

IF YOUR MOUTH IS SORE OR SWALLOWING IS PAINFUL

- Soft textured, non-acidic foods are ideal
- Temperature is important – room temperature usually best tolerated
- Creamy textures like custard, nut butters and avocado work well
- Avoid citrus fruits, tomato or cranberry juices or vinegar dressings which may burn
- Use (non alcoholic) mouthwash – add aloe gel
- Try ice cream at room temperature and full fat Greek style yogurt
- Pasta with cream sauce may be easy to swallow

IF YOUR APPETITE IS POOR

- If just the thought of food makes you feel nauseated try ginger – ginger tea, ginger pop or crystallized ginger may be helpful
- If small amounts of food make you feel full immediately make sure they are high in calories – try home made protein smoothies, egg custards and avocado
- Try commercial ready prepared protein drinks/instant breakfast type items
- Try frequent small meals (baby food is a good portion size)

IF YOU HAVE CONSTIPATION

- Try prunes or prune juice
- Try syrup of figs
- Try adding rhubarb to your desserts as stewed or pie filling
- Try some stewed pitted fruit/compote of peaches, plums, apricots or cherries
- Include wheat germ on top of breakfast cereal for added insoluble fiber



IF YOU HAVE DIARRHEA

- Try the BRAT diet (Bananas, rice, apple sauce and toast) and include a fortified breakfast cereal like Cheerios
- Try a liquid only diet for a day and then reintroduce some baked potato or white rice
- Avoid iceberg lettuce and other foods high in insoluble fiber such as wheat germ or whole grain breads or crackers
- Make sure you are adequately hydrated – don't avoid sodium and have sufficient water

YOU HAVE NO ONE TO HELP YOU PREPARE FOOD

- Use baby food – portion size and blandness is often ideal as an addition to yogurt to make a soup for example
- Ask a friend to make a large batch of soup or casserole and freeze into individual portions
- Use protein smoothies (many commercial ready made whey protein product in shelf-stable packaging now available at most drug stores)
- Consider a home meal delivery program

IF YOU ARE DEPRESSED

- Depression can be crippling – ask for help if you find your mood is consistently preventing you from making self supportive actions
- Dark chocolate is often helpful as a mood lifter – try a cup of hot cocoa or small square of 70% organic dark chocolate
- Surround yourself with love!



IF YOU HAVE INSOMNIA

- Make sure you have no caffeine or stimulants (including dark chocolate) after 3 pm
- Take any green tea supplements before 3 pm
- Have light dinner at least three hours before lying down to sleep – avoid cheese or meat in evening
- Try half a banana before bedtime with small glass of milk
- Try calming herbal tea, e.g. passiflora or chamomile
- Try magnesium and vitamin B6 supplement

SUPPORTIVE NUTRITION DURING TREATMENT: WHAT YOU CAN DO NOW

- Eat a diet low in toxins and rich in nutrients
 - Farmer's market produce or other high quality vegetables and fruit
 - Pureed vegetables or soups
- Omega-3 oils may be helpful
 - Try DHA fortified milk and finely ground flaxseed
- Add specific nutrient rich foods to your diet
 - **Protein** – (sulfur rich) whey, egg white, cottage cheese, etc.
 - **Phytonutrients** – blueberries, spirulina and other blue/green foods, dark cherries, pomegranates and black raspberries
- Enhance your natural immunity and resilience
 - **Mushrooms**
 - **Berries and cherries**
 - **Tea**

A TYPICAL HEALTHY DAILY MENU

- *Breakfast* Oatmeal or other whole grain cereal, non fat milk , berries or raisins
- Snack* Apple, banana or other piece of fresh fruit (optional)
- *Lunch* Large salad with dark leafy vegetables (lettuces, spinach, etc.) topped with colorful vegetables. Parsley, chives and fresh herbs are good. Sprinkle slices of avocado, a few pine nuts and sunflower seeds for added benefit. Tuna, hard boiled eggs or lean chicken for protein
- Snack* handful of walnuts, almonds, sunflower seeds OR 1 small square of dark chocolate (organic)
- *Dinner* Salmon or other fish, lean red meat (not more than once a week) or chicken or turkey or tofu or vegetarian protein (Quorn® for example), 2 or more steamed vegetables or stir fry in (small quantity) of sesame or olive oil, brown rice, baked potato, corn or whole wheat tortilla, fresh berries for dessert
- *Beverages* Iced green tea, water (1.5 – 3 liters a day all fluids)

