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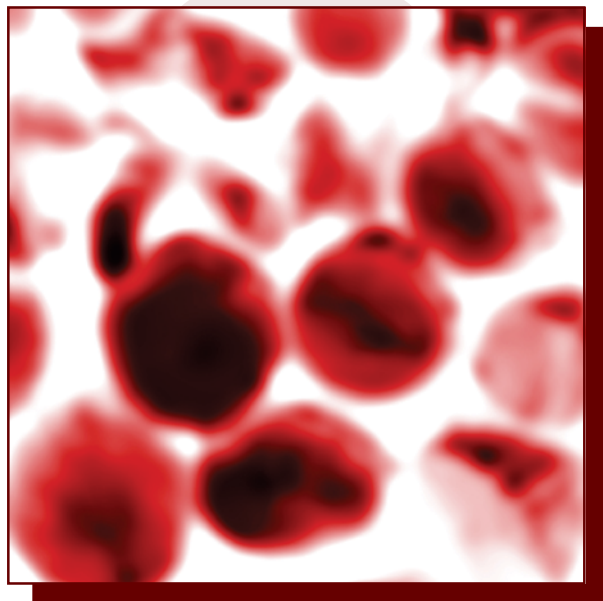
CAMBRIDGE INTERNATIONAL INSTITUTE FOR MEDICAL SCIENCE

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THE PHYSICIAN'S CONCISE GUIDE TO:

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The Truth About Ketones & Ketosis



Dedicated to advancing and publicizing the science and discoveries of Prof. Brian Peskin.

There is simply no one better in the 21st century at developing practical health-related solutions based on the world's leading medical and nutritional science. **"Science - Not opinion" is Brian's trademark.** When Brian is through explaining a topic it is "case closed!" When he says it, you "can take the information to the bank!"

Unlike most of his peers' recommendations, Brian's health and nutritional recommendations have stood the test of time. **Brian has never had to reverse or significantly alter any of his medical reports – reports that have tackled everything from the dangers of soy, to the wrongly popularized need for fiber in the diet, to his warning about the potential harm of supplementing with copious amounts of omega-3.** In 1995 he published the report "Fiber Fiction" and finally, eleven years later, others in research are acknowledging the silliness of recommending fiber in the diet of a human being. Brian's latest crusade is to warn of the dangers of excess omega-3 (in particular, fish oil) and how it will lead to increased cases of skin cancer. The list goes on and on...

Brian received an appointment as an Adjunct Professor at Texas Southern University in the Department of Pharmacy and Health Sciences (1998-1999). **The former president of the University said of his discoveries: "...His nutritional discoveries and practical applications through *Life-Systems Engineering* are unprecedented."** Brian earned his Bachelor of Science degree in Electrical Engineering from Massachusetts Institute of Technology (MIT) in 1979. Brian founded the field of *Life-Systems Engineering Science* in 1995. This field is defined as *The New Science of Maximizing Desired Results by Working Cooperatively with the Natural Processes of Living Systems*. To many, Brian is THE MOST TRUSTED AUTHORITY ON HEALTH AND NUTRITION IN THE WORLD.

Brian continues to be a featured guest on hundreds of radio and television shows both nationally and internationally. His sheer number of accomplishments during the last decade of the 20th century and into the 21st century are unprecedented and uniquely designate him as the #1 authority in the world of what really works and why. Forget listening to the popular press or most popular so-called health magazines. Their editors simply don't understand the complicated science that they write about - they merely "parrot" what everyone else says without independent scientific verification. Their recommendations often have no basis in reality of how the body works, based on its physiology.

Brian has dedicated his life to provide the truth - which is almost always opposite to what everyone says. Here's why Brian is the #1 man in America to listen to when it comes to your health.

There is almost as much misinformation regarding the health threat from ketones and ketosis (leading to metabolic acidosis) as there is misinformation regarding the benefits from eating carbohydrates. **The following is based predominantly on the world's leading medical textbooks and medical journals including: *Textbook of Medical Physiology, Basic Medical Biochemistry, (Stryer's) Biochemistry (4th) edition, and Essentials of Biochemistry.***

Unfortunately, we all have been unknowing victims of a massive experiment—“*the great carbohydrate eating experiment*”—forcing us to endure a diet proper to fattening a cow but not proper for a human. For the past 50 years, Americans have been told to make carbohydrates the basis of our diet—currently publicized as the “Food Pyramid.” Starting in the late 1950s, the “Four Basic Food Groups” model showed us that we should eat “balanced” portions of bread/cereal, fruits/vegetables, dairy, and meat. The first 2 of these groups are almost all carbohydrate. In the 90s, the “Food Pyramid” model officially replaced the older model. **The base of this model, the largest food group, is bread/cereal, with other carbohydrates** still making up most of the rest. **This is in contrast to the diets proven successful for hundreds of years—eating more proteins and natural fats** with less carbohydrates—**the diet of our parents and grandparents**, and of most Americans before 1950. They told us not to eat too many potatoes, not to eat too much pie, and not to have too much cereal. Did mom tell you, “Now don’t eat that cookie, I’m cooking a good meal, and that will ‘spoil’ your appetite”? She was at least partially right.

I point again to that “*great carbohydrate eating experiment.*” **We never gave our informed consent.*** It’s an experiment that most of us weren’t aware of and in which we weren’t willing participants.

What was the result of this experiment? Unprecedented levels of obesity and diabetes have occurred during the exact time frame of this experiment. Heart disease and strokes have not decreased during this time frame. We are victims, and we have every right to be upset. You also have a right to find out who perpetrated this experiment on us and what their motivation may have been. More than 25% of our children are now obese and more than 55% of adult Americans are certified obese.

* Before doctors or hospitals can perform a procedure on you, they **MUST** obtain your informed consent. First, they must fully inform you what is involved, including possible benefits, complications, risks, and costs. Then and only then, they must obtain your voluntary consent. **Under the carbohydrate eating experiment, we did not - and still cannot - give our informed consent, because we have NEVER BEEN FULLY “INFORMED.”**

Surprise #1 – Carbohydrates are either aldehyde or ketone compounds. *Analysis:* Even the carbohydrates we are told are so good for us are loaded with the building blocks of ketone bodies. **Carbohydrates directly generate a problematic insulin-response; ketones don't.**

Surprise #2 – Biochemically, ketones are **the #1 preferred fuel of the following organs: the skeletal muscles, the heart, and the liver.** *Analysis:* These organs don't want sugar (carbohydrate). Are we doing great damage by not giving these vital organs the fuel that Mother Nature designed them to run on?

Surprise #3 – Ketones are natural products of fat burning. When body fat is oxidized, ketones are produced. *Analysis:* **Unless you want to keep all the excess body fat you have, you can't prevent generating ketones.**

Surprise #4 – We have been led to believe that the medical condition called “ketosis” (leading to metabolic acidosis—low blood pH) happens very quickly. This is correct for the diabetic, **but not true for the general population. Only after 3-5 days of virtually complete starvation (fasting) do ketones in the body become significant.** Our bodies have been compromised. Our bodies have been forced to try to adapt to run primarily on carbohydrates. You will learn why carbohydrates are not meant by Mother Nature to be our primary food. **“The great carbohydrate eating experiment” was instituted with no scientific basis - only “studies” subject to misinterpretation. It was founded on biased opinion** with no underlying established medical science. Contrary to popular misinformation, running on ketones (for the non-diabetic) is the body's preferred and most efficient state, and the leading biochemistry and physiology textbooks support this fact.

Analysis: We have been misled into believing what the body's preferred natural state and its proper fuel are. Carbohydrates are not meant by Mother Nature to be our primary food. **Mother Nature never intended this, and the real-life results are terrible.**

Surprise #5 – **We've even been (mis)advised to eat many times a day.** We have become accustomed to cravings. But we know that many religious sects fast for prolonged periods of time (weeks), and have safely

done so for thousands of years. *Analysis:* Real-life results and Mother Nature's time-tested wisdom offer more valuable guidance than the most popular unsupported theoretical guesses by those defending biased positions. The diabetes epidemic is accelerated by this bad advice.

Surprise #6 – We are told that ketosis will cannibalize our muscle tissue. *Medical Fact:* After just 3-5 days of fasting, our body requires only 1/3 the amount of glucose it has been forced to tolerate during “*the great carbohydrate eating experiment*” – **we could eat less than 1/3 of a bagel a day and maintain superb health. The brain and nervous system start to use ketones, because they finally get them. Our muscle is spared.** *Analysis:* If you have spent much time in a gym, then you know how difficult it is to add muscle. Do you really think that Mother Nature would allow that precious muscle to be quickly wasted? **A widespread but unrecognized nutrition deficiency is at the core of our problem, and it has nothing to do with ketosis.**

Surprise #7 – **Protein and ketones are NOT “hard” on the kidneys and liver.** Most of the nitrogen from the protein is converted to urea in the liver and excreted by the kidneys (a normal process), and **the carbons are oxidized to carbon dioxide and water. The ketones are used as primary fuel by the kidneys, skeletal muscles, and heart.**

Surprise #8 – **Carbohydrates, not protein, are hard on the kidneys.** High blood glucose levels place excessive stress on the kidneys. That is why diabetes is the single greatest cause of kidney failure in the U.S. **Too many nutritionists and physicians continue to “parrot” outdated misinformation.**

Surprise #9 – Before carbon skeletons of amino acids can be oxidized, the nitrogen must be removed. **Ammonia is formed and converted to urea, which is nontoxic, water-soluble, and readily excreted in the urine.**

Surprise #10 – Perform a Medline Internet search on “**kidney, high-protein diet,**” and you will find article-after-article attesting to the scientific **FACT there is no problem.** An example is “The concomitant increase of renal net acid excretion and maximum renal acid excretion capacity in periods of high protein intake appears to be a highly effective

response of the kidney to a specific food intake leaving a **large renal surplus capacity** for an additional renal acid load." *Translation:* The body's natural life-systems perform perfectly as Mother Nature intended. **In contrast to the body's protein response, its carbohydrate response is strongly associated with renal (kidney) failure.**

