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Dangers of the Paleo Diet

Low carb fad diets continue to resurface under the guise of new names, new faces, new sets of rules, and for some odd reason, every time they become all the rage. Why do these carb-fearing diets attract such a large audience?

- Rapid, initial weight loss (from glycogen and water loss)
- The illusion of better blood sugar control
- They lull people into a false sense of security with research funded by special interest groups
- Short-term health improvements after eschewing processed foods and sugar

Unfortunately, these seeming initial benefits come at the expense of future health. Paleo diet gurus use the same "scientific research" funded by the National Dairy Council, The National Dairy Promotion Board and other special interest groups as the low carb guru's before them. Let's delve into the arguments presented by the Paleo promoters and see if they really stand up to scrutiny.

The "Science" Behind the Madness

Let's start out with the idea that tens of thousands of years ago the majority of our ancestors were hunters and ate primarily meat-centered diets. On page three of Loren Cordain's book he claims that every human being for the last 2.5 million years up until the beginning of the agricultural revolution ate the way he prescribes in his book. An article published in the American Journal of Clinical

Nutrition[1] gives a very detailed account of the flaws in the studies used to promote these inaccurate claims. The hunter-gatherer atlas used by Cordain and others in the Paleo community is actually an index of information from **20th century sources**.

I thought this diet was supposed to be based on our ancient ancestors?

The study was conducted by ethnographers who did not have any nutrition related educational background. During the study they had very little contact with the women in the communities they studied, which is important because it is women who are generally the ones in societies who gather plant foods and prepare meals, so already we have a bias toward the masculine 'hunting' side of the story in this atlas. They are trying to tell us what our ancient ancestors ate based on a collection of data from **modern day primitive cultures**. While there may be some similarities in modern primitive cultures to ancient ones this does not give an accurate account of the large majority of ancient peoples and their dietary trends. Giving isolated accounts of the typically small meat eating cultures in the world does not give an accurate account of the much larger population of people who eat predominantly plant-based diets. If we look at our own modern world, the majority of people do eat predominantly plant-based, including most traditional Asian diets, Indian, and other cultures. The design of this atlas was highly biased and was not based on ancient societies as is commonly presented.

Even in Western cultures in history the majority of the population ate predominantly plant-based diets. It was the kings and wealthy who ate high meat diets and they were also the ones who suffered gout and the same diseases of affluence we suffer today.

Human Physiology

Physiologically we are not carnivores and, in fact, our digestive systems and physiology have little resemblance to that of even an omnivore. The fact that people actually eat meat does not mean they ARE carnivores or omnivores physiologically. As the famous Oprah episode on mad cow disease brought to public awareness the fact that farmers fed ground up cows to other cows shows us that a species that is herbivorous can be fed meat and still thrive does not mean it is healthy for that species to do so. This fact was well explained in an article found in the American Journal of Clinical Nutrition and it states:

"Humans come from a fairly generalized line of higher primates....There is general agreement that the ancestral line (Hominoidea) was strongly herbivorous. Modern human nutritional requirements such as the need for a

dietary source of vitamin C, features of the modern human gut (haustrated colon), and the modern human pattern of digestive kinetics (similar to that of great apes) suggest an ancestral past in which tropical plant foods formed the basis of the daily diet, with perhaps some opportunistic intake of animal matter."[2]

We are physiologically herbivorous but do have a capacity to survive on animal based foods in times of food scarcity. The reality is, **without carbohydrates the body relies on its starvation mechanisms for self-preservation including a reduction in the basal metabolic rate to conserve energy until carbohydrates are available again to adequately supply blood sugar and energy requirements**. The body stores carbohydrates in the form of glycogen in the liver and muscles to provide energy when needed and that is the first source that is accessed, body fat is then used if food is still not available but this produces a lot of metabolic waste including ketones, lipid peroxides and other wastes that are damaging to the body, whereas the waste created by the metabolism of carbohydrates is merely water and carbon dioxide. **Carbohydrates are a clean burning fuel for the body, fat and protein are not.**

Tracing the History

We cannot adequately determine what the ratio between animal to plant based food consumption was **tens of thousands of years ago** because plant food consumption leaves very few obscure traces; tools and weapons used for hunting leave very obvious traces and therefore provide the majority of evidence we have about previous dietary patterns and unfortunately this gives a **very inaccurate picture**.