THE 3 A'S OF CANCER AND NUTRITION

- Antioxidants

prevent free radical formation which if unchecked causes damage to DNA

- Anti-inflammatories

prevent elevated rates of cell division which may increase “mistakes” in DNA

- Anticarcinogens

prevent persistent and deleterious damage (mutations) to DNA

Good News!

MANY DELICIOUS FOODS PROVIDE ALL THREE

1. ANTIOXIDANT NUTRIENTS

Antioxidants “quench” free radicals which, if unchecked, cause damage to DNA

- Carotenes including lycopene (guava, tomatoes, sweet potatoes and carrots)
- Coenzyme Q10 in many foods and supplements
- Vitamin E (as mixed tocopherols) in whole grains and natural, cold pressed oils
- Vitamin C in fruits and vegetables; berries, bell peppers, citrus and kiwi fruit
- Many phytonutrients (dark pigmented, aromatic)

ANTIOXIDANTS DURING TREATMENT

- 3 large clinical trials using supplemental antioxidants had to be stopped early due to increased mortality in test groups
- **Supplements** of antioxidants may have unintended increased risk – it isn't yet clear why this is so
- Avoid high doses (- above 30 times RDA) of supplemental antioxidants for example beta carotene, Vitamin E (in synthetic form) or Vitamin C
- **Antioxidant rich fruits and vegetables are healthful during treatment**
- Always check with your physician and oncology pharmacist before including any supplements – even large amounts of green tea may interfere with certain treatment protocols

2. ANTI-INFLAMMATORY FOODS

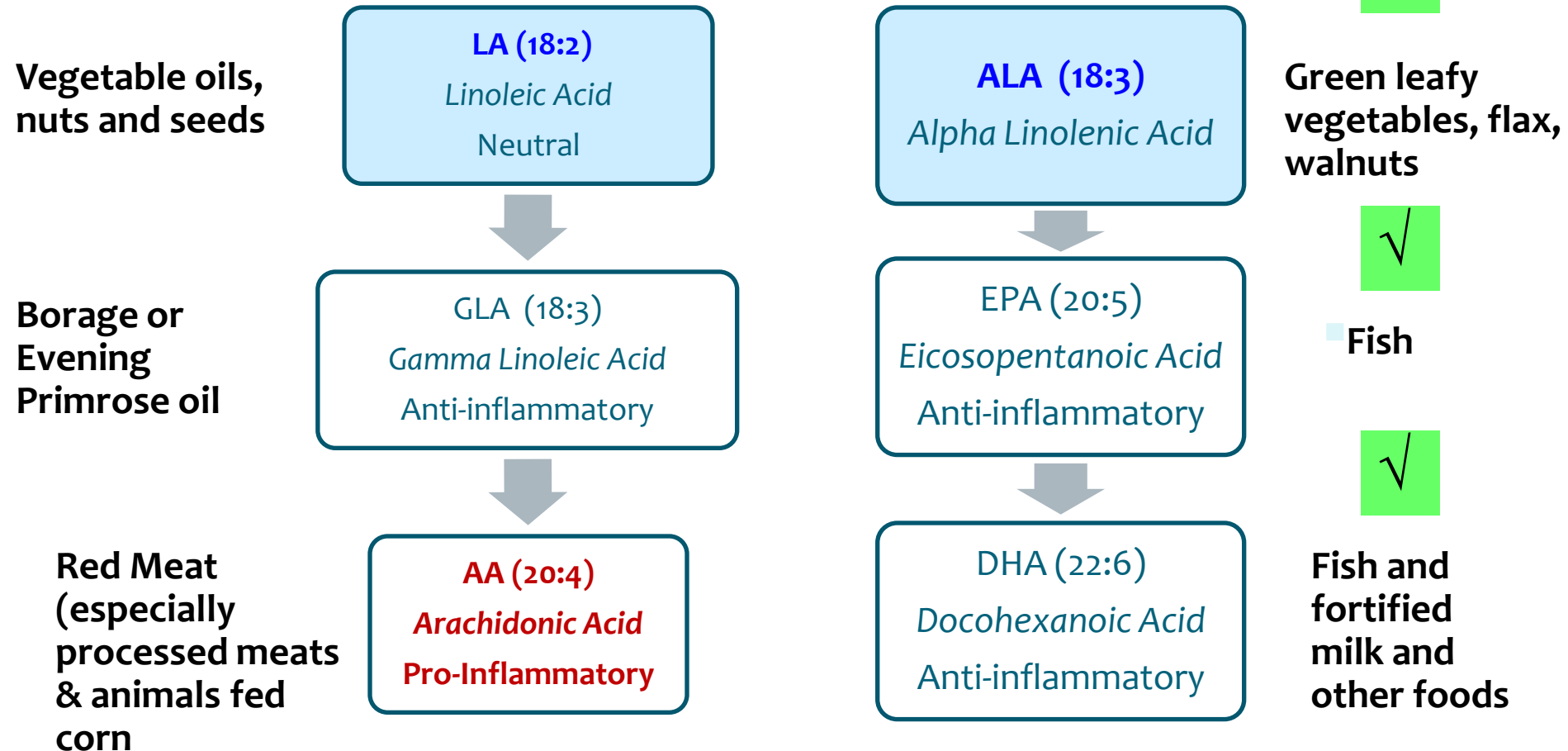
Anti-inflammatories prevent elevated rates of cell division which may increase “mistakes” Cells in resting stage have more time to be “corrected” as DNA repair takes place preventing chronic illnesses

