

Acid Diet and Cancer
Is there a relationship between diet and risk of cancer?
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Is there a relationship between diet and risk of cancer? You bet there is. Are cancers acidic by nature? Yes. Will high acid foods lower your body pH and cause cancer? No. Unfortunately, there is a lot of press on the subject of acid foods promoting tumor growth but it is not true. Usually the promoting web site is also seeking to sell treatments for your body's acidic pH. They offer pH strips for you saliva and promise to decrease your risk of cancer if you take their alkalinizing tablets. Although cancers are acidic, there is no basis in fact for the assumption that taking alkalinizing agents will prevent or treat cancer. In fact, the American Institute of Cancer Research in their May 2008 newsletter stated "it's time to set the record straight" regarding the myth of acid-base balance, foods and cancer.

The pH is a measure of the balance of acid and base. A lower pH corresponds to more acidity and a higher pH means more alkaline. The pH in humans is kept constant at an average of 7.4. When the pH is out of the normal range, people become very ill. It is through our kidneys and lungs that the acid-base balance of the body is maintained. At varying times, the urine will be more acid or alkaline or carbon dioxide will be expelled through your lungs to expel excess acid. So measuring the pH of your urine or your saliva only demonstrates that the system is working and rest assured your body pH is still 7.4. Diet cannot change the pH of your blood because of this system. In fact, taking alkalinizing tablets will not change your blood pH, but it will alkalinize your urine and saliva.

So what is the pH of the blood of cancer patients? The theory would have you believe that the blood is acidic in cancer patients. There have been many studies regarding this issue early in the 20th Century. Many of the studies had conflicting results either showing no difference or a tendency for the blood of cancer patients to be more alkaline. Horace Millet presented his data on this subject in 1929 in the Journal of Biological Chemistry. He used an accurate glass electrode and did not demonstrate any difference in the blood pH of cancer patients compared to normal patients.

What is the connection of cancer and acid? Cancers are acidic. The acidic nature of cancers may serve a purpose. The internal pH of tumors helps to make them resistant to chemotherapy and radiation therapy (Cancer Drug Resistance, Humana Press 2007, Int J Rad Onc Biol Phys, September 1996). The reason behind the acidity is due to how the cancers utilize energy. Studies by the German scientist Otto Warburg in 1930 demonstrated that tumors have an abnormal metabolism compared to normal cells. Normal cells metabolize glucose through a process called oxidative phosphorylation. This system maximizes the production of energy in the form of ATP but also requires oxygen. This is how humans get their energy. We breathe in oxygen and the byproducts include energy (ATP), carbon dioxide and water. When oxygen levels are low, such as during vigorous exercise, the system switches to another system called glycolysis or anaerobic metabolism. Without oxygen, the system does not produce as much energy

and has lactic acid as a byproduct. When people exercise beyond their limit, they get energy from this system and then are left with sore muscles from the lactic acid buildup. Dr. Warburg found that cancer cells preferentially use the glycolysis (low oxygen) form of metabolism. The reason is twofold, first cancers tend to outgrow their blood supply causing the center of the tumor to be low on oxygen. Second, cancers need a lot of energy to grow and the glycolytic pathway is the quickest way to make ATP energy (J Natl Cancer Inst 2004;96:1805). The downside of this form of metabolism is that it is a wasteful way to make energy. Cancer patients lose both fat and muscle because the tumors are eating excessive amounts in order to grow. Finally, lactic acid is a byproduct of glycolysis and this makes the inside of tumors acidic. That is why tumors are acidic and your diet does not promote cancers by making your blood acidic.

Is there a problem with the alkaline diet? If you review the alkaline diet, it contains healthy foods such as fruits, vegetables, and nuts. It also encourages us to avoid coffee, alcohol and processed foods. These are not bad suggestions. The problem is that certain acid foods have substantial anti-cancer effects. These include soy, blueberries, cranberries, prunes, whole grains-barley, wheat, oats, beans, walnuts, and fish. All of these are beneficial to your health and should not be avoided in the diet in an effort to remain alkaline.

My advice is to eat a variety of fruits, vegetables, whole grains, nuts, omega-3 fatty acids and chicken or fish. Foods to limit include red meat, processed meat, animal fats, dairy, processed food, alcohol, and sugar. Drink plenty of water but don't be afraid of coffee or tea. They contain polyphenols and have beneficial health effects. Finally, forget the notion of acid foods and cancer, don't measure your saliva pH, and don't take alkalinizing tablets to prevent cancer.