

Nutrition & Cancer

Common Questions, Myths and Misconceptions

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Objectives

Discuss the following common question about nutrition for cancer patients including the current evidence and recommendations.

- Does sugar feed cancer?
- Do I need to eat organic foods?
- Are soy foods safe?
- Should I follow an alkaline diet or drink alkaline water?

Does Sugar Feed Cancer?

Does Sugar Feed Cancer?

- The Claim: Sugar feeds cancer
- All cells, including cancer cells, use sugar (glucose) for energy
- Sugar comes from all carbohydrate foods, including:
 - Vegetables
 - Fruits
 - Whole Grains
 - Low-fat Dairy
 - Legumes

Carbohydrates (aka Carbs)

- Primary energy source – your body turns carbs into glucose or sugar to give you energy to function
- Three types of carbohydrates:
 - Fiber
 - Starches
 - Sugars
- On the Nutrition Facts Food Label “Total Carbohydrates” includes a combination of all three types

Nutrition Facts	
8 servings per container	
Serving size	2/3 cup (55g)
Amount per serving	
Calories	230
% Daily Value*	
Total Fat 8g	10%
Saturated Fat 1g	5%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 160mg	7%
Total Carbohydrate 37g	13%
Dietary Fiber 4g	14%
Total Sugars 12g	
Includes 10g Added Sugars	20%
Protein 3g	
Vitamin D 2mcg	10%
Calcium 260mg	20%
Iron 8mg	45%
Potassium 235mg	6%
<small>* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.</small>	

Does Sugar Feed Cancer?

- We cannot control which cells get sugar for energy.
- If we are not providing sugar through our diet then our bodies will be forced to make sugar from fat and protein to meet the needs of all cells.
- Making sugar can result in muscle loss and a weakened immune system.
- Remember that there is no particular reason why sugar “feeds” cancer cells any more than sugar feeds ALL cells

Blood Sugar & Insulin

- It is still a good idea to limit eating simple sugars
- When we eat sugar our bodies produce insulin to regulate your blood sugar
- Insulin is a hormone made by your pancreas – jobs include:
 - Helps sugar enter into a cell to be used as energy
 - Takes extra sugar to your liver to be stored for later (fat cells)
- Storing excess sugar as fat leads to overweight and obesity which increases risk of cancer, diabetes, and heart disease
- Goal is to avoid excess insulin production

BALANCED BLOOD SUGAR

What Blood Sugar Should NOT Look Like



What Blood Sugar Should Look Like



What to do?

- You should not avoid all carbohydrates
- The best sources for healthy, complex carbohydrates are fruits, vegetables, whole grains, and legumes (beans) which are foods that appear to fight cancer best
- Try eating other foods that have protein, fat, or fiber when eating carbohydrate foods – this will help reduce the amount of insulin produced
- Example: instead of having 2 pieces of fruit for a snack, have 1 piece of fruit and a small handful of nuts (healthy fat, protein, and fiber).
- Complex carbohydrates are broken down into the basic sugars before they are absorbed **BUT** the digestive process is slower because these foods contain fiber, vitamins, minerals, and phytonutrients.

Simple vs. Complex Carbohydrates

Simple carbs are digested quickly and more likely to cause a spike in your blood sugar

- Can increase your weight and risk for diabetes, heart disease and high cholesterol



Complex carbs are less likely to cause a spike in your blood sugar due to the time it takes to digest

- They also contain vitamins, minerals, and fiber that your body needs



Sugars

- Sugars are a simple carbohydrate
- Our body breaks down simple carbs quickly and causes blood sugars to rise and then drop quickly
- You may feel a burst of energy – followed by feeling tired/sluggish
- Two types of sugars:
 - **Naturally occurring sugars** – found in milk and fresh fruits
 - **Added sugars** – found in sweets, canned fruit, juice, sodas, etc.
- All sugars are processed the same – the body cannot tell the difference between natural or added sugars
- However – foods with natural sugars also provide vitamins, minerals and some fiber

Added Sugar

- Sugar goes by many names – check the food label ingredients:
 - Agave nectar
 - Cane syrup or corn syrup
 - Dextrose, fructose or sucrose
 - Honey
 - Molasses
 - Sugar
- Limiting “added sugar” is essential to keep blood sugar levels in the healthy range
- The American Heart Association recommends:
 - No more than 25gm per day of added sugar for women (25gm = 6.25 teaspoons)
 - No more than 36gm per day of added sugar for men (36gm = 9 teaspoons)

Added Sugar

- Be cautious with added sugars – they are simple sugars that we add to our foods
 - Adding sugar to your coffee or tea
 - Added by food manufacturers to processed and prepared foods
- 75% of packaged foods have added sugars
- The average American eats 22 teaspoons (88gm) per day of added sugars which adds up to 70 pounds of added sugar per year!

