

NUTRITION & EXERCISE: BEFORE, DURING & AFTER CANCER TREATMENT

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OBJECTIVES

- **To provide an understanding of the role nutrition plays in improving cancer outcomes.**
- **A knowledge base of nutrition principles to potentially reduce the risk of developing other types of diseases.**
- **Side Effect Management: Nutrition Tips**
- **Basic nutrition knowledge to improve overall health status and quality of life.**

SCIENTIFIC EVIDENCE

- **Being overweight or obese has been associated with an increase risk of:**
 - Heart disease
 - Multiple cancers (especially aggressive prostate cancer)
 - Diabetes
 - Lower quality of life inclusive of poor mobility, strength, and risk of depression.
- **Thirty-three percent of cancer deaths are adult diet related.**
- **Low-fat diets are associated with lower incidence of prostate cancer.**

SCIENTIFIC EVIDENCE (CONTINUED)

- A healthy diet improves immunity, recovery, quality of life and energy levels.
- The American Cancer Society has published guidelines on nutrition and physical activity for cancer prevention:
 - Maintain a healthy weight throughout life
 - Adopt a physically active lifestyle
 - Consume a healthy diet, with an emphasis on plant sources
 - If you drink alcoholic beverages, limit consumption

EXERCISE & CANCER PREVENTION EXERCISE DURING CANCER TREATMENT

Tips!

Principle #1

Be physically active!

- **250 minutes per week in exercise activity.**
- **10,000 steps per day 5 times per week.**



NUTRITION FOR CANCER PREVENTION

- **Composition of a healthy diet**
- **Diversify:**
 - **Eat your macro- and micronutrients:**
 - **Protein**
 - **Carbohydrates**
 - **Fat**
 - **Vitamins and Minerals**
 - **Phytonutrients, Phytochemicals & Bioactive Compounds**

PLANT BASED DIET BENEFITS

- Plant based foods are anti-inflammatory and typically low in calories in normal servings.
- Contain many antioxidant properties as evidenced by their vibrant colors in foods.
- Extensive evidence has proven benefits of high fruit and vegetable intakes in reducing cancer risk.
- PSA levels have been shown to decrease significantly by increasing consumption fruit and vegetable servings from 2-3/day to 5/day.
- Fiber content of fruits and vegetables improves gastrointestinal health in majority of cases.

FAT INTAKE

Principle #2

Diet should be low in fat with emphasis on consuming healthy fats.



BENEFITS OF LOW FAT DIET FOR PREVENTION OF CANCER

Facts

- Multiple reports indicate high fat diets increase testosterone which then stimulates cancer growth.
- High added fat diets are associated with increased mortality.
- Red meat sources of fat have been associated with higher mortality.
- Some evidence suggests margarine may not be good substitute for butter in prostate cancer.

Recommendations

- Limit saturated fats typically found in high fat dairy products and animal fat.
- Limit total fat intake to 20% of calorie intake or 420 calories (45 grams per day)
- Limit red meat sources of protein (two servings per week is considered safe.)



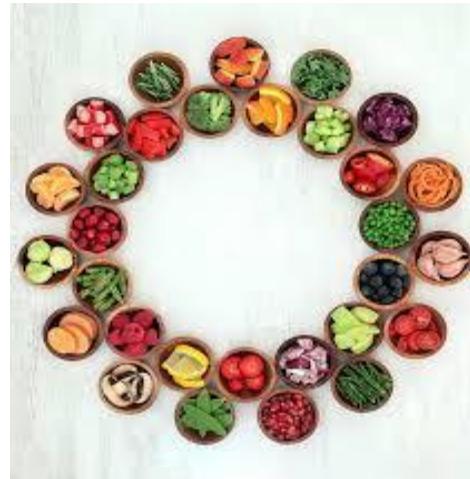
ANTIOXIDANTS

Defined:

Compounds that help prevent unstable molecules, called free radicals, from damaging your cells. This is called oxidative stress. Some examples of antioxidants include selenium, vitamins A, C and E, beta-carotene, lutein and lycopene.

(Livestrong definition)

Plant based antioxidants are shown to be more effective in this process while supplements have not proven to be beneficial in cancer prevention.



