Team Name: NutriWonders

Title

Mindful Eating – Beat Cancer

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Abstract

Background: Cancer is engulfing our society across the globe. We can help mitigate the risk of developing Cancer by managing our lifestyle, watching what we eat as well as focusing on the right food.

Aim: Analyze and discuss important food and natural ingredients playing a key role in Cancer prevention.

Methods: We have researched articles from PubMed and other reliable web sources.

Discussion: Eating healthy food rich in antioxidants is very important for our health. Antioxidants help to balance the free radicals inside our body, protecting our cells from DNA damage, helping the body to be protected against Cancer and other diseases. Inflammation also plays a very important role in Cancer. We have listed the food rich in antioxidants and also food that helps to reduce inflammation. We need to avoid unhealthy food. Keto diet, Ayurvedic medicines have beneficial properties, but more research needs to be done to confirm if they can be added to the diet **during** cancer treatment.

Conclusion: Healthy food helps to fight Cancer. We would like to generate awareness about avoiding bad food in our diet. We should never, ever avoid cancer treatment in favor of an alternative treatment like the ketogenic diet or any other diets or superfoods.

Diet and Cancer

Cancer
Cancer is one of the leading causes of death worldwide [1]

Diet & Cancer
30-40% of all cancers can be prevented by lifestyle and dietary measures [2]

Healthy Diet reduces Cancer risk
It is likely that there would be ~60-70% decrease in breast, colorectal, and prostrate cancers and even a 40-50% decrease in lung cancer [2]

Diet helps in recovery
A healthy diet helps in recovery from Cancer when a person is undergoing Cancer treatment [2]

Antioxidants and Free Radicals

Antioxidants are substances that prevent oxidation. They protect our cells against the effects of free radicals [3]

Free radicals are produced by processes inside our body (endogenous sources like Stress, unhealthy food, etc.) and exogenous sources (pollution, alcohol, tobacco, smoke, radiation, industrial wastes, certain drugs.. etc.) [4, 5]

Free radicals harm the body by causing damage to cells, proteins and DNA leading to many kinds of diseases, including Cancer [6]

Free radicals are constantly being formed in your body, could cause serious harm to our body
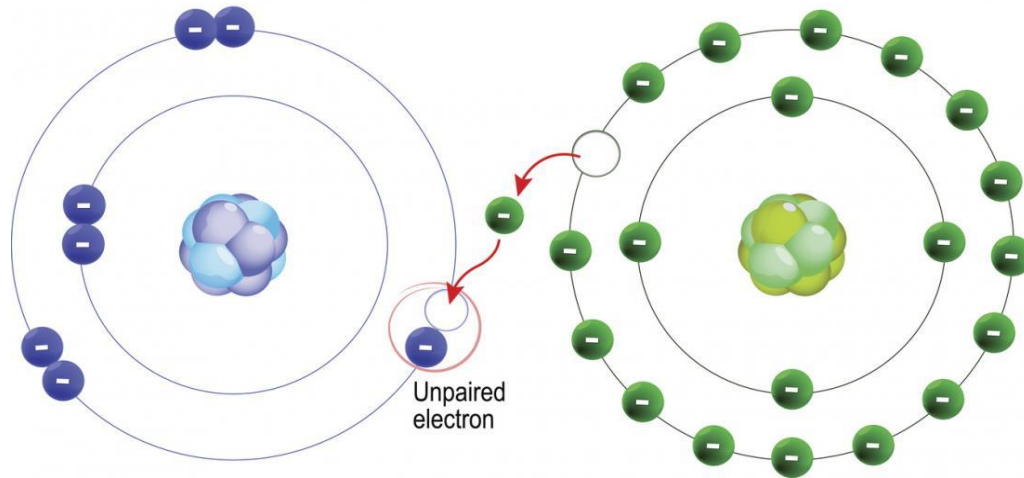
Antioxidants help to clean up free radicals

Antioxidants contribute an electron to the unpaired electron in the free radical

This stabilizes the free radical, so it no longer causes harm to cells

Free radical

Antioxidant

Unpaired electron

Picture source [8]

Role of antioxidants [7]

- Berries: Deeper color berries usually have bioflavonoids. Blueberries and strawberries have anthocyanins

- Raw cocoa beans: whole, broken(into pieces called nibs), or cocoa powder

- Artichoke: Steaming increases the effectiveness of the antioxidants by 15 times.