- Omega 3 rich oils (EPA and DHA)
- Flaxseed, borage and blackcurrant seed oils beneficial fatty acids (ALA and GLA)
- Natural salicylates, e.g. turmeric, rosemary, thyme, apricots, broccoli
- Naturally occurring COX-Inhibitors green tea, cocoa and red wine

OMEGA-6 AND OMEGA-3 FATTY ACIDS

■ Omega-6

■ Omega-3



■ Table adapted from Simopolous, A (1998)

ANTI-INFLAMMATORIES DURING TREATMENT

- Inflammation often accompanies treatment; use anti-inflammatory rich foods to combat this
- Chia and Flax seeds are very high in omega-3
- EPA and DHA may be very important for some people with underlying inflammatory conditions
- Supplements of DHA (microalgae) or DHA and EPA (fish oil), ethyl esters of omega-3 fatty acids (prescription)
- Turmeric and ginger are anti-inflammatory
- Discuss any supplements with your health care team to prevent excess blood thinning (fish oil, aspirin, etc. all can be cumulative)

3. ANTICARCINOGENS

Anticarcinogens prevent DNA damage and allow for time for DNA repair or apoptosis

- Curry powder (a combination of turmeric, cumin and other spices)
- Citrus fruits (naringinin and limonene)
- Green tea (EGCG and other catechins)
- Pomegranates (especially the oil from the seeds)
- Brazil nuts (excellent source of selenium)
- Tomatoes (excellent source of lycopene)
- Saffron

GARLIC, ONIONS, CHIVES AND LEEKS

- Vegetables of the Allium family help liver and kidney detoxification enzyme processes
- Garlic, onions, leeks, scallions, shallots and chives
- Shallots (Moo-Seer in Persian cuisine) are easier to digest. Shallots are richer in flavonoids and phenols than other onions
- Sulfur compounds (allicins) are natural defenses; antibacterial and antifungal
- These vegetables support natural detoxification processes

CRUCIFEROUS (BRASSICA) VEGETABLES

- The cabbage family have flowers in shape of cross (crucifers) hence the name
- *Brassica oleracea* includes broccoli, cabbage, cauliflower,
- *Brassica napus* includes mustard, rapeseed (Canola oil)
- Radish, horseradish (wasabi) and watercress are also part of the Brassica family
- Watercress is especially healthful and has anticarcinogenic properties
- These vegetables also support natural detoxification processes

PUTTING IT ALL TOGETHER

- ▶ **Avoid mega-doses** (more than twice RDI or Acceptable Intake) of any supplemental nutrient (unless specifically prescribed by your physician or oncologist)
- ▶ **Be cautious with herbal products** Many affect drug detoxification pathway efficiency and may interfere with other medications (reduce therapeutic dose or increase toxicity). Only use reliable sources for purity
- ▶ **Pharmacogenomics** is a new field of personalized medicine. For example, grapefruit and Seville oranges may cause adverse drug reactions by inhibiting enzymes that metabolize medications
- ▶ Choose nutrient dense foods rather than take supplements and remember to **tell your health team about EVERYTHING you take**

WHAT ABOUT SOY?

- Soy is a legume. It is often fermented for increased digestibility (Natto, Tempeh, Tofu or yogurt)
- Soy and “Women’s Formulas” contain isoflavones with (weak) estrogen activity
- Most oncologists recommend avoiding soy isoflavones if you have ER +ve cancer (no more than 10 grams per day)
- Genistein and Daidzein are the predominant isoflavones. Equol is present in smaller amounts
- Soy’s health benefits are likely due to time of exposure (*in utero* and at puberty)

SOY AND SOY ISOFLAVONES

<u>Food</u>	<u>Amount</u>	<u>Isoflavones (mg)</u>
Roasted soybeans	½ cup	167
Edamame	½ cup	70
Soy isolate	1 oz	57
Tofu, firm cooked	3 oz	52
Tempeh, cooked	3 oz	47
Soy sausages	1	35
Soy milk	1 cup	35
Soy yogurt	1 cup	30
Soy burger	1	9
Soy oil	1 fl oz	0
Soy sauce	1 fl oz	0

WHAT ABOUT JUICING AND FASTING?

- Fresh juices can be a great way to add liquids and vegetables and fruits to your diet; if squeezed fresh they also have active enzymes removed by pasteurization
- Commercial juices are pasteurized (high temperature, short time) including juice cafés unless squeezed in front of you!
- If your white cell count is low (neutropenia) you may wish to use only juices from fruits and vegetables that are peeled
- Fasting is rarely recommended during treatment as it results in weight loss including loss of muscle mass

HYDRATION – A KEY TO HANDLING YOUR ENERGY LEVEL

- During treatment dehydration can happen easily
- Fatigue is an early sign of dehydration
- Make sure you have sufficient water and electrolytes all through the day and night
- Don't avoid sodium at this time (use sea salt to season your food)
- Home made remedy: ½ teaspoon sugar, pinch salt in 1 cup water
- Check for hydration status:
 - - color of urine should be light/straw
 - - press on back of hand – should bounce back quickly

ALKALINIZING YOUR DIET

- Improve your diet with vegetables and fruits which have an “alkaline ash”
- Simply adding alkaline water isn’t the same
- During treatment you may benefit from more vegetables as these balance out probable more acidic residues from cell destruction
- **Deep breathing** is the best way to help neutralize and normalize blood pH levels as lungs are largest surface area in the body responsible for this function
- Even if you can’t exercise much abdominal breathing is helpful in normalizing pH levels during treatment

ACID-BASE BALANCE FOODS *(AIM FOR 70:30 RATIO)*

Alkaline Ash (higher pH)

- Vegetables (all)
- Leafy green vegetables
- Citrus fruit
- Seeds
- Seaweed
- Root vegetables
- Dairy products
- Miso
- Herbs and spices

Acid Ash (lower pH)

- Meats (processed, red)
- Cranberries
- Plums
- Lentils
- Grains
- Nuts
- Beans
- Fish
- Alcohol

■ Avocado is a delicious (pH neutral) high calorie food

WEIGHT MANAGEMENT

- Healthy weight has a ratio of lean to fat that is above 2.0 (*ask me about body fat testing*)
- Muscle is easily lost during treatment
- You will need to **eat more protein** and maintain as much activity as possible to prevent muscle loss
- Have a protein beverage before bedtime if losing weight
- Watch “empty” calories if gaining weight
- Drink plenty of fluids to maintain hydration
- Cottage cheese or low fat Greek style yogurt are good snacks providing about 15 grams protein per serving