Even if some societies in history consumed a predominantly animal fat and protein based diet this does not imply that this is the ideal way of eating for humans. Throughout history humans suffered from a variety of difficulties ranging from travel through desert climates, famine, and periods of time with severe lack of food. After these periods of famine or harsh times habits of eating could still linger which can alter the natural diet of man **even if these changes are not optimal**. Early humans had to eat whatever they could find, this does not indicate an optimal diet—it is just merely survival.

In our modern world we don't have to "just survive", we actually have an opportunity that no other people in history have enjoyed—an abundance of food. We don't have to eat whatever we can scrounge up from our surroundings, we can choose a diet that is based on **our physiological make up** that provides optimal health and longevity.

Warning Signs of Paleo Failure

Those who are new to Paleo eating are warned about the severe fatigue, brain fog, and other difficult symptoms that will surface initially and… just to ignore this, they are told that they are "training" their body to use fat for fuel instead of carbohydrates and it will go away. The scientific truth is that you don't and can't "train" your body to use fat for fuel, it does this during times of starvation and lack of food as a survival mechanism. Y**ou aren't training it to do anything!**

These initial symptoms are due to **severe lack** of energy producing food (carbohydrates), and when Paleo dieters claim they start feeling better this doesn't mean their body is now all "trained" to run on fat for fuel and all is well, in fact, it is because the **metabolism is slowed** to allow the conversion of fat into "blood sugar" so that the body can survive.

Converting fat into fuel is difficult and does not provide efficient fuel and so the metabolism must slow down in order to allow the body to function properly. Once the metabolism slows, energy returns and the individual starts to feel better but **this is only temporary**. The length that an individual can run on stored body fat and continue to feel well varies widely but it is temporary none the less. It could be weeks, months or even a few years.

A great example of how this works is our knowledge of exercise. We are told that if we exercise at a slower pace the body burns more fat and less glycogen and carbohydrate, this is because the body has time to access the fat stores, convert them into fuel, and use them for energy. However, during high intensity exercise the body uses glycogen or carbohydrates because they can quickly be burned as they are and do not need any conversion in order to be utilized as fuel, whereas **fat has to be converted into fuel first** and the body does not have time to do so as the muscles are working so hard they need immediate fuel.

So, you don't "train" your body to do anything! The body naturally goes into this state of being during lack of fuel at any time—you may start feeling better for a time but **eventually the body runs out of fat stores and it begins burning other tissues** and this is where these diets really become **damaging**. Dietary fat cannot be used as fuel. For example, if you consume dietary fat in the form of olive oil, lipase enzymes, produced by the pancreas, breakdown the long fatty acid chains into smaller molecules consisting of just a couple carbon atoms. Glucose, the sugar molecule found in the blood that provides energy and fuel for the body and without which you would DIE, has 6 carbons atoms, 12 hydrogen and 6 oxygen. As fat is broken down into fatty acids which contain only a couple of carbon atoms the body cannot convert these directly into glucose and therefore they are stored in the fat cells as triglycerides.

When blood sugar levels drop and there is insufficient carbohydrate or glycogen to provide immediate fuel the body secretes hormones that cause the fat cells to release triglycerides and the pancreas secretes lipase enzymes that can break them down, they are then converted into and utilized as fuel.

As you can see this is a VERY involved process to get dietary fat converted into a form which can be used as energy—it is NOT the body's **primary** source of fuel and the body **does not** run as efficiently this way, but it can do so to provide a way to **survive** when food is scarce, which is exactly what would happen to primitive people. We don't need to do this in our day; we can maintain a healthy, trim body without manipulating starvation mechanisms within the body.

The article in the American Journal of Clinical Nutrition above concludes:

"Given these facts, in combination with the strongly plant-based diet of human ancestors, it seems prudent for modern-day humans to remember their long evolutionary heritage as anthropoid primates and heed current recommendations to increase the number and variety of fresh fruit and vegetables in their diets rather than to increase their intakes of domesticated animal fat and protein." [2]

We are Starchivores

I will state here that I am not a believer in evolution, as in I do not believe humans "evolved" from apes. However, physiologically we are similar and therefore looking at the dietary patterns of apes in that regard does give us a good insight into what our diet should look like.

