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# NUTRITION FOR THE PERSON WITH PROSTATE CANCER

ABBY MOELLERING, RD, LD  
OUTPATIENT ONCOLOGY DIETITIAN  
ST ELIZABETH CANCER CARE



## OBJECTIVES

- Look at diet and lifestyle and prostate cancer risks
- Understand the role of nutrition in actively treated patients and survivors of prostate cancer.



Prostate cancer is the most common type of cancer in men

Risk factors include age, ethnicity, and heredity:

>65 years and older

North American and Northern European descent, and in the U.S. there is more prevalence in black men

**NUTRITION MATTERS!**

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## NUTRITION AND PROSTATE CANCER RISK

A plant-based diet is associated with lower risk of prostate cancer and of disease recurrence

Studies also suggest that diet, and lifestyle modifications such as physical activity may slow the progression of prostate cancer and lower the risk of recurrence

# NUTRITION AND PROSTATE CANCER RISK

## WHY PLANT-BASED DIET?

- **Phytonutrients** are substances found in plants that can prevent various diseases
  - Those found in allium (e.g. garlic, onion) and cruciferous vegetables (e.g. Broccoli, cabbage, kale, cauliflower) may reduce prostate cancer risk and often its recurrence and metastasis or spread
  - Also diets high in lycopene, flaxseed, green tea, pomegranate, and soy foods are protective against prostate cancer.
  - These foods have anti-cancer actions like stopping the growth of prostate cancer cells, causing cell death of prostate cancer cells, reducing inflammation, and act as antioxidant to provide protection against prostate cancer risk
- **Antioxidants** are substances that remove potentially damaging oxidizing agents
  - Found in many colorful fruits and vegetables, spices (e.g. turmeric), herbs, grains, and legumes
    - Vitamin C: broccoli, Brussel sprouts, sweet potatoes, bell peppers, tomatoes, citrus fruits
    - Beta-carotene: apricots, cantaloupe, mangoes, carrots, grapefruit, bell peppers
  - The antioxidant activity in lycopene (found in tomatoes) is believed to help protect against prostate cancer risk.

# FAT CONSUMPTION

- Western diets full of sweets and animal fat are associated with prostate cancer
  - Increase testosterone levels which is a concern for individuals with sex-hormone-dependent cancer.
  - Generally, studies show a positive association between prostate cancer development/recurrence and saturated fat from meat and dairy, poultry with skin, processed meats, and meat cooked at high temperature
- Omega-9 fatty acids which are derived from plants like olive oil, nuts, etc. appear to show a decrease in prostate cancer risk
- Diets high in fish consumption are correlated with lower risk and recurrence (recommended 8 oz per week)

# DAIRY PRODUCTS, CALCIUM AND VITAMIN D

- A high intake of total calcium (>1500 mg) and dairy products showed a positive association with increased risk for prostate cancer
- A higher consumption of whole milk may increase risk for prostate cancer recurrence and mortality.

# DIETARY SUPPLEMENTS

- There is a lack of significant evidence to recommend any single supplement to decrease prostate cancer risk
- There is some concern that certain supplements may increase prostate cancer risk.
  - Selenium and Vitamin E
- Regular Multivitamin use is considered safe and was associated with significant 8% reduction in total cancer incidence in men (from Physicians' Health Study II)



## EGGS AND CHOLINE

- Choline (found in eggs yolks) is highly concentrated in prostate cancer cells
- Studies have correlated a high dietary choline intake and higher than normal plasma levels of choline with an increased risk for prostate cancer

## **BODY WEIGHT AND PHYSICAL ACTIVITY**

- Greater body fatness is strongly associated with advanced prostate cancer
- Gaining more than 2.2 kg (or 4.8 pounds) after a prostatectomy has been associated with doubling the risk of recurrence
- A weight gain of 5% or more has been associated with twice the risk for prostate cancer-specific mortality
- 3 hours or more a week of vigorous activity is associated with lower mortality in survivors
- Aerobic and resistance exercise help mitigate the side effects of androgen deprivation therapy (ADT)



# NUTRITION ROLE IN ACTIVE PATIENTS: PROBLEMS AND INTERVENTIONS

- Radiation Therapy - May expose the bladder, rectum, sigmoid colon, and small bowel to radiation
  - May need to reduce insoluble fiber and fat intake for rectal urgency and loose stools
  - Consider probiotic supplements