- Pecans: Pecans offer high levels of good fat, calories, minerals, and antioxidants

- Red Cabbage: Red cabbage, like strawberries and red kale, contains anthocyanins

Foods rich in antioxidants [3,9]

- **Beans:** Beans contains kaempferol, which may help suppress cancer cell growth

- **Purple and red grape:** They contain vitamin C, and anthocyanins

- **Spinach and Kale:** Zeaxanthin and lutein are two of the antioxidants found in spinach and other dark green leafy vegetables

- **Orange colored vegetables:** They contain large amounts of phytochemicals

- **Beets:** Beets contain antioxidants called betalains

Foods rich in antioxidants [7,9]

Cancer and Inflammation – Role of Diet

Chronic Inflammation is often associated with growth of cancer. Stress, lack of exercise, exposure to toxins can contribute to inflammation, but dietary choices play an important role in reducing disease risks specially cancer [10, 11, 12, 13]

[6]

Curcumin- in turmeric, has antioxidant effects, and promotes healthy cell functions [14, 15]. Turmeric combined with piperine from black pepper enhances curcumin absorption [17]

[9]

Ginger: therapeutic properties preventing the formation of inflammatory compounds [18]

[21]

Onions and Garlic: anti-inflammatory and reduces the buildup of carcinogenic compounds that cause cancer [20]

Picture source [25]

Tomatoes: Rich in Lycopene

Fruits and Berries: All fruits rich in antioxidants. Berries have anthocyanins helping to prevent inflammation

Nuts: Rich in calcium & Vitamin E; Walnuts – high in alpha-linolenic acid

Olive Oil: Rich in Oleocanthal

Leafy Greens: High in Vitamins & Minerals

Fatty Fish: Rich in Omega 3 Fatty acids

Food and its Magic Ingredients [22, 23, 24, 25]

More Natural Anti-inflammatory Food

[28]

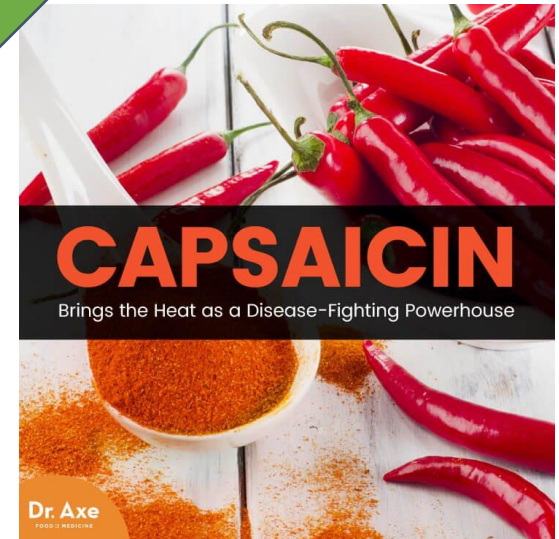**Beet: phytochemicals, betalains contain high antioxidant & anti-inflammatory properties** [28]

[31]

Green tea: flavonoids & polyphenols help reduce inflammation [29, 30]

**Disclaimer: Age recommendation & guidelines to be followed**

contain Capsaicin which is a strong anti-inflammatory agent [26, 27]

[32]

Sweet potato: carotenoids alpha and beta carotene, **Vitamin B6 & Vitamin C help in inflammation** [32]

1. **Sugar**: Processed sugar. It is better to reduce the intake of **desserts, pastries, sodas, chocolate bars, even fruit juices with added sugar.**

2. **Saturated fats**: May trigger inflammation which is not only an indicator of heart disease but also worsens inflammation.