Keep in mind, there is one significant difference between humans and apes that is critical in understanding our dietary differences. An article published in Nature Genetics detailed these differences. Apes cannot digest starches, but humans digest starches very easily and, in fact our, saliva is perfectly designed to do so. Apes have only two copies of the amylase gene and therefore cannot digest starches; they must get their energy from simple carbohydrates in fruit. In contrast, humans have between 6 and 16 copies of the amylase gene and have amylase, the complex carbohydrate digesting enzyme in our saliva and digestive tract. We are completely designed to digest complex carbohydrates... we have amylase right in our saliva! It is interesting that so many nutrition books fail to even detail our physiology properly and tell us to avoid carbohydrates.

In reality, most highly respected anthropologists such as Nathanial Dominy, PhD from Dartmouth College explain: "That's a myth. Hunter-gatherers, get the majority of their calories from plant foods... meat is just too unpredictable."

Dr. Dominy goes on to explain that through his entire career as a biological anthropologist evidence suggests: "Humans might be more appropriately described as 'starchivores'." This claim is supported by our physiology including the fact that we have starch digesting enzymes in our saliva, along with our long, sacculated digestive tract, opposable thumbs, very dull canine teeth, molars for grinding etc.

To add another voice to this, aside from the American Journal of Clinical Nutrition and Dr. Dominy of Dartmouth, researchers from the University of California Santa Ana have also made a statement supporting the argument that the human diet should be and was predominantly plant based.

"According to researchers from the University of California Santa Ana, even when we look at most modern hunter gatherers meat is a minimal part of their diet."[3]

At the Proceedings of the National Academy of Sciences presented in 2011 researchers concluded: "Here we report direct evidence for Neanderthal consumption of a variety of plant foods, in the form of phytoliths and starch grains recovered from dental calculus of Neanderthal skeletons from Shanidar Cave, Iraq, and Spy Cave, Belgium… Our results indicate that in both warm eastern Mediterranean and cold northwestern European climates, and across their latitudinal range, Neanderthals made use of the diverse plant foods available in their local environment and transformed them into more easily digestible foodstuffs in part through cooking them, suggesting an overall sophistication in Neanderthal dietary regimes."[4]

It is important to realize that a large body of current evidence suggests that most populations of the world, no matter what timeframe they are from, have subsisted on a predominantly plant-based diet **that included whole grains and legumes**. There have been small, isolated populations that have existed on high meat based diets, but these were never large, long-lived, or successful populations.

Do High Meat Eating Societies Thrive?

We have two modern examples of populations that exist on a high-meat centered diet that is not based upon factory farming practices and we still see the worst longevity in the modern world among these populations. The first

example is the Inuit Eskimos, which have very limited access to fruits and vegetables because of the extreme climate they live in. They are used as a "model" people for low-carb diet promoters but what they fail to tell you is that the Inuit Eskimos have the worst longevity statistics in North America and die about **10 years younger** than the average Canadian **and have a higher rate of cancer as well**.[5]

Not only do the Inuit's have a **short lifespan**, **they also suffer from osteoporosis far greater than white populations**. According to an article published in the American Journal of Clinical Nutrition, "After age 40 the Eskimos of both sexes had a deficit from 10 to 15% relative to white standards. **Aging bone loss**, which occurs in many populations **has an earlier onset and greater intensity in the Eskimos**." The article goes on to implicate the nutritional factors of high protein, high nitrogen, and high phosphorus intake.[6]

The Inuit Eskimos eat to survive, not to thrive. They live in extremely undesirable conditions and, of course, they make do with what they have but I would not consider their diet, nor their living conditions anything close to ideal.

The next example of a high meat eating society is the Maasai population in Kenya. They eat a diet high in wild hunted meats, eat organs, and drink animal blood, which, for the most part, is exactly what the Paleo promoters preach to their unsuspecting followers. How do the Maasai stack up in longevity?

