Objectives

- Explain benefits of organic foods
- List 3 functional foods
- Explain role of body weight and cancer
Will eating organic foods prevent cancer?
Organic foods

- There is no evidenced-based data that eating organic foods will prevent cancer.
- No studies have shown that the nutrient content of organic foods are superior to conventionally grown foods in vitamin and mineral content.
Reasons to consider organically grown foods

- Lower pesticide residues
- Lower amounts of synthetic food additives
- Better use of natural resources such as land and water
How to know if foods are organic?

- Environmental Working Group (EWG)
  - Dirty dozen (foods with high pesticide residue)
  - Clean fifteen (foods with the least amount of pesticides)
Dirty 12

1. Strawberries
2. Apples
3. Nectarines
4. Peaches
5. Celery
6. Grapes
7. Cherries
8. Spinach
9. Tomatoes
10. Bell peppers
11. Cherry tomatoes
12. Cucumbers
Clean Fifteen

1. Avocados
2. Corn
3. Pineapple
4. Cabbage
5. Sweet peas
6. Onions
7. Asparagus
8. Mangoes

9. Papayas
10. Kiwi
11. Eggplant
12. Honeydew
13. Grapefruit
14. Cantaloupe
15. Cauliflower
Should I juice?
Juicing/smoothing and cancer

- Goal is to consume whole foods first
- If consume 5 servings of fresh fruits and vegetables, can add juice
- 14% of Americans meet this guidelines according to U.S. Centers for Disease Control
- If needing to gain weight or having difficulty with eating, juicing can be a good way to increase calories
- If needing to lose weight, juicing is not encouraged
Guidelines for juicing/smoothing

- Prefer smoothing to juicing for increased fiber intake
- Choose mainly vegetables (arugula, chard, bok choy, Brussel sprouts, carrots, kale, spinach, beets, broccoli, cauliflower)
- Add one fruit for sweetness
- Drink what you would eat (1 carrot not 20 carrots)
- Add protein and fat source with juice to balance nutrient intake and enhance absorption
What are phytochemicals?
Phytochemicals

- Broad term used to describe compounds naturally found in fruits and vegetables
- Each poly-nutrient has a different benefit and effect on the body
- Common names include antioxidants, polyphenols, catechins, flavones, isoflavones
Functional Foods can be:

- **Conventional foods** - vegetables, fruits, grains and dairy
- **Modified foods** - ready to eat cereals enriched and fortified with vitamins, minerals and phytochemicals
- **Food ingredients** - indigestible carbohydrates such as resistant starch (prebiotic benefit)
# Cancer Fighting Functional Foods

<table>
<thead>
<tr>
<th>B-glucans (polysaccharide and soluble fibers that may boost immune function)</th>
<th>Carrots and other bright yellow, orange or red foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inulin and fructo-oligosaccharides (prebiotic activity to improve intestinal health)</td>
<td>Onions, shallots, Jerusalem artichokes</td>
</tr>
<tr>
<td>Lignans (phytoestrogens)</td>
<td>Flaxseed, chickpeas, oats, barley</td>
</tr>
<tr>
<td>Lycopene (antioxidant to block free radicals)</td>
<td>Tomato, tomato products, watermelon, grapefruit</td>
</tr>
<tr>
<td>Soluble fibers (promote intestinal health)</td>
<td>Oats, legumes, apples, oranges, flaxseeds, blueberries</td>
</tr>
</tbody>
</table>
Omega 3 Fatty Acids

- EPA (eicosapentaenoic acid) and DHA (docosahexaenoic acid) (from fatty fish)
- ALA (alpha-linolenic acid) plant based (walnuts and flaxseed)
- Decrease inflammation (anti-inflammatory activity)
- VITAL study testing effects of daily supplements of 1000 mg daily but will not be available for several years
Green tea

- EGCG (epigallocatechin) contains catechin polyphenol with powerful antioxidant effects
- Stimulate enzymes that deactivate carcinogens, decrease tumor growth and restrain the ability of cancer to spread (breast, ovary, and endometrium)
- Quantities studied are not consumed in typical green tea consumption
Curcumin