# NUTRITION ROLE IN ACTIVE PATIENTS: PROBLEMS AND INTERVENTIONS

- Androgen Deprivation Therapy (ADT) - Decreases serum testosterone levels and increases estrogen
  - Bone loss
    - Do weight-bearing and resistance exercise 2-3 times per week
    - Recommend 1000-1200 mg calcium daily from supplement or food
    - Consider daily vitamin D supplement (e.g. > 600 IU)
  - Decreased Insulin Sensitivity
    - Eat a heart healthy diet with balanced complex carbohydrates
    - Stay physically active
  - Elevated Lipids
    - Heart healthy diet
    - Stay physically active

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# NUTRITION ROLE IN ACTIVE PATIENTS: PROBLEMS AND INTERVENTIONS

- ADT: Decreases serum testosterone levels and increases estrogen
  - Hot Flashes
    - Maintain healthy weight
    - Add moderate aerobic exercise
    - Limit or avoid hot beverages, spicy foods, alcohol, caffeine, and smoking
  - Loss of muscle mass
    - Do resistance exercise 2-3 times per week
    - Consider protein supplements
  - Normochromic, Normocytic Anemia
    - Maximize iron consumption and absorption (spinach, white beans, lean meats, fortified cereals, soy, lentils, rice, nuts – eat with vitamin C containing foods/fluids)

## **NUTRITION IN SURVIVORSHIP**

Maintain weight within normal range

May need calcium and vitamin D supplementation

Partake in physical activity for healthy weight and to maintain bone density

- At least 30 minutes per day on most days

Food or Nutrient	Recommended Intake	Comments
Cruciferous vegetables	Try to include at least one serving per day	Examples: arugula, broccoli, brussels sprouts, cabbage, cauliflower, various greens, kale, radishes, rutabaga, turnips, watercress
Lycopene-rich fruits and vegetables	Include dietary sources daily as able. Lycopene supplements are not recommended	Examples: tomatoes, guava, watermelon. Cooked tomato products or juices contain more. Lycopene is best absorbed with consumed with fats (e.g. olive oil, avocados, nuts)
Poultry	Choose unprocessed without skin	Avoid processed, skin on, barbecued, or fried poultry.
Fish	Aim for at least 2 servings per week	Avoid swordfish, shark, king mackerel, and tilefish due to high mercury levels
Dairy	Limit consumption, particularly of whole-milk products to goal of 1 serving daily. Try combining with nondairy sources of calcium with limited dairy selections	Select reduced or nonfat cheese, milk, yogurt, and similar dairy products. Include more non-dairy sources of calcium and vitamin D like leafy green vegetables, soy, seeds, lentils and beans, almonds, salmon.
Saturated Fat and Trans fat	Avoid all food sources of trans fat and limit saturated fat to < 6% total energy intake	Limit whole-milk dairy foods, red meats, processed meats, poultry skin, and most baked goods

Food or Nutrient	Recommended Intake	Comments
Eggs	Try to limit egg-yolk intake to 2 yolks per week	Egg whites are acceptable
Omega-6 fatty acids Arachidonic acid and linoleic acid	<p>Limit intake of arachidonic acid by limiting consumption of higher fat meats, butter, egg yolks, and whole-milk dairy foods</p> <p>Limit intake of linoleic acid by limiting certain vegetable-oil sources to 1 Tbsp per day</p>	Vegetable oils containing linoleic acid include corn, safflower, sunflower, and cottonseed oils, and processed foods made with these oils
Omega-3 fatty acids Eicosapentaenoic acid (EPA), docosahexaenoic acid (DHA), and alpha-linolenic acid (ALA)	Try consuming cold-water fish twice weekly	<p>Sources of EPA and DHA include salmon, sardines, black cod, trout, herring, and DHA-enriched eggs (within the egg allowance).</p> <p>Sources of ALA include flaxseed, chia seeds, walnuts, hemp seeds, and pumpkin seeds</p>
Omega-9 fatty acids	Include daily, but limit consumption of nuts to ¼ cup per meal or snack to keep calorie intake reasonable	Oleic acid is a primary source of omega-9 fat and is found in olive oil, avocado oil, canola oil, macadamia nut oil, almonds, hazelnuts, pistachios, pecans, and avocados
Flaxseed	Try to include 2 Tbsp of ground flaxseed daily	Ground flaxseed (whole flaxseeds may not be absorbed) is acceptable at intakes of up to 2 Tbsp daily.