NEW LABEL / WHAT'S DIFFERENT

Servings: larger, bolder type		Nutrition Facts		Serving sizes updated	
		8 servings per container Serving size 2/3 cup (55g)		Calories: larger type	
		Amount per serving Calories 230			
		% Daily Value*			
		Total Fat 8g 10%			
		Saturated Fat 1g 5%			
		Trans Fat 0g			
		Cholesterol 0mg 0%		Updated daily values	
		Sodium 160mg 7%			
		Total Carbohydrate 37g 13%			
		Dietary Fiber 4g 14%			
		Total Sugars 12g			
		Includes 10g Added Sugars 20%			
		Protein 3g			
		Vitamin D 2mcg 10%		Actual amounts declared	
		Calcium 260mg 20%			
		Iron 8mg 45%			
		Potassium 235mg 6%			
		* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.		New footnote	

Sugar and PET Scans

Why does cancer glow on a PET scan?

- It is not that the sugar (glucose) is only reaching the cancer cells. It's the hyperactivity (higher metabolic rate) of the cancer cell that is detected on a PET scan.

Does Sugar Feed Cancer?

- A helpful comparison: Cells use sugar the way cars use gas. Normal cells use a reasonable amount and cancer cells are gas guzzlers.
 - During cell division, more glucose is used, much like accelerating cars use more gas. After cell division it goes back to more of an idling state, using less glucose.
 - Cancer cells are like cars with the accelerator stuck to the floor, using glucose at high rates, because they are dividing at much faster rates than normal cells.

Sugar Summary

- No single food or food component, including sugar, can cause cancer by itself nor can it protect you against cancer by itself.
- There is insufficient evidence to show a direct link between sugar intake and cancer growth.
- Avoiding sugar completely will not slow cancer growth
- Eating a lot of high sugar foods could mean excess calories to your diet which leads to **weight gain & excess body fat - obesity** increases the risk of 11 common cancers
- There is strong evidence that a diet filled with a variety of plant foods such as vegetables, fruits, whole grains, and beans can lower your risks for many cancers & increase overall health and immunity

Do I need to eat organic food?

Organic vs. Conventional

- The Claim: Organic food is better than non-organic food
- There is no strong evidence that **organic** fruits and vegetables provide more protection against cancer than conventional foods
- There has been no consistent evidence that organic food is any more nutritious (higher in vitamins, minerals and other nutrients) than conventionally grown foods



Conventional vs. Organic

Conventional	Organic
Apply chemical fertilizers to promote plant growth	Apply natural fertilizers, such as manure or compost, to feed soil and plants
Spray insecticides to reduce pests and disease	Use beneficial insects and birds, mating disruption or traps to reduce pests and disease
Use herbicides to manage weeds	Rotate crops, till, weed or mulch to manage weeds
May give animals antibiotics, growth hormones and medications to prevent disease or spur growth	Give animals organic feed and outdoor access. Use preventative measures – rotational grazing, a balanced diet and clean housing – to help minimize disease

Organic vs. Conventional

- Why would someone choose organic?
 - Lower pesticide residues
 - Lower amounts of synthetic (man made) food additives
 - Better stewardship of natural resources – land & water
 - Better stewardship of human resources – socially considerate of the working & living conditions of laborers, needs of the rural communities and health of consumers



What do the Organic Labels Mean?

Label Claim	What it Means
100% Organic	All ingredients must be certified organic
Organic	At least 95% of the ingredients are certified organic
Made with Organic	At least 70% of the ingredients are certified organic
Organic Ingredients	Less than 70% of the ingredients are certified organic

Organic vs. Conventional

- Buying organic may make sense for you but...
- Research clearly shows that eating a wide variety of plant foods (vegetables, fruits, legumes, & whole grains) daily – in addition to being physically active and maintaining a healthy weight – is what really matters.