- Found in turmeric
- Anti-inflammatory properties
- May reduce Cisplatin-induced neurotoxicity if taken in supplement form
- Most research focused on colorectal and pancreatic cancers
Should I take supplements?
Dietary supplements

- Recommendation is to avoid all supplements during active radiation and chemotherapy
- Supplements can interfere with compounds in treatment
  - Supplement/Drug interactions through pharmacokinetic or pharmacodynamics pathway
  - oxidant/antioxidant issue and the impact of clotting
  - CYP3A4 isoform of p450 enzyme system can be affected by supplements
Cytochrome P450

- Found within cells and binds with heme pigment that absorbs light
- Essential for the production of cholesterol, prostaglandins, steroids and thromboxanes
- Detoxify foreign chemicals
- Drug metabolism
Herbal supplements

- Herbal supplements are not regulated by the FDA
- Not well studied
- When studied, dose is different than available over the counter
- Herbal supplements have active compounds that require metabolism along the same pathways that chemotherapy and other prescription drugs require
- Herbs can change the way our bodies process medications
- Some herbs can interfere with the metabolism of medications making them less effective or too effective causing toxicity
Does sugar feed cancer?
Sugar and cancer

- All cells use glucose (form of sugar) in the bloodstream for fuel
- Indirect connection of sugar feeding cancer
  - High sugar foods → high kcal diet → increased weight and body fat if kcal not utilized
- Excess body fat increases greater risk for several cancer
- Highly refined foods and foods with added sugar may increase insulin resistance, which influences diabetes and increased weight
- Apple shaped body = higher risk of disease
  - AICR recommends no more than 37 waist inches for men and 31.5 waist inches for women
Sugar and Cancer

- Even without carbohydrates in diet, the body will make sugar from fat and lean body mass.
- **Stress** from trying to avoid all sugars in the diet creates flight or fight response, increasing production of hormones that can raise blood glucose levels which suppresses the immune system.
- This increased stress may reduce the possible benefit of eliminating sugar in the first place.
- Sugars relationship to high insulin levels and related growth factors may influence cancer growth the most.

Oncology Nutrition
Sugar and cancer cont.

- Cancer cells have insulin receptors making them respond more than normal cells to insulin’s ability to promote growth.
- **Increased weight** and **low activity** is associated with increased risk of **insulin resistance**.
- Unintended weight loss causing utilization of fat and lean body mass will provide energy for cancer cells and healthy cells regardless of intake of sugar.
How to reduce insulin resistance

- Maintain healthy weight
- Move body more
- Balance total carbohydrates throughout the day
- Reduce ultra processed foods (high salt, sugar, oils and fats, flavorings, emulsifiers and other additives)
- Reduce added sugar intake (American Heart Association)
  - 25 grams (6 tsp) women
  - 37 grams (9 tsp) men
Obesity and fat mobilization

- Fat cells secrete cytokines that promote inflammation
- Excess body fat may impair immunity
- Obesity can lead to insulin resistance
- Fat produces estrogen which can impact post-menopausal breast cancer and endometrial cancer
Lifestyle modification messages

- Choose whole fruits and vegetables for increased phytochemical properties
- Reduce refined sugar intake to decrease inflammation
- If choosing to buy organic foods, pick from dirty dozen list
- Be as lean as possible to reduce fat mobilization
Resources

- Oncology Nutrition—a Dietetic practice group of the Academy of Nutrition and Dietetics. [http://www.oncologynutrition.org](http://www.oncologynutrition.org)
- American Institute for Cancer Research. [http://www.aicr.org](http://www.aicr.org)

Supplements

- Natural Medicines Comprehensive Database:
  - [http://naturaldatabase.therapeuticresearch.com/home](http://naturaldatabase.therapeuticresearch.com/home)
- The National Center for Complementary and Integrative Health, a division of the National Health Institute (NIH) [https://nccih.nih.gov](https://nccih.nih.gov)
References

Nutrition After Cancer Treatment

Additional Resources:

Interested in learning more about those “superfoods” that fight cancer? Check out the “Foods That Fight Cancer” link at the American Institute for Cancer Research homepage, www.aicr.org. Recipes for using these foods are also included.

