

INVESTIGATING THE PALEOLITHIC DIET

Simone J. Washington
John Gutweiler, Ph.D., Advisor
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ABSTRACT

Objective: To research and analysis the nutritional content of the Paleolithic diet.

Methods: A seven day menu of the Paleolithic diet was entered to the computer program, *FoodWise*, for nutritional analysis according to RDA values.

Results: The calorie distributions for protein (28.88%), fat (30.00%), and carbohydrates (41.11%) all fall within the RDA ranges. The fat breakdown: monounsaturated 35%, polyunsaturated 30%, saturated 19% and unspecified as 16%. The protein level was 140.93g tripled the RDA value. With the exception of vitamin D, all vitamin and mineral levels met or exceeded the RDA value. However, vitamins A, C, K, and iron were found at potentially toxic levels.

Conclusion: Although there are concerns of toxicities, in support of current research, the Paleolithic diet proves to be highly nutritious and beneficial in fighting and preventing illness such as diabetes, cardiovascular disease and hypertension.

Key Words: Paleolithic diet, hunter-gatherer diet, pre-agricultural diet, insulin resistance.

INTRODUCTION

Despite technical advances in medicine and science, the United States remains one of the sickest countries on the planet. It is now understood that the United States consumes 60% of the planets medications. Ironically, however, the United States is ranked 37th among 39 other industrialized countries in overall health. Even more alarming is that, “There are 25 million pills consumed every hour of every day of every week of every year in the United States” (13). The majority of Americans, two thirds, are obese (BMI of 30 or greater) (16, 20). Furthermore, there is a 90% chance that an individual will suffer from hypertension at least once in their lifetime. In addition to that, the prevalence of heart disease, the number one killer in the United States, is expected to double by the year 2054 (1). Both in U.S. and worldwide, 171 million people, 17% of 65-74 year olds in the U.S., suffer from type 2 diabetes (8). In children, type 2 diabetes is thought to account for 8-45% of recently diagnosed cases (9). These statistics provoke great concern as the fate our country.

Questions arise as to how Americans became so sick. Many in the health professions are now naming lifestyle choices as the main culprit. Dr. James Chestnut, physiologist and chiropractor, explains this concept: “We eat toxic and deficient diets and live toxic and deficient lifestyles and just keep looking for more toxic drugs to alleviate the signals that our bodies are desperately sending in attempts to convince us to change our ways and save ourselves” (13). It is obvious to most leaders in the health profession that the lifestyle choices, specifically foods we chose to consume, have heavy implications on the status of our health.

The connection between one’s diet, lifestyle and health, leads to a much more confusing dilemma concerning which food choices are best for one’s health. Each week a “new and improved” diet is introduced by the media. With a multitude of conflicting opinions, healthy

eating becomes discouraging. The average American knows more about properly fueling their car than they do about fueling their own body. Over the past the hundreds of generations, humans have lost all innate ability to decipher which foods are to be eaten and which foods are to be avoided. Furthermore, what is interesting is that the most “simple” of animals in the wild have no confusion about what foods are best for them to eat and which foods are not to be consumed. “Living organisms thrive best in the milieu and on the diet to which they were evolutionary adapted; this is the fundamental axiom of biology” (1). This concept is no different for humans.

Many leading researchers have looked backwards in time to learn the proper diet for humans. It is proposed that the ideal or innate diet for humans is the Paleolithic diet (13). Just like creature in the wild, 500 generations or 2.5 million years ago, every human on the planet ate the same diet (12). The Paleolithic diet was a diet that met all the nutritional needs required for human survival, for it was a natural human diet having evolved with the human genome. Eaton, the forefront expert on the Paleolithic diet, explains that humans evolved on this diet and therefore this diet serves superior in meeting all of humanity nutritional requirements. “The nutritional needs of today’s humans arose through a multimillion year evolutionary process during nearly all of which genetic changes reflected life circumstances of our ancestral species” (11). In 40,000 years, our genes have changed less than 0.02%. Our Paleolithic ancestors, who lived in the wild, hunted wild animals and gathered fresh fruits and vegetables, had the same genes as modern humans today. In sum, “We are Stone-Agers living in the Space Age” (12). In other words, modern day humans are physiology the same as our ancestral Stone-Age hunter-gathers. The difference today is that we exist on a planet that is no longer providing our nutritional needs in exact accordance with our genetic make-up (15). As a species, humans have

gotten away from the natural diet designed to meet our genetically determined nutritional needs. This observation enforces the proposition that humans are now the world's sickest species. Furthermore, we are the only species on the planet that live, eat, and drink in complete discordance to our genetic needs (13).

In the past 40,000 years as a species our genes have changed only slightly (19). However in the past 10,000 years, our culture and lifestyle have changed significantly. Much of this change has occurred in the last 200 years and can be attributed to the Industrial Revolution and agricultural industry (15). The adaptation of cereal grains to our diet eventually lead to humans abandoning their traditional Paleolithic lifestyle. Dietary changes in this small span of evolutionary time have been sudden, and as a result, the human genome has not been able to keep up and adapt to these dietary modification (2). These vast changes in diet have resulted in sickness and disease for humans. This phenomenon is true even today. For when modern day hunter-gather tribes switch to a cereal grain base diet, their overall health becomes compromised with chronic illnesