

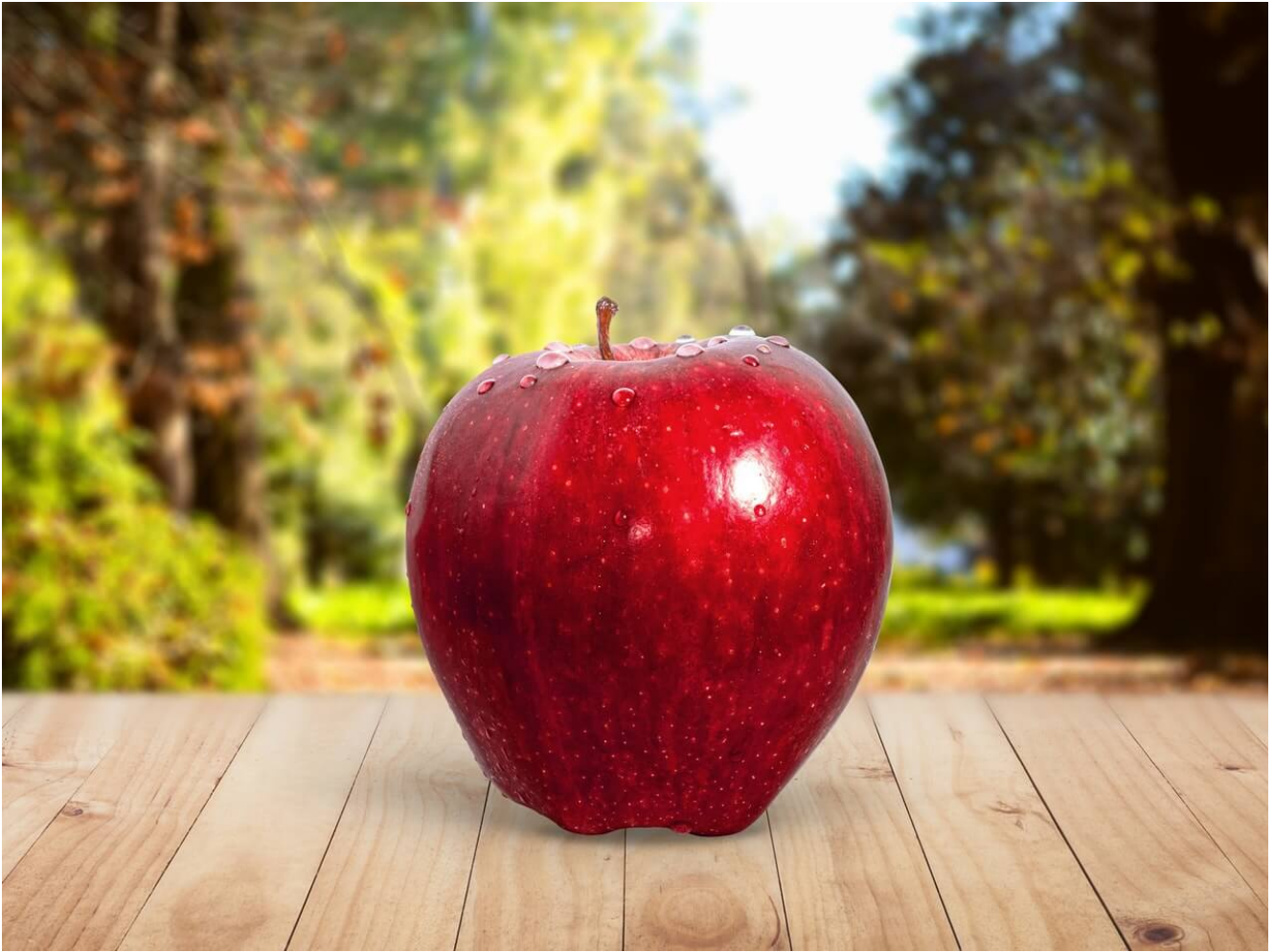
Ketogenic Diet and Cancer – Is Keto The Answer?

Ketogenic Diet And Cancer – Can the ketogenic diet treat cancer?

Keto vs cancer who wins?

Ketogenic diet is a high-fat, low carbs diet. Its method of action depends on shifting our metabolic fuel from glucose (carbohydrates based) to ketone bodies (fats) and in order to not lose so much muscle mass you should eat a moderate amount of proteins.

Ketosis is a metabolic state where your body is forced to breakdown fatty acids into ketone bodies. Ketone bodies are a name given for acetone, b-hydroxybutyrate, and acetoacetate. Hence the name “Ketosis”.



When your body enters Ketosis, it forces itself to stop using up glucose and use ketone bodies as their only source of energy. This state is unique as it shifts many physiological processes while on it.

For example, our brains can only use glucose as its main source of energy, because it crosses the blood-brain barrier easily. So, any other source of energy like amino acids and other sugars can't cross the BBB and the brain cannot use them at all.