Is Soy Safe?

Is Soy Safe?

- The Claim: Soy foods can increase cancer risk and estrogen sensitive cancers should avoid soy foods
- The current consensus among health experts who study soy is that breast cancer survivors can safely eat these foods
- Research suggests that soy is protective against breast cancer recurrence
- There is less research regarding soy and other hormone related cancers – endometrial and ovarian cancers. However, the studies that are available suggest that soy foods are safe for these women too.

Soy Confusion

- Confusion about soy stems from the term “phytoestrogens”
- Some soy nutrients – the isoflavones – have chemical structures that look like estrogen found in a woman’s body – this is how the term originated
- Isoflavones are not the same thing as female estrogens – they bind to the body’s estrogen receptors differently and function differently
- Avoidance was recommended from the misunderstanding about potential effects of “phytoestrogens” and hormone-sensitive cancers.
- Now we have studies of survivors of breast and prostate cancer showing no harmful effects, and potential for beneficial roles as part of a healthy diet.

Soy and Breast Cancer



Common consensus from health experts is that soy foods are safe for breast cancer survivors



Emerging research suggests that soy foods may decrease the likelihood of breast cancer recurrence



Most health experts agree that the evidence is not strong enough to recommend that all women with a history of breast cancer eat more soy



Several large (thousands of women), human studies consistently show that compared with women who do not eat soy, women who regularly eat soy have lower breast cancer risk



Some studies also suggest that breast cancer survivors who consume soy foods have lower risk of recurrence compared to those who avoid soy

Soy and Breast Cancer



Studies have been conducted in both Asian and US populations this is important because soy has long been part of many Asian cuisines, but it is relatively new to the American diet.



The studies are observational so it is always possible that the true connection with better breast health is not soy, but something else that is related to eating soy.



For example, women who eat soy foods also may eat less fried food and more vegetables. They may exercise more and maintain a healthier body weight.

Soy Foods, Diet, and Tamoxifen

- Because of the concern around the “phytoestrogens” in soy foods, some people have recommended that women taking Tamoxifen should avoid soy foods
- Worried that soy might “undo” the estrogen blocking effects of the medication
- Ongoing research supports the **opposite** conclusion – soy foods appear to enhance or improve the breast cancer blocking actions of tamoxifen
- A review of studies published in 2019 which pooled 330,000 human participants found that soy protein intake was associated with a decreased risk in the mortality of breast cancer

How Much Soy?

- Moderate consumption is 1 to 2 standard servings daily of whole soy foods, such as tofu, soy milk, edamame and soy nuts
- One serving averages about 7 grams of protein and 25 mg isoflavones
- Examples of a standard serving are
 - 1/3 cup (3 oz.) tofu
 - 1 cup (8 oz.) soy milk
 - 1/2 cup edamame
 - 1/4 cup (1 oz.) soy nuts
- Studies have demonstrated up to 3 servings/day – up to 100 mg/day of isoflavones – consumed in Asian populations long-term does not link to increased breast cancer risk.

The Alkaline Diet

The Alkaline Diet

- Alkaline Diet Claim: Acidic foods can alter the body's pH balance and promote cancer.
- It is based on the theory that eating certain foods will change your body's pH level – improving your health and preventing cancer.
- The unsubstantiated theory is based on lab studies that suggest cancer cells thrive in an acidic (low pH) environments, but cannot survive in alkaline (high pH) environments.

The Alkaline Diet

The Research:

- These **lab** study results are accurate when applied to cells in an isolated lab.
- BUT it is virtually impossible to create a less acidic, less-cancer friendly environment in the human body.
- Acid-Base balance is tightly controlled by several mechanisms of our bodies – including the kidneys and respiratory system
 - When kidney function is normal, the body will maintain pH balance regardless of diet

The Alkaline Diet

Alkaline Water:

- Most alkaline water is like bottled water but with a different mineral content
- Water alkalizers are expensive
- Alkaline water will NOT change the pH of your blood – there is no evidence that drinking alkaline water has any medical value

What to do?

- What you eat can have an impact on your cancer risk – but the acidity or alkalinity of foods is not important
- Focus on making choices that can truly affect your risk:
 - Eat a variety of vegetables, fruits, whole grains & beans
 - Limit the consumption of red & processed meats
 - If you drink alcohol only do so in moderation

Questions?

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