Surprise #11 – Have you heard the unfounded and scientifically incorrect claim that **excess protein "leaches" calcium** from the bone and causes osteoporosis? **Then why does The Textbook of Medical Physiology state, "... protein functions in the brush borders of these cells to transport calcium into the cell cytoplasm...** The rate of calcium absorption seems to be directly proportional to the quantity of this calcium-binding protein." *Analysis:* Calcium is transported via protein. **Along with the protein, the calcium is actually going into the cell – not being taken away!**

Surprise # 12 – Mother Nature designed 3 life-systems to prevent any of the so-called "problems" with which the high-carbohydrate promoters continue to scare us: respiratory system, circulatory buffer system, and renal (excretory) system. **Often, there is a lack of insight by nutritionists into how the various life-systems work together:**

- Before ketosis COULD EVER BECOME A PROBLEM (in an extreme case, ketosis could lead to ketoacidosis—whereby low blood pH would cause severe complications), your respiration would have to increase to almost double your normal rate. This can *happen to the diabetic* but **has this ever happened to you?**
- **Sufficient salt** (sodium) is required for the circulatory **buffer system to work properly** – lack of salt means lack of sodium bicarbonate (NaHCO₃). Could Americans' obsession with reducing dietary salt be the real reason that this critical life-system is compromised and unable to do its job? Salt is critical to proper functioning.
- **Our renal system automatically responds** (similar to increased breathing when exercising to increase oxygen) to stabilize our system.

Surprise # 13 – If you are diagnosed with kidney malfunction, and a nutritionist tells you that the traditional diet for a person with kidney malfunction is low protein, you need to resist this advice. This paper discusses nutrition for healthy people, not ones with diseased kidneys. **Protein does not cause kidney failure.** Unless you are eating too many carbohydrates and you are an uncontrolled diabetic, a normally functioning kidney REPELS excess protein in the blood. If the kidney doesn't work, it may make sense to restrict protein levels. *Analysis:* **Existing kidney disease has no bearing concerning healthy people.** If you have an injured back, you may not exercise too much—but a healthy person could exercise for hours – **don't get fooled by incorrect analogies.**

Note #1: Only a Type I, insulin-dependent diabetic who has **no access to insulin** (virtually no one) could possibly have a problem with eating protein. But that diabetic would have a life-threatening problem eating carbohydrates without the insulin to protect him from high blood sugar and ketoacidosis.

Note #2: **Following the ingestion of a high protein meal, the gut and liver utilize most of the absorbed amino acids...** The liver takes up 60-70% of the amino acids in the portal vein. These amino acids, for the most part, are converted to glucose and directly used for the protein's own digestion (not raising blood glucose levels).

Note #3: Anyone suggesting you take the result of a "rat" study and apply it to a human being is misleading you. **More often than not, a rat's physiology doesn't correlate directly with a human being's physiology.** *Translation:* People aren't rats! Never rely on an animal study to "prove" anything about how the item under study applies to a human being. The best scientists and physicians never do.

Note #4: If you exercise by running, you produce lots of "extra" carbon dioxide—a waste product, because respiration increases. If you eat more protein, you automatically produce more ammonia. **If you insist that "extra" ammonia is "bad," then following the same logic, you must say that even moderate exercise is "bad," too.**

Note #5: Even after 5 weeks of complete starvation, (but drinking water), blood glucose levels in the average, healthy adult only drop to 65 mg/dl (normal is 70-110 mg/dl). **From burning our excess body fat, we still get all the sugar we require.**

Note #6: As the *Textbook of Medical Physiology* makes quite clear, urea and **uric acid are removed** by your kidneys, and excreted. The kidneys regulate your blood's acid-base balance so your blood's acid/alkaline level is very tightly controlled (7.35 - 7.40). Tight blood pH control is why the pH of urine can vary widely (4.5 - 8.0).

This is the **established medical science—not unjustified opinions**, so you can **choose for yourself**.

NEWSFLASH!!!

“Ketosis” is almost impossible in a normal person! Don't waste your money on the highly promoted “ketosis strips.” Adapting to a higher fat, higher protein diet will almost never produce ketosis. From the *Textbook of Medical Physiology*, page 869, we learn the truth:

“ On changing SLOWLY from a carbohydrate diet to an almost [even] COMPLETELY FAT diet, a person's body adapts to the use of far more acetoacetic acid than usual, and in this instance, **ketosis normally does not occur**. For instance, the Eskimos, who sometimes live almost **entirely on a fat diet, do not develop ketosis**. Undoubtedly, several factors enhance the rate of acetoacetic acid metabolism by the cells. Even the brain cells, which normally derive almost all of their energy from glucose, after a few weeks can derive 50 to 75 percent of their energy from fats.” (emphasis added)

This is the truth based science. Next time you hear about the “horrors of ketosis,” give them this information, and once again, stop wasting money testing for ketosis—you won't find it. The solution is to stop gaining fat by minimizing carbohydrate consumption. It's that easy.