IF YOU NEED TO GAIN WEIGHT

- When you need to gain weight there are *two key considerations*:
 - You need at least 500 more calories each day than you actually burn to start to gain weight
 - You need to have readily usable calories in your system at nighttime
- A good way to achieve this is to have a bedtime smoothie or milk based beverage
- Another important concept is to sip on papaya or guava juice then swill with water every few hours (or when waking up) during the night

SYMPTOM MANAGEMENT WITH NUTRITION

- Nausea

Choose whole grain crackers, melba toast ginger (half teaspoon ground ginger, ginger pop or crystallized) or sip on club soda or sweet tea

- Constipation

Choose prune juice, dried or stewed pitted fruits, e.g. prunes, figs, apricots, rhubarb

- Headache

Avoid caffeine, chocolate, cheese and tyramine containing foods (anchovies, processed or organ meats and gravies)

- Diarrhea

Cream of rice, apple sauce, bananas, toast, crackers

MORE SYMPTOM MANAGEMENT WITH NUTRITION

- **Weight loss** - choose avocado, high calorie smoothies, Greek style yogurt, high quality ice cream
- **Tendency to bleed easily** - choose oranges, lemons, limes (especially the white pithy parts)
- **Vision loss** - choose dark green leafy vegetables, blueberries and bilberries, apricots
- **Cold sensitivity** – avoid spicy foods
- **Rash** – avoid psoralens (foods that react with UV light to cause a rash in sensitive individuals) e.g. celery, parsley

DIET AND CHEMOTHERAPY

- [Avastin](#) (*Bevacizumab*) – a biologic agent/targeted therapy used with other chemotherapy agents like CPT-11 or 5-FU. Eat small, easy to digest meals frequently.
- [Camptosar](#) (*Irinotecan, CPT-11*) – a chemotherapy; inhibitor of Topoisomerase-1. Avoid diarrhea with apple sauce, oatmeal, cream of rice, barley water.
- [Eloxatin](#) (*Oxaliplatin*) – a cytotoxic chemotherapy agent. Drink plenty of fluids. Small, frequent meals.
- [Erbitux](#) (*Cetuximab*) – a biologic agent or monoclonal antibody to EGFR. Magnesium requirements may be increased.
- [5FU](#) (*5Fluorouracil, Adrucil*) – an anti-metabolite that blocks cell division. Thiamin rich foods may be helpful, e.g. cereals.
- [Xeloda](#) (*Capecitabine*) – a chemotherapy which is changed in the body to 5FU (see above). Xeloda may interact with blood thinners. Avoid ginkgo biloba, vitamin C and E and other blood thinning supplements.

FOODS WITH POSSIBLE SPECIAL BENEFITS

- **Lemon grass** is much sought after as a rich source of CITRAL; citral induces apoptosis (programmed cell death) of cancer cells in vitro – delicious flavoring in Thai dishes
- **Mushrooms** are a rich source of beta glucans. Mushrooms (cooked) induce natural killer cells and are rich in potassium. White button mushrooms are excellent
- **Guava** as a good source of lycopene an oil soluble antioxidant thought to protect prostate cells
- **Black Raspberries** – highly effective at killing cancer cells in vitro and in animal studies. Recent studies indicate Black Raspberries modify expression of 100 human genes consistent with anticarcinogenic activity (Ohio State, USDA)
- **Pomegranates** are rich in all three of the 3 A's

SUMMARY

- Prevent and Protect, Repair and Regenerate
- Eat Smart to provide yourself with the 3 A's of Health
 - Antioxidants (citrus fruits)
 - Anti-inflammatories (culinary herbs)
 - Anticarcinogens (berries)
- Enjoy food that is fresh, locally grown and seasonal
- Grow your own food or visit your local farmers' market
- Be as physically active as you can. Walk often and enjoy our local, natural beauty
- Culinary herbs are easy to grow on a windowsill or in pots on a deck outside – fight your cancer with a fork!

MIRACLES

There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle

Albert Einstein (1879-1955)