But in ketogenic diet, and when your glucose stores are depleted, fatty acids breakdown to provide energy to our body. When it breaks down, a chemical reaction takes place that produces energy and ketone bodies too.

Ketone bodies have a huge advantage as they can pass the blood-brain barrier too and give the brain all the energy it needs to work efficiently! it also starts a cascade of

chemical

reactions that can help treat many diseases including epilepsy, Alzheimer's disease, and cancer.

History of the ketogenic diet:

Although ketogenic diet trend has only started a couple of years ago, but it is not as recent as you may think. actually, its history goes way back almost 500 years B.C. as a method to decrease the frequency of epilepsy in children.

And it re-surfaced again for the same reason in the 1920s till anti-epileptic drugs emerged as saviors for epileptic children.

The present of the ketogenic diet:

Now that the ketogenic diet has re-emerged in a time where scientific research is working in a more innovative and evidence-based environment, every single observation is put under the microscope both literally and figuratively.

One of the most important observations that have got the scientific world rolling, is the fact that the ketogenic diet has an effect on cancer! One of the most malicious diseases in the last 100 years could be prevented, avoided, treated by a simple diet!

The future of the ketogenic diet:

Many studies have been published, proving that ketogenic can definitely treat cancer, unfortunately, most of these studies have been tested on animals. But this is a step forward and in the near future, more studies will confirm or deny this strong allegation.

<https://dietlife.com/11-long-term-effects-of-ketogenic-diet-good-and-bad/>

How does the ketogenic diet and cancer cells Affect each other?

There are three methods by which ketogenic diet affects cancer cells

Method # 1: eliminating all health risks for cancer:

Prevention is better than treatment! And that is true with cancer too. Many types of cancer could be totally avoided if we eliminate one of its most important risk factors: OBESITY. Yes, obesity raises the risk for cancer, mainly because of the sedentary lifestyle that tags along, the processed food, the trans-fat and the free radicals too.

When you follow a diet, especially ketogenic diet, you lose the weight, you change the lifestyle, you stop the junk food from poisoning your body. Many studies have already proved the losing weight and leading a healthy lifestyle can decrease the risk for specific cancers like colon cancer and pancreatic cancer too.

Method # 2: Altering blood glucose levels:

In a study conducted in 2017, Kim and colleagues suggested that certain tumors are susceptible to restriction of glucose.



One of these tumors is called squamous cell carcinoma (SCC). Squamous cell carcinoma relies totally on glucose for survival and malignant growth. After measuring glucose levels in SCC, they found a tight correlation between higher glucose levels in patients' samples and bad prognosis and survival rate of these patients.

Although in other carcinomas like adenocarcinoma, blood glucose levels were of no significance to its prognosis. So, following a ketogenic diet, directly cuts off the main source of thriving of squamous cell carcinoma which is glucose, eventually, it goes smaller in size till almost disappears. Cutting off carbs in ketogenic diet helps to manage blood sugar levels and enhances conventional methods of cancer treatment too.

<https://dietlife.com/is-ketogenic-diet-good-for-diabetes-2/>

Method # 3: ketogenic diet for cancer treatment:

Ketogenic diet can complement existing cancer therapies and synergize their actions, like chemotherapy and radiotherapy.

This diet provides a powerful tool against cancer by selectively targeting malignant cells metabolism and inducing oxidative stress exclusively in those cells sparing the normal cells.

When cancer cells are under oxidative stress they are forced into early programmed death (Apoptosis) killing all malignant cells without affecting normal ones.