PLANT SOURCES CONTINUED:

Beta Carotene (an antioxidant): is converted to vitamin A in the body.
(orange in color)

- Evidence is controversial if beta-carotene alone is beneficial.
- Generally believed high beta-carotene containing fruits and vegetable may be cancer protective.
- Supplements of beta-carotene have been shown to have no benefit in reducing cancer risk and may increase risk of some cancers.

Food Sources:

Sweet potatoes, yams, carrots, winter squash, cantaloupe, mango and papaya.

PLANT SOURCES AND SPECIFIC BENEFITS

Allium: (onion) family which includes garlic, scallions, onions, leeks

- May be beneficial in reducing prostate cancer risk which often translates to lower risk of cancer tumor cell growth upon diagnosis.

Recommendation:

Consume a minimum of one serving daily of an allium family vegetable.

PLANT SOURCES CONTINUED:

Cruciferous vegetables:

- Strong evidence indicates 3 servings per week reduces prostate cancer risk.
- Evidence also indicates the phytonutrients in broccoli sprouts blocks cell growth.
- Multiple compounds in cruciferous vegetables appear to play a significant role in cancer cell growth and/or death.

Food Sources:

Broccoli, arugula, cabbage family, green leafy vegetables.

Recommendation: one or more servings per day.



PLANT SOURCES CONTINUED: LYCOPENE

Facts

- **Antioxidant properties**
- **Tomato based products are primary source in US.**
- **One serving daily is protective.**
- **Consumption of >2 times per week reduced PC progression and risk of developing PC.**
- **Lycopene from real foods versus supplements is preferred.**

Food Sources of Lycopene

Product	Serving Size (mg/serving)	Lycopene
Tomato juice	250 mL (1 cup)	25.0
Tomato ketchup	15 mL (1 tbsp)	2.7
Spaghetti sauce	125 mL (1/2 cup)	28.1
Tomato paste	30 mL (2 tbsp)	13.8
Tomato soup (condensed)	250 mL prepared	9.7
Tomato sauce	60 mL (1/4 cup)	8.9
Chili sauce	30 mL (2 tbsp)	6.7
Cocktail sauce	30 mL (2 tbsp)	5.9
Watermelon	368 g (1 slice)	14.7
Pink grapefruit	123 g (1/2)	4.9
Raw tomato	123 g (1 medium)	3.7
Papaya	1 cup	2.6

Source: Heinz Institute of Nutritional Sciences

DURING CANCER TREATMENT

- Talk with your provider about being physically active.
- Physical activity helps:
 - Reduce fatigue, pain, nausea, improve physical, emotional and functional wellbeing substantially & improve quality of life.
 - Prevent lymphedema
- **Looking for a Fitness Expert?**
 - The American college of sports medicine (ACSM) offers a certification for trainers who want to work specifically with people who have been affected by cancer. Visit: ACSM Website at: www.acsm.org to find an ACSM-certified professional.

NUTRITION FOR CANCER PREVENTION & DURING CANCER TREATMENT

Principle #3

Limit processed grains, food products, white flours and sugars!

**Increase consumption of whole grains & Fruits and Vegetables
(aim for >3 gm of fiber per serving).**



BENEFITS OF FIBER

Principle #4 Increase fiber intake.

Facts

- May reduce the risk of developing many cancers and is suggested to reduce risk of PC progression.
- Fiber binds to carcinogens for elimination from the body.
- High fiber diet reduces hormone levels that may promote PC progression.

Recommendations

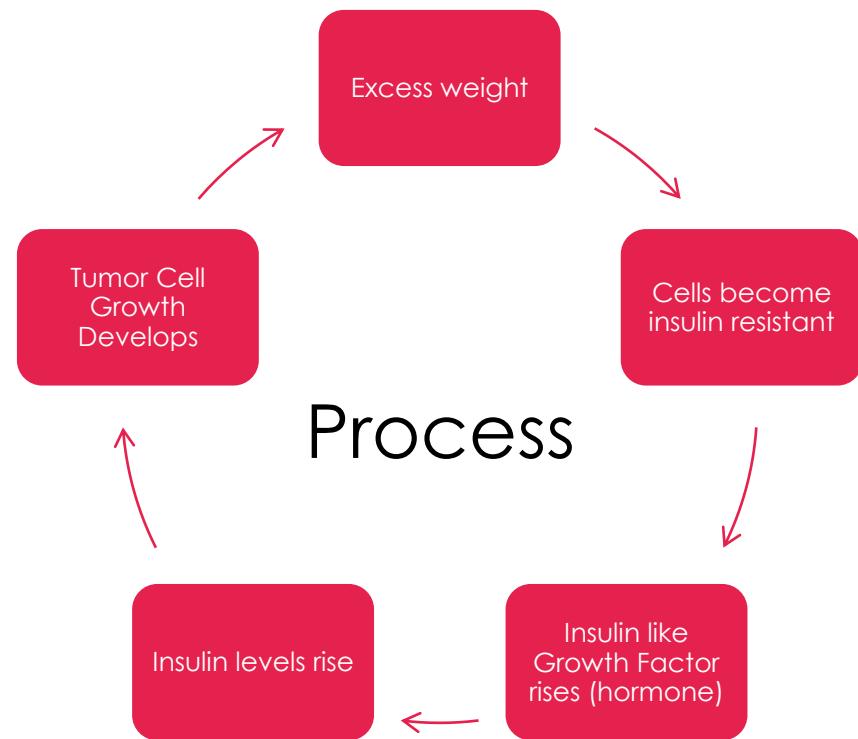
- Consume 25-30 grams fiber everyday through natural plant sources.



SUGAR AND REFINED CARBOHYDRATES

Sugar Facts

- Studies suggest a diet high in refined sugars are associated with increased prostate tumor growth.**
- Increased serum insulin levels which is a growth hormone and may lead to cell growth.**



SUGAR AND CANCER BOTTOM LINE

Control your insulin levels by:

- Eat a high fiber and avoid refined sugar.
- Choose moderate amounts of healthy fats.
- Maintain your weight at a health weight for height.

SIDE EFFECTS ASSOCIATED WITH CANCER TREATMENT

- Anemia
- Appetite Loss
- Bleeding and Bruising
(Thrombocytopenia)
- Constipation
- Delirium
- Diarrhea
- Edema (Swelling)
- Fatigue
- Fertility Issues in Boys and Men
- Fertility Issues in Girls and Women
- Hair Loss (Alopecia)
- Infection and Neutropenia
- Lymphedema
- Memory or Concentration Problems
- Mouth and Throat Problems
- Nausea and Vomiting
- Nerve Problems (Peripheral Neuropathy)
- Pain
- Sexual Health Issues in Men
- Sexual Health Issues in Women
- Skin and Nail Changes
- Sleep Problems
- Urinary and Bladder Problems

SIDE EFFECT MANAGEMENT: NUTRITION TIPS

Side Effect	Strategy
Nausea/Vomiting/Poor Appetite	Clear Liquids in small amounts High carbohydrate foods (fruit and popsicles) Small meal patterns to provide 6 – 8 small frequent meals/snacks per day
Thickened Saliva	Seltzer and tonic waters Papaya Nectar Increased Fluid intake

SIDE EFFECT MANAGEMENT: NUTRITION TIPS

Side Effect	Strategy
Diarrhea	Avoid high fat foods Avoid dairy (if lactose intolerant) Eat bananas (soluble fiber) Consider soluble fiber supplements (benefiber)
Fatigue	Adequate protein, calorie & fluid intake. Engage in physical activity.

SIDE EFFECT MANAGEMENT: NUTRITION TIPS

Side Effect	Strategy
Weight Loss	Eat smaller, frequent scheduled meals with nutrient-dense foods. Use calorie/protein supplements (i.e. benecalorie, beneprotein).
Neutropenia	Encourage safe food preparation, food handling/cooking to avoid food-borne illness. Weight maintenance important.

SIDE EFFECT MANAGEMENT: NUTRITION TIPS

Side Effect	Strategy
Altered Taste	<p>Regular dental care (brushing teeth/flossing).</p> <p>Use baking soda/water rinse.</p> <p>Metallic taste – use plastic utensils</p> <p>Sugar free mints, candies or gum.</p> <p>Use sauces or marinades on meats.</p> <p>Straws with liquids.</p> <p>Try cold foods vs. warm foods.</p>

DIET PRINCIPLES FOR CANCER AND PREVENTION

Principle # 5

Drink plenty of fluids:

(64 ounces per day is general rule of thumb)



FOOD SAFETY

Food Safety: Nutrition Tips

- Avoid Buffets.
- Avoid raw meats and seafood. Cook meats to correct temperatures.
- Avoid raw sprouts.
- Soak your fruits and vegetables for 2 minutes in water and then rinse in water.



NUTRITION FOR SURVIVORSHIP

- Following a balanced diet combined with physical activity can help with eating-related side effects from cancer treatment, weight maintenance and prevention of cancer recurrence.
 - Grill meats as an occasional treat and consume in moderation with fruits and vegetables as they provide healthful compounds that can counteract the harmful effects of PAHs and HCAs.
 - Portion control for weight maintenance
 - Consume at least 5 servings a day of fruits and vegetables
 - Stay active!
 - Upgrade your meals!

NUTRITION FOR SURVIVORSHIP CONTINUED

- **Nutrition and Breast Cancer Survivors:**

- WINS: Women with ER- Breast Cancer had a 42% reduced risk of cancer recurrence if they followed a low fat diet (~ 15 – 20% of kcal from fat). Not significant for ER + breast cancer.
- WHEL: 3,088 participants (pre & post-menopausal breast cancer patients) adopted a plant based diet. No significant difference between groups.

- **Considering taking a nutrition supplement?**

- Consult with your health care team to determine if the food, supplement or dietary regimen may help or harm your health.

NUTRITION FOR SURVIVORSHIP CONTINUED

- **Eat for bone health:**

- Select low-fat/fat-free dairy products (calcium, vitamin D, phosphorus)
- Green vegetables (great source of calcium)
- Monitor vitamin D levels

- **Follow a heart healthy diet:**

- Achieve and maintain a healthy weight, be active daily for ~ 30 minutes, eat fish, lean meats, poultry, and avoid processed meats and soluble fiber!

- **Do you have access to a nutrition professional?**

- American Cancer Society National Cancer Information Center: (800)227-2345

SUMMARY

- **Consume 8-10 colorful combined fruits and vegetables per day.**
- **Increase fiber intake to minimum of 25 grams per day.**
- **Keep white flours off your plate!**
- **Limit high fat dairy and red meats.**
- **Include healthy fats in diet, including: fish, avocados, nuts and olive oils.**
- **Consume 30 mg lycopene containing foods on routine basis.**

SUMMARY (CONTINUED)

- **Supplements remain controversial...ask your physician.**
- **Get vitamins and minerals from real foods unless supplement is indicated for specific deficiencies or risks.**
- **Monitor Vitamin D levels annually with your physician check up.**
- **Exercise and maintain a healthy weight.**
- **Drink adequate fluids from low sugar sources.**

RECIPE: CANCER PREVENTION

Pearl Couscous "Tabbouleh"

- Serves 4

Ingredients:

- 1 cup pearl couscous
- 2 cups reduced-sodium chicken or vegetable broth
- 2 Roma tomatoes (seeded and chopped)
- 1/2 cucumber, peeled, seeded, and chopped
- 1/2 cup hopped fresh Italian parsley
- 2 tablespoons finely chopped red onion
- 2 tablespoons chopped fresh mint
- 2 tablespoons extra-virgin olive oil
- 2 - 3 tablespoons fresh lemon juice
- Salt and pepper to taste

Methods:

- In a skillet over medium-high heat, add the couscous and saute' for 1 - 2 minutes or until lightly golden. Add the broth and bring to a boil. Reduced the heat and simmer for 6 - 8 minutes, stirring until almost all the liquid is absorbed. Cover and set aside for 5 minutes.
- Meanwhile, in a bowl, combine the tomatoes, cucumbers, parsley, onion, and mint. Add the couscous and stir to combine. In a bowl, combine the oil and 2 tablespoons of the lemon juice (or put into a jar and shake well). Drizzle the dressing over the couscous to lightly coat, and stir gently to combine. Season with salt and pepper and additional lemon juice, if desired.

RECIPE: DURING CANCER TREATMENT

- **Chocolate Chia Seed Pudding**

- Serves 4

- **Ingredients:**

- 1 3/4 cups canned coconut milk
- ½ cup chia seed
- 2-3 Tbsp maple syrup (to taste)
- ¼ tsp. vanilla extract
- 2 Tbsp cocoa powder

- **Method:**

- Place the first five ingredients in a bowl and mix well using a whisk.
- Cover and refrigerate for at least an hour, or until the mixture sets.
- Serve with desired toppings such as fruit or whipped cream.

QUESTIONS?

