

Sugar and Its Role in Cancer

More than ever, individuals with cancer diagnoses are paying close attention to what they eat. One of many concerns related to nutrition and cancer is whether sugar intake increases cancer risk or promotes the growth of existing cancers. More research is needed to fully understand this topic. This handout summarizes the current knowledge about the relationship between sugar and cancer.

What are carbohydrates or “carbs”?

Carbohydrates or “carbs” are one type of nutrient found in the foods we eat.

Foods with carbs include:

- Fruits
- Vegetables
- Grains
- Milk
- Sweets, including sodas, candy, desserts and fruit drinks



Fruits and vegetables are rich in healthy carbohydrates.

The body breaks down carbs into sugar, which is the body’s main source of energy. This sugar, called glucose, is the body’s fuel.

In order to use this fuel, the body needs insulin. Insulin is a type of hormone, which is a chemical that the body makes. The insulin helps the body move glucose from the bloodstream to the cells, where the energy is used.

Sugar and Cancer Cells

Cancer cells grow and get energy from carbs, too. Your first thought may be to stop eating carbs; however, when people do this, the body converts other nutrients into sugar to be used as energy. This is hard on the body. Also, you cannot “starve” cancer cells because this would also “starve” the healthy cells.

The types of carbs you eat may affect the growth of the cancer cells. Different carbs have different effects on your blood sugar level. The glycemic index was created to rank carbs by how they affect blood sugar. Carbs that cause your blood sugar level to rise quickly after eating have a high glycemic index. Carbs that have a more gradual effect on your blood sugar level after eating have a low glycemic index.

Eating a lot of foods with a high glycemic index increases your risk of several diseases, including cancer. These foods cause your body to release more insulin and other substances, which may lead to the development and spread of cancer cells.

Which carbs should I eat?

Since removing carbs from a diet will not “starve” cancer cells, it is recommended that people choose healthier types of carbs in the right portions.

Use the chart below to choose the healthier types of carbs. Limit the amount of foods you eat in the column on the left, as it lists less healthy carbs. Instead, choose foods from the column on the right that lists healthy, high fiber carbs. The correct serving size is provided.

Limit Less Healthy Carbs (Foods with high glycemic index)	Include Healthier Carbs (Foods with low glycemic index)
Table sugar	Dried fruits (1-2 tablespoons)
Sugar sweetened beverages (sodas, lemonade, fruit drinks)	Low-fat / nonfat milk or soymilk (1 cup)
Desserts	Fresh fruit (1 medium fruit)
Candy	Raw vegetables (1 cup)
Chips	Cooked vegetables (1/2 cup)
Unbleached wheat flour (“white” flour)	Whole grain flours
White rice	Brown or wild rice
White pasta	Whole grain pasta

Eating the healthier carbs with a healthy protein and/or fat can also be helpful. This slows down the digestion of carbs and the entrance of glucose into the cells. The following foods are examples of healthy foods that are good sources of proteins and fats. Add these foods to carbs at meals and snacks.

- Beans, lentils
- Soy nuts
- Avocado
- Nuts, nut butters
- Healthy oils (olive, canola, flaxseed)
- High fat coldwater fish (salmon, mackerel, albacore)
- Protein powders derived from whey, soy or brown rice
- Plain low-fat / nonfat yogurt



Lentils, similar to beans, are high in protein and fiber.

Are Artificial Sweeteners Safe?

Artificial sweeteners are regulated by the U.S. Food and Drug Administration (FDA). These do not add sugar to the diet or into the bloodstream. Below is a brief summary of the more common sweeteners and any cancer-related research that has been performed on each.

Saccharin (Sweet 'N Low[®])

During the 1970's, some studies in laboratory rats found higher rates of bladder cancers in rats fed large amounts of saccharin. However, it is believed that the mechanism by which these bladder tumors developed in the rats is not relevant to human tumor development. Human cancer research has not clearly linked saccharin to bladder cancer risk.

Aspartame (Equal[®] and Nutrasweet[®])

Aspartame was approved in 1981. At that time, research in laboratory animals showed no link between its use and the development of cancer. Since then, several questions have surfaced related to aspartame use and increased incidence of brain tumors in humans and lymphomas and leukemias in rats. So far, studies have not been able to confirm this link in humans.

Sucralose (Splenda[®])

Sucralose is one of the newest artificial sweeteners on the market. It has undergone only short term study to evaluate cancer related risk. Though it has been given the "all clear" by the FDA, many scientists believe that long term studies should be performed before promoting this as a safe alternative to sugar.

In summary, some links between artificial sweeteners and cancer in laboratory animals do exist. Since it is not clear how artificial sweeteners affect human health, avoid using them until more information is known.

Are There Natural Alternatives to Sugar?

A few examples of naturally occurring sweeteners are:

- Honey
- Molasses
- Maple syrup
- Agave nectar

These sweeteners are recommended over granulated sugar and artificial sweeteners. Molasses, honey and maple syrup are high in antioxidants. Antioxidants are substances found in foods that protect your body from heart disease, cancer and other diseases. Agave nectar has the lowest glycemic index of sweeteners. Remember, though, that each of these sweeteners provides similar calories to granulated sugar (approximately 60 calories per tablespoon). You should still use them in moderation.

Stevia is a naturally sweet herbal extract that has become popular recently. It contains no calories. Our understanding of Stevia's possible risks related to human diseases is incomplete. Use caution with this product until more is known.