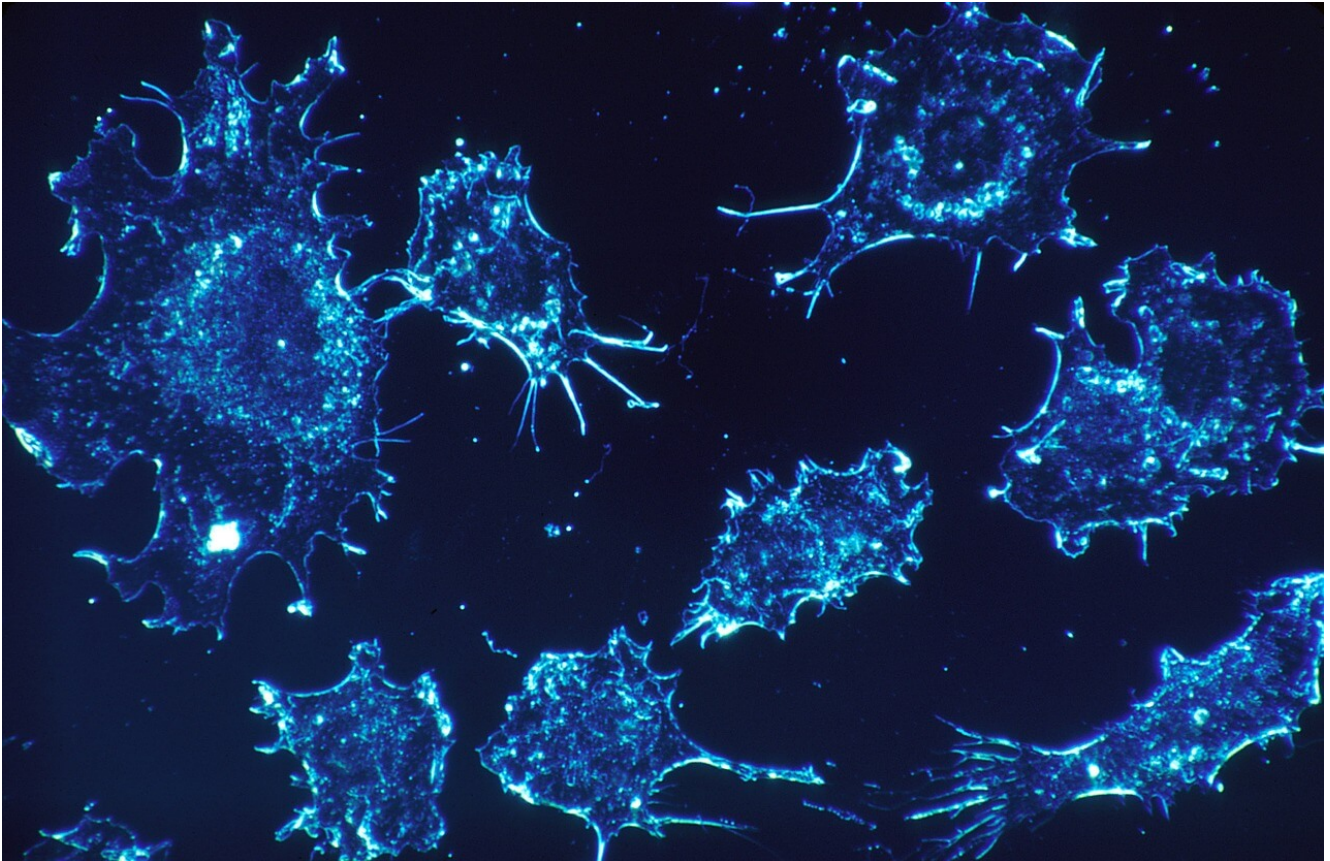
Also, ketogenic diet, by altering blood glucose levels, directly restricts cancer cells' energy source.

Method #4: immunotherapy:

Ketogenic diet improves your overall health, improves your immunity and alters your biological system into activating somethings that can more effectively combat cancer. Ketogenic diet can act as a complementary therapy for patients fighting their battle against cancer.

Method #5: ketogenic diet and starving the cancer cells:

Ketogenic diet triggers a cascade of reactions that fights cancer cells by limiting IGF-1 which is a protein growth signal for cancer cells and it also decreases levels of another growth factor known as VEGF.



Why are these factors important?

Because they are directly involved in signaling the need for new blood supply for malignant cells, so when ketogenic diet suppresses these factors, it directly starves cancer cells and prevents them from growing! This method is called “anti-angiogenesis”.

Ketogenic diet for cancer: Clinical trials:

Ketogenic diet has shown great potential treating cancer, not only by one direct method but through many others, both directly and indirectly.

Most of these studies have proven ketogenic diet beneficial in the fight against cancer, but more studies and clinical trials are required to explore all other mechanisms by which ketogenic diet fights cancer. Other studies are required to find if there are any possible

side effects of using ketogenic diet as complementary or adjunct therapy against cancer.

Keto vs cancer: who wins?

At the end of our discussion of ketogenic diet and cancer, although the diet may be a great therapeutic option for cancer, ketogenic diet is notorious for not being a lifestyle change and that it is hard to follow for a long interval of time.

Unfortunately, ketogenic diet can't help fight all types of tumors, in fact, it has very limited capabilities against malignancy.

And only your doctors can clear you for following keto diet because ketogenic diet has so many side effects that could affect your overall health stronger than cancer does.

These side effects include:

- Kidney stones
- Kidney failure
- Liver failure
- Gall bladder problems
- Change in blood pressure

Diet life advice:

Ketogenic diet has proven not only a weight loss diet but also a strong complementary therapy against cancer. It can eliminate many health risks that lead to cancer like obesity, extra visceral fats, disproportional waist-hip ratio.

But if you already have cancer, God forbid, ketogenic diet still has something to offer in the fight against cancer. It works on so many levels and by several methods including limiting blood glucose levels, cancer cells' blood supply and exert direct oxidative stress in the malignant cells and forcing it into programmed cell death. But because most of

these mechanisms are not evidence-based yet, you must consult with your oncologist before following the ketogenic diet. Your factor will recommend a certified nutritionist, so that he/she can help you fight cancer by every mean possible!

References:

<https://www.ncbi.nlm.nih.gov/pubmed/28653283>

<https://www.ncbi.nlm.nih.gov/pubmed/29029389>

<https://www.ncbi.nlm.nih.gov/pubmed/26892894>

https://www.researchgate.net/publication/323121020_Keto

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4371612/>