Well we said that the Inuit have the worst longevity in North America. The Maasai have **the worst life expectancy in the Modern World**! **Life expectancy is 45 years for women and 42 years of age for men**. The average life expectancy for all of Kenya is 62.5 (!), so this isn't just because of high rates of infectious disease or infant mortality because of where they live compared to industrialized nations, because the life expectancy on average for their country of origin is much higher.

Many cite Weston A. Price and his visit to the Maasai, but one must realize he had **no way of truly assessing health other than dental health and appearance**. **No blood tests or medical tests were conducted**! Price was a dentist **not a medical doctor** and had no training to evaluate heart disease, osteoporosis, inflammation or any other health condition that may result from their high meat diet. While Weston A. Price did contribute to the understanding that processed foods are not healthy, his evaluations just do not hold up in quality to current research protocols.

The Maasai DO develop atherosclerosis, they just don't live long enough to die from it!

The reality is modern autopsy studies on Maasai men have actually shown atherosclerosis, they do not escape the damaging effects of their high meat diets, even though they eat wild game, but researchers say that their highly active lifestyle may offer some protection from the atherosclerosis that they do develop. Many low carb diet promoters wrongly assume that because they have a lower heart attack rate than the Western world that they don't develop cardiovascular disease, this however is not true, they DO develop atherosclerosis! It is very uncommon for an individual in the U.S. under the age of 45 to die from heart disease, the Maasai simply don't live long enough to have the same statistics as those in industrialized nations, and as researchers pointed out, their extreme workload and physical activity provides some benefit (realize this isn't just an hour at the gym every morning either).[7]

I will never understand why people romanticize a strongly violent, savage, patriarchal society that promotes violence against young girls in the form of ritualistic female circumcision, drinks animal blood, and lives a very poverty stricken life. They are one of the most impoverished people in Kenya with an extremely short life span and struggle with heavy workloads that may protect their health to some degree, but I can't imagine any American actually desiring to eat or live in the way that these people do. How does this violent little culture has become a romanticized model for dietary lifestyles? I personally have no desire to move backward to violent, savage living conditions. We need to move forward and live according to a higher level consciousness.[8,9]

Is the Paleo diet really good at managing blood sugar levels of Type II diabetics?

There seems to be a claim that the Paleo diet is good at managing blood sugar levels. Does that mean it is a "cure" or "treatment" for diabetes? No! The reason the Paleo diet does so well at balancing blood sugar is that it deals with the symptoms, not the cause. We are physiologically designed to digest, assimilate, and use carbohydrates. When the body become sick and unable to digest carbohydrates, do we just remove the carbohydrates and say, "You are cured!"? That is like saying I can cure you of a peanut allergy by telling you "Don't eat peanuts!" That isn't a cure at all. Neither is a low-carb or Paleo diet for diabetes.

In the New England Journal of Medicine, Yale University researchers tested young adults whose grandparents were diabetic. Some of these young adults already had insulin resistance as well as higher levels of intra-myocellular lipids within the muscle cells. When intra-myocellular lipids accumulate within the cell this interferes with insulin's intracellular signaling process preventing insulin from attaching to a receptor site allowing glucose into the cell causing high

circulating blood glucose levels.[10] Intra-myocellular lipids begin to build up in muscle cells due to a diet too high in fat. These fats inhibit the insulin receptor on the cell from binding with insulin and allowing glucose into the cell, resulting in insulin resistance. **Several studies have shown that when a low-fat diet comprised of only whole food fats is adopted these intra-myocellular lipids clear from the cells and the insulin receptors become sensitive to insulin again.**

Researchers at Pennington Biomedical Research Center in Baton Rouge studied 10 young men who were in their 20's, were healthy and of normal weight. They put these men on a high fat diet comprising 50% of its calories from fat and after only 3 days on the diet these men had built up significantly more intramyocellular lipids. These lipids build up very rapidly, but with the right diet, they can also decrease rapidly.[11]

We say that eating carbs like those found in donuts, potato chips, cookies, cakes, pastry's etc., makes us fat and causes diabetes; but did you know that ALL of these foods are actually FAT dominant foods?

They are either fried in fat or contain the majority of their calories in the form of butter or oils! They are not carbs! This is the big mistake that people make when implicating carbs in diabetes and weight gain. Fat is 9 calories per gram, where carbohydrates are 4 calories per gram, so adding a stick or two of butter in cookies or pastries or frying in oil actually adds more calories from fat than from carbohydrate and this is where we run into problems. It is when we isolate fat from its whole food such as olive oil from olives, sunflower oil from sunflower seeds etc., concentrating it into pure fat and adding it to sugar that we really run into problems. This is NOT the same thing as consuming brown rice or fruit!

What happens when a diabetic goes on a low-carb or paleo style diet?

They become more diabetic!

They remove or severely restrict carbohydrates forcing the body to utilize fat stores for fuel and their blood sugar stabilizes and they get really excited. All seems to be going perfectly, and then the temptations and cravings start to set in—those mashed potatoes look really good, cookies, cake or maybe even just some fruit. They eventually give in and, let's say they just ate some brown rice, what happens? Their blood sugar spikes sky high, they feel horrible and then they say, "The low carb diet was working and carbohydrates are bad for me." Not so fast!

Now that they have been eating a high-protein, high fat diet **their body is even less able to handle carbohydrates than it was before**. Why? Because

intramyocellular lipids continue to increase on this high fat diet and so now their blood sugar levels are even more unstable when consuming carbohydrates. They didn't "cure" their diabetes! They made it worse!

Want to test this out? Ask any diabetic who has gone on a low carb diet what started to happen when they ate a carbohydrate food after being on a low carb diet for a while. They will tell you their blood sugar levels sky rocketed worse than ever before. EXACTLY! It happens every time.

If we are physiologically designed to consume carbohydrates, as our saliva and physiology show that we are, a healthy human being should be able to consume them without negative effects. In order to be healthy we need to find a way to carbs without negative effects, then we can consider that being cured. Merely removing carbohydrates is not the answer. The Paleo answer to diabetes is not a cure; it is a band aid that will not hold up over a lifetime of diabetes!

Celiac and Paleo

Celiac disease has become the poster child of low carb and Paleo proponents. They claim that the rise in celiac disease proves that we are not designed to eat grains of any kind and that they are bad for everyone. There is no scientific evidence or any legitimate proof that celiac is on the rise because we aren't meant to eat grains—this is just a personal opinion of low-carb promoters and is not based in fact.

They use research conducted on celiacs and extrapolate that to humans in general—you cannot do that. Celiac disease diagnosis is on the rise for many reasons: increased awareness, better diagnostic techniques, and some has to do with our modern society which I won't go into in this article but it has nothing to do with the idea that humans aren't meant to eat grains.

An article written in The Physician and Sports Medicine in 2008 stated there is a decreased risk of metabolic syndrome, obesity, high blood pressure, stroke and even some forms of cancer in individuals who have the highest consumption of whole grain foods as opposed to those who eat very little to no whole grain foods. Research continues to show the importance of a whole food diet that is rich in fruits, vegetables and whole grains and yet fad diet gurus continue to try to convince readers that whole grains are unhealthy. (12)

A simple internet search will pull up dozens of peer-reviewed research studies on the benefits of whole grain consumption, even cereal companies are taking

advantage of this research as they are now allowed to put "lowers cholesterol" right on their packaging because research supports these claims.

Refined grains are not healthy and I think that has been well established, but we need to separate the effects of whole grains from refined products. Research published in the American Journal of Clinical Nutrition reported dietary habits of 2,834 men and women enrolled in The Framingham Heart Offspring and Third Generation study. The study used MDCT scans to determine the VAT or visceral adipose tissue and SAT or subcutaneous adipose tissue volumes in the participants. It is important to understand that a higher level of visceral fat (fat that surrounds the abdominal organs) is linked to higher risks of metabolic syndrome, high blood pressure, insulin resistance, high cholesterol and other health problems.

Paul Jacques, DSc, director of the Nutritional Epidemiology Program at the USDA HNRCA explained the results found in this study: "Not surprisingly, when we compared the relationship of both visceral fat tissue and subcutaneous fat tissue to whole and refined grain intake, we saw a more striking association with visceral fat." He went on to explain that this strong association between refined grain intake and increased visceral fat remained even after adjusting for other lifestyle factors that play a role in visceral fat as well such as smoking, alcohol consumption, fruit and vegetable intake, calories consumed from fat and physical activity.

This study also found that if refined grain consumption exceeded 4 servings per day no benefits were seen. Therefore, a combination of whole grain and refined grain consumption does not provide a benefit. The researchers concluded that whole grains must replace refined grain in the diet, not simply be an addition to a processed food diet.

Science or Emotional Fiction?

There is something romantic about the idea of "returning to nature" or "returning to ancient traditions" in our fast paced, nature disconnected society. Many authors have toyed with the sentimental emotions of readers by creating romantic ideas about the past, enticing us into the desire to follow these traditions. The problem with this is that much of this flies in the face of current understanding of human physiology and nutrition. Authors use the limited scientific research funded by special interest groups out there that does support their ideas to lull unsuspecting readers into a false sense of security about the dangers of these diets.

Most readers don't even take the time to find out that the recent study stating saturated fat doesn't cause heart disease was funded by the National Dairy Council... This trend of special interest groups funding research to state that their unhealthy products aren't unhealthy is not new and these low-carb, paleo, hunter-gatherer style diet promoters are notorious for using these conflict of interest studies to back up their claims and say that the Institute of Medicine and any other organization is wrong about what promotes health. While I agree these government organizations still have a ways to go in promoting a truly healthy diet, the basic science behind recommending avoiding saturated fat and other animal based foods is based on sound research.

Saturated Fat—a Yummy Feast?

Let's move on to the claims about Saturated fat being okay to consume in large quantities.

Saturated fat consumption causes an increase in platelet aggregation and increased viscosity of the blood. (13) Consumption of saturated fat causes the blood to become thick and the platelets stick together. This is one of the aspects of saturated fat consumption that increases cardiovascular disease, leads to poor circulation and other health problems.

- C reactive protein, an indicator of inflammation in the body which has been strongly correlated with autoimmune diseases and heart disease in a recent study, is the single most important factor found in elevated CRP levels was saturated fat consumption. (14)
- This inflammation caused by saturated fat intake aggravates autoimmune diseases like rheumatoid arthritis and heart disease.
- A study in Nutrition 2006 found that consumption of more than 10% saturated fat led to twice the risk of elevated CRP levels compared to those who consumed less fat.
- A study published in the American Journal of Clinical Nutrition stated that the progression of coronary artery disease was STRONGLY correlated with long chain saturated fatty acids and trans fatty acids. (15)
- In another study, published in the European Journal of Medical Research, you will read, "Saturated fatty acids are very potent in increasing LDL-cholesterol concentration in plasma a dangerous risk factor for early CHD."

Another quote from the paper by the food and nutrition board:

"Therefore, neither an Adequate Intake nor RDA is set for saturated fatty acids. There is a positive linear trend between total saturated fatty acid intake and

total and low density lipoprotein (LDL) cholesterol concentration and increased risk of coronary heart disease (CHD). A UL [upper limit] is not set for saturated fatty acids because any incremental increase in saturated fatty acid intake increases CHD risk." (16)

According to the Dietary Reference Intake by the Food and Nutrition Board:

"Saturated fatty acids are synthesized by the body to provide an adequate level needed for their physiological and structural functions; saturated fats have no known role in preventing chronic diseases."

Saturated fat is not an essential fat, meaning we do not need to consume it and it does not play any role in preventing disease. (17, 18, 19)

I know many low-carb diet gurus say that saturated fat is not bad and they point to the research **funded by the National Dairy Council** to back up their claims but the reality is that the large body of evidence not funded by special interest groups paints an entirely different picture. As shown earlier, even the Maasai, completely untouched by modern farming practices consuming wild game still develop atherosclerosis they just don't live long enough to die from it!

Conclusion

Humans throughout history have predominantly consumed a plant-based diet as the majority of their calorie intake. We are not physiologically designed to maintain omnivorous diets although we may have the capacity to digest them, however poorly we do digest them, and assimilate nutrients. This is not an indication that these diets are best for optimal health. It is critically important that we begin to move toward the plant-based diet we are physiologically designed to eat to enjoy long-lasting health and longevity rather than fall for the latest romanticized fad.

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