Food or Nutrient	Recommended Intake	Comments
Soy	<p>Try to include soy foods regularly in the diet. Opt for whole soy foods over processed soy products that use soy protein isolate or soy isoflavone extracts</p>	<p>Whole soy foods include soybeans, edamame, tempeh, tofu, soy milk, soy nuts, and miso.</p> <p>Soy supplements are not recommended</p>
Green tea	<p>Aim for 1 cup or more daily</p>	
Calcium	<p>Include the Recommended Dietary Allowance (RDA): 1000 to 1200 mg/d (from diet)</p> <p>Do not exceed 1500 mg/day</p>	<p>Preferred sources of calcium include reduced-fat or nonfat dairy products (up to one serving daily), canned fish with soft bones, beans, leafy greens, tofu, almonds, calcium-fortified nondairy beverages, and calcium-fortified foods</p>
Vitamin D	<p>Include the RDA: 600 to 800 IU/day (more if serum 25-hydroxyvitamin D level is below normal)</p> <p>Do not exceed 4,000 IU/day unless prescribed by physician</p>	<p>Sources of vitamin D include sunlight, fish, and fortified foods</p>

# SAMPLE MEAL PLAN 1

## ■ Breakfast:

- Omelet
  - 1 egg white
  - ¼ cup spinach
  - ¼ cup chopped asparagus
  - ¼ cup chopped tomato
  - 1 oz feta cheese
- Watermelon
- 1 cup unsweetened coffee

## ■ Lunch:

- lentil soup
- Tabouleh (recipe on next slide)
- ½ Whole grain pita bread
- ½ cup Hummus
- ½ cup Cucumber slices
- 1 cup unsweetened tea

## ■ Dinner:

- 3 oz grilled fish
- 1 cup whole grain pasta
- ¼ cup marinara sauce
- ¼ cup fresh basil
- ½ cup sauteed eggplant
- 1 cup spinach for salad, 1 oz almonds for salad, 1 Tbsp olive oil for salad
- ½ cup grapes

## ■ Evening snack:

- 1 cup Greek yogurt with flaxseed topping

# TABOULEH

## ■ Ingredients:

- ½ cup Fine bulgur wheat
- 4 Chopped Roma tomatoes
- 1 Chopped cucumber
- 2 bunches Parsley
- 12-15 Mint leaves
- 4 Green onions
- Salt
- 3-4 Tbsp Lime juice
- 3-4 Tbsp Extra virgin olive oil

## ■ Directions:

- Wash bulgur wheat and soak in water for 5-7 minutes then drain
- Finely chop vegetables, herbs and green onions
- Place chopped vegetables, herbs and green onions in mixing bowl and combine with bulgur. Season with salt
- Add lime juice and olive oil and mix
- Serve with pita bread or romaine lettuce to make wraps or “boats”



[Tabouli Salad Recipe \(Tabbouleh\) | The Mediterranean Dish](#)

# SAMPLE MEAL PLAN DAY 2

## ■ Breakfast:

- Smoothie
  - 1.5 cups almond/soy milk
  - 2 cups baby spinach
  - 1 frozen banana
  - 1 apple
  - ¼ avocado
  - 2 Tbsp flaxseed
  - 1 scoop unflavored protein powder

[Best Green Smoothie Recipe \(5 Ingredients\) - Downshiftology](#)

## ■ Lunch:

- Salad
  - Skinless chicken breast
  - Tomatoes
  - Sliced almonds
  - Berries
  - Goat/feta/blue cheese
  - Vinaigrette dressing
- Vegetable soup
- 1 cup unsweetened tea

## ■ Dinner:

- Tofu stir fry with string beans, carrots, broccoli, bell pepper, and green onion
- ½ cup brown rice

[Best Tofu Stir-Fry Recipe - How To Make Tofu Stir-Fry](#)

## ■ Evening snack:

- Carrots and bell peppers with hummus



## BOTTOM LINE

Eat a variety of plant-based foods with limited fats from animal sources



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