3. **Trans Fats**: Trans-fat found in fast foods and other **fried products, processed snack foods, cookies, donuts etc.**

4. **Omega 6 fatty acids**: Our body needs a healthy balance of Omega-6 and Omega-3 fatty acids. Excess consumption of Omega-6 (found in oils such as **corn, sunflower, vegetable, peanut, soy and grapeseed oil**) can trigger the body to produce pro-inflammatory chemicals.

5. **Refined carbohydrates**: **White flour products** are high glycemic index foods that stimulate inflammation.

INFLAMMATION FOODS

Fried foods   Sodas   Refined carbs   Lard   Processed meats
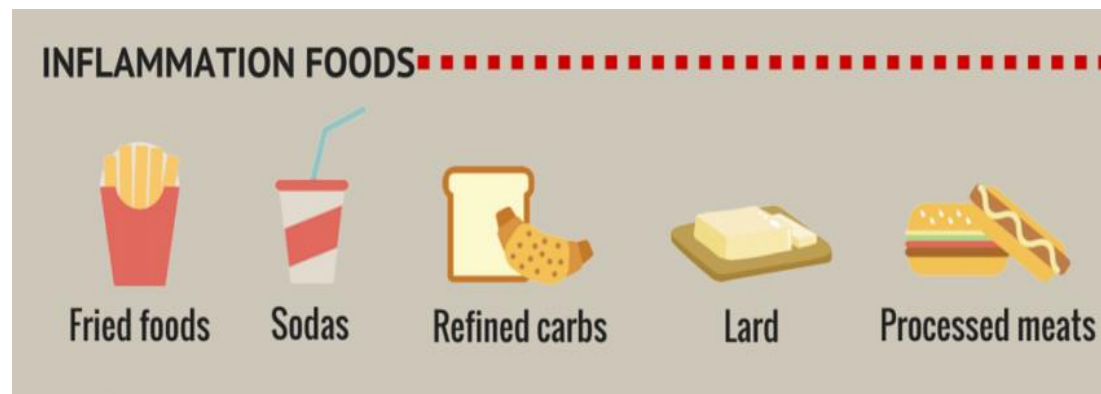
What is Keto diet? Benefits & Risks..[33,34]

The ketogenic diet is a very low-carb, high-fat diet. Fat becomes our body's primary energy source.

All cancer cells feed off carbohydrates or blood sugar in order to grow and multiply.

A ketogenic diet can lower blood sugar levels. This may help reduce tumor growth and even starve cancer cells.

When we are on a keto diet, Ketones a type of acid is formed by our liver and then sent into our bloodstream. Ketones can lead to dehydration and alter the chemical balance of our blood.

In addition, Diet high in fat are associated with heart disease and obesity. Food approved with keto diet, rich in fat, like red meat, may increase the risk of Cancer.

More Research Needs to be conducted to confirm the role of Keto diet in Cancer

Risks of Keto diet [33, 34]

Ayurveda and Cancer

In **Ayurveda**, perfect health is defined as **"a balance between body, mind, spirit, and social wellbeing."**
Herbs used in **Ayurvedic medicine**, are now recognized as beneficial for heart **health** and as antioxidant-boosters [36]
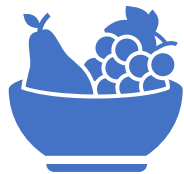
Picture source [35]

Researchers have found that some Ayurvedic treatments can help relieve cancer symptoms. **There is no evidence that Ayurvedic medicine can prevent, treat or cure cancer in humans [37, 38]**
Need for more research in this field

Conclusion

There is no one food or diet that can cure cancer but can reduce the risk of developing cancer. Healthy lifestyle and healthy food helps body fight diseases

More research is in progress to further investigate the different aspects of Diet and its role in Cancer

We should never, ever avoid conventional cancer treatment in favor of an alternative treatment like the ketogenic diet or any other diets or superfoods

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