

## THE KETOGENIC DIET

A Personal Opinion from the Research and Experience of Prostate Cancer Patient  
Peter Hopkins, Melbourne, Australia

My story is like so many others. A rising PSA just 5 months after a prostatectomy resulted in 7 weeks of radiotherapy of the prostate bed. Another 5 months and the PSA had fallen to 0.03 but then, 3 months later, it was back up to 0.05. Yes, I know they are tiny numbers, but it was a 67% rise and I thought that stopping the rise early had to be easier than stopping it later. Besides, I'd read that the doubling time of PSA could be more significant than the actual numbers and, if that rate of increase continued, the doubling time would be just 4.5 months. Naturally, the radiation oncologist said to come back in 3 months.

In the meantime, I'd heard a talk by Prof. Paul Davies who was headhunted to lead a multi-disciplinary anti-cancer team being put together by Arizona State University that was to re-examine cancer "from the ground up". He told the woman recruiting him that he would love to accept, but that she had the wrong person—he was an astrophysicist and knew nothing about cancer. She replied that that was why she wanted him. With no preconceived ideas he could ask all the really dumb questions. His talk is extremely interesting, giving a different view of cancer from that normally presented.

<http://www.abc.net.au/radionational/programs/scienceshow/rethinking-our-approach-to--cancer/5246414>

Toward the end, when asked about promising developments, he mentioned a "ketogenic diet". This was the first I had ever heard of it.

So I started looking and found a presentation by Dr Colin Champ, a radiation oncologist at UPMC St Margaret Cancer Center, PA, whose talk is titled: *Augmenting Cancer Therapy with Diet*.

[https://www.youtube.com/watch?v=ot96y5-D\\_K0](https://www.youtube.com/watch?v=ot96y5-D_K0)

Note that he is not advocating the stopping of conventional therapy, just suggesting that we can do better with a supportive diet.

It was incredibly hard for me to decide to start the ketogenic diet (high in healthy fat, moderate protein, very low carbohydrate) as it is the exact opposite of

everything I'd believed and practiced for 50+ years. **But the SCIENCE made sense.**

## **SCIENCE BEHIND THE KETOGENIC DIET**

1. Cancer **LOVES** glucose! This is the reason PET scans work. A radioactive sugar is injected into a blood vessel. Tumors are primed to take maximum advantage of this “feast” and soak up **many** times more than normal tissue does-- thus showing up on the scan. It is interesting that we have used this sugar-attracting characteristic of tumors for many years for diagnosis, but it is only now starting to be used for treatment.
2. Every carbohydrate eaten is turned into glucose (some carbs much faster than others).
3. An elevated glucose level (hyperglycaemia) is bad for us and, consequently, a glucose spike triggers a corresponding insulin spike, designed to “push” the excess glucose into all available cells—especially tumors. **Every** glucose/insulin spike promotes cancer growth.
4. Mitochondria are in every cell and they are the “powerhouses” for that cell—supplying its energy needs. They usually use glucose for fuel, but most normal cells in our bodies do not need glucose, they can function perfectly well on a diet of ketones (made by the liver from fatty acids).
5. Most tumors have damaged mitochondria and rely on fermentation for energy production. This requires vastly greater amounts of glucose than normal cells, giving tumors their insatiable appetite. The tumors cannot process ketones and consequently, even though you maintain normal blood sugar levels on a Ketogenic diet, the tumor misses out on the (normally frequent) glucose and insulin spikes and so become stressed when on a ketogenic diet. Hence, the tumor is more susceptible to any chemotherapy, radiotherapy, hormone treatment and the defences of our immune system.
6. An insulin spike also triggers production of hormones such as Insulin-like Growth Factor–1 (IGF–1). These hormones prime tumors to take maximum advantage of the glucose feast that is arriving, thus further promoting tumor growth

7. A tumor cannot grow larger than about 0.5 mm without an enhanced blood supply. The growth of these new blood vessels is called angiogenesis.

Dr William Li, co-founder of the Angiogenesis Foundation of Cambridge, MA, talks about anti-angiogenic food here:

[https://www.ted.com/talks/william\\_li](https://www.ted.com/talks/william_li)

8. Yet another consequence of an insulin spike is that it triggers the tumor to produce Tumor Angiogenic Factors (TAF) that stimulate the growth of an enhanced blood supply to the tumor—to feed its insatiable appetite for **glucose**. Note, that a ketogenic diet is extremely anti-angiogenic by maintaining insulin levels at an absolute minimum, thereby depriving the tumor of both the TAF hormones and the insulin-promoted growth spikes.

9. Tumor cells are more susceptible to attack from free radicals than normal cells. This is largely the basis of radiotherapy, which generates free radicals in the vicinity of the tumor. Indeed, anti-oxidants are best avoided during radiotherapy treatment for this reason, but nobody tells you.

10. Tumor cells, deprived of their normal glucose “fix”, become stressed and are even more prone to free radical attack, i.e. radiotherapy efficacy is enhanced. Conversely, the ketogenic diet has been shown to be anti-inflammatory for the normal cells fed on ketones—they enjoy enhanced protection from free radical attack.

Note: a well-controlled Ketogenic diet makes weight management much easier (both weight loss and weight gain). I've seen a high-carb (indulge your sweet tooth) diet recommended to chemo patients to help them maintain weight during treatment. It's the **worst possible** advice—it's just force-feeding the tumor! By taking extra calories in the form of healthy fats, the energy goes to the body where it's needed, not to the tumor.

11. The ketogenic diet is used in more than 100 hospitals in the USA for childhood epilepsy (and some cancers) that are resistant to drug therapy. Refer:

<https://www.charliefoundation.org/>

To the very best of my knowledge, not one of the above points is disputed by any authority. Consequently, to me, cutting those carbs really was a no-brainer.

The end result? Well, two months after starting the diet my PSA was down to 0.04 and six months later it was <math>\mathbf{0.03}</math>. It has remained constantly at <math>\mathbf{0.03}</math> for over a year.

So what's not to like? Well from my perspective there is NO downside (in large part a consequence of my wife's great cooking, meals are still delicious). Obviously, I can't prove that the diet has made a difference, but I'm not about to give it up to try to prove a point.

## RESEARCH

There are a lot of clever people around the world researching the ketogenic diet, having attracted funding despite the fact that there is no patentable product at the end. No possible way for the outlay to be recovered, except by improved patient health.

- Iowa University published a research paper in 2014, ***Ketogenic diets as an adjuvant cancer therapy: History and potential mechanism***. In its conclusion it stated:

*Despite recent advances in chemo-radiation, the prognosis for many cancer patients remains poor, and most current treatments are limited by severe adverse events. Therefore, there is a great need for complimentary approaches that have limited patient toxicity while selectively enhancing therapy responses in cancer versus normal tissues. Ketogenic diets could represent a potential dietary manipulation that could be rapidly implemented for the purpose of exploiting inherent oxidative metabolic differences between cancer cells and normal cells to improve standard therapeutic outcomes by selectively enhancing metabolic oxidative stress in cancer cells.*

*Although the mechanism by which ketogenic diets demonstrate anticancer effects when combined with standard radio-chemo-therapies has not been fully elucidated, preclinical results have demonstrated the safety and potential efficacy of using ketogenic diets in combination with radio-chemo-therapy to improve responses in murine cancer models. These preclinical studies have provided the impetus for extending the use of ketogenic diets into phase I clinical trials that are currently ongoing.*

The complete paper is available, free at:

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4215472/>

- Dr. Abdul Kadir Slocum from the ChemoThermia Oncology Center in Turkey has been combining a ketogenic diet with chemotherapy, a glucose lowering drug, fasting and hyperbaric oxygen with some truly SENSATIONAL results. Not prostate specific, but exciting.

<https://www.youtube.com/watch?v=tL8rQ3aNvhs>

- Thomas Seyfried PHD of Boston College has pioneered the research and understanding of cancer as a metabolic disease, but his book is extremely technical (and expensive). He presents information from his book here:

[www.youtube.com/watch?v=SEE-oU8\\_NSU](http://www.youtube.com/watch?v=SEE-oU8_NSU)

An excellent presentation of his work is in 4 parts by Georgia Ede MD:

<http://www.diagnosisdiet.com/what-causes-cancer/>

<http://www.diagnosisdiet.com/what-causes-cancer-part-ii/>

<http://www.diagnosisdiet.com/dietary-treatment-of-cancer/>

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I'll guarantee you'll have a vastly better understanding of cancer after reading these. Almost certainly better than your GP. I printed off a copy of this for my GP to study. He did not dispute the content.

- Dominic D'Agostino PHD is a research scientist for the U.S. Navy. His study of oxygen toxicity has led into ketogenic research for cancer, epilepsy and dementia. His website has a great reference section:

<http://www.ketonutrition.org/>

and an interesting (short) presentation is at:

<http://www.ketonutrition.org/>

## **IMPLEMENTATION**

A ketogenic diet for cancer treatment is not the same as that often used for weight loss. You're aiming toward just 12 gm of net carbs a day (net carbs are equal to the gross carbs minus the fiber), 1gm of protein per kilogram of ideal body weight (i.e. 154 lbs = 70 kg that gives 70 gm of protein per day). The balance of your food is made up of healthy fats (olive oil, coconut oil, avocado, ghee, butter from grass fed beef. Forbidden is all margarine, trans fats, hydrogenated oil, vegetable oils of corn, soybean, canola and cottonseed.)

But don't just jump in. You need to ease into a ketogenic diet over about 2 weeks to let the body adapt and prevent "keto flu". When you have adapted and your body is happy running on ketones, you are said to be in "ketosis". You can check this with test strips available from a pharmacy.

- have your GP monitor your blood chemistry. While you should aim to get a wide range of micronutrients by ensuring variety in your diet, a multi-vitamin/mineral daily should prevent deficiencies.
- Patricia Daly is a Swiss nutritional therapist living in Ireland had lost her sight in one eye from melanoma. In the end, it was only a ketogenic diet that restored her sight and completely removed a tumor on her optic nerve. We have found her recipes/cookbooks/advice to be excellent, particularly when first feeling our way in adopting a ketogenic diet. Refer:

<https://patriciadaly.com/>

- Fight Cancer With a Ketogenic Diet, an eBook that costs US\$25 and arrives instantly. It's a good, practical guide with balanced menus to get you started.

[www.ketogenic-diet-resource.com/cancer-diet.html](http://www.ketogenic-diet-resource.com/cancer-diet.html)

- There's a huge range of great sites available in a world you never knew existed.

<https://nortonsafe.search.ask.com/web?q=Ketogenic+Diet%3F&o=APN11908&prt=cr>

But remember that a ketogenic diet for health/weight loss is not the same thing as a ketogenic anti-cancer diet.

## **SIDE EFFECTS**

One common side effect is muscle cramps at night. Usually easily treated with magnesium.

I've had one unexpected side effect. Before starting the diet, I was walking daily for 2 miles, but if I started out on an empty stomach my blood sugar would crash after 1.5 miles and I'd have to stop and rest. (Possibly pre-diabetic?) Now I have no trouble walking 4 miles at a brisk pace after fasting for 36 hours.

A ketogenic diet is also becoming accepted as a cure for Type 2 diabetes.

## **CONCLUSION**

I'm enormously pleased, grateful, thankful and feel blessed that so many people have worked so hard to make a ketogenic diet available to help us through, what we all know, is a very difficult time.