I need more recipes! Browse these links for tasty ways to add the healthy foods we reviewed:

- Cooking Light, www.cookinglight.com/eating-smart/nutrition-101/cancer-fighting-foods-00412000078087/page11.html. Also click the Food tab, then Recipe Finder, and type in the name an ingredient you want to use like “kale” or “lentils”, and a list of healthy recipes will pop up.

Curious about all those supplements and herbal treatments you read about on the internet, or that your friends are encouraging you to take? Ignore the sales ads making promises that are often too good to be true, and see what the research and science has to say:

- American Cancer Society, www.cancer.org
- Memorial Sloan Kettering Herb database, mskcc.org/mskcc/html/11570.cfm

Have a “hot topic” question about caffeine, gluten, juicing, or soy? Check out where your dietitian goes for answers at the Oncology Nutrition dietetic practice group of the Academy of Nutrition and Dietetics, www.oncologynutrition.org/erfc/hot-topics/


To calculate your 10-year risk of developing heart disease, try the online calculator at the National Cholesterol Education Program (NCEP), www.hp2010.nhlbihin.net/atpiii/calculator.asp?usertype

To learn more about your cancer type and to keep up with the latest cancer news, additional resources include:

- The National Cancer Institute, www.cancer.gov
- Caring4Cancer, www.caring4cancer.com
Beet salad

INGREDIENTS
2 cups julienned fresh beets (1 large)
1 1/2 cups shredded red cabbage (buy pre-shredded and save yourself some time!)
1 1/2 cups julienned carrots (again-save some time and buy these pre-cut)
1 1/2 cups frozen green peas, thawed
1 cup chopped broccoli florets
1 cup dried cranberries
2 teaspoons grated fresh gingerroot

Dressing and Garnishes:
1/2 cup Salad Girl Curry Fig Organic Salad Dressing
4 cups mixed spring salad greens
3/4 cup (3 oz) crumbled goat cheese or feta cheese

INSTRUCTIONS
1. Toss beets, cabbage, carrots, peas, broccoli, cranberries, and ginger in a large bowl. Stir in dressing until well coated.
2. Spoon salad on top of mixed greens; sprinkle with goat cheese.
Mango Coconut Chia Pudding

www.skinnytaste.com

Servings: 2 • Size: 1 cup • Old Points: 3 pts • Points+: 3 pts
Calories: 159.1 • Fat: 9.6 g • Protein: 3.6 g • Carb: 17.9 g • Fiber: 6.5 g • Sugar: 9.2 g
Sodium: 52.2 mg

Ingredients:

- 1/2 cup lite coconut milk
- 1/2 cup unsweetened almond milk
- 3/4 cup fresh ripe champagne mango, diced
- 2 tbsp chia seeds
- 1 tbsp sweetened shredded coconut
- 4-6 drops Nu-Naturals liquid stevia (or sugar/honey to taste)

Directions:

Combine all ingredients in a large container. Mix well and close container. Refrigerate overnight or at least 5-6 hours.
No Bake Energy Bites

Ingredients:

• 1 cup (dry) oatmeal (I used old-fashioned oats)
• 2/3 cup toasted coconut flakes
• 1/2 cup peanut butter
• 1/2 cup ground flax seed
• 1/2 cup semisweet chocolate chips (or vegan chocolate chips)
• 1/3 cup honey or agave nectar
• 1 tablespoon chia seeds (optional)
• 1 teaspoon vanilla extract

Directions:
1. Stir all ingredients together in a medium bowl until thoroughly mixed. Cover and let chill in the refrigerator for half an hour.*
2. Once chilled, roll into balls of whatever size you would like. (Mine were about 1” in diameter.) Store in an airtight container and keep refrigerated for up to 1 week.

*Prep time listed does not include time for the mixture to chill. To speed up the chilling, I recommend spreading the mixture out on a baking sheet, then covering it with plastic wrap and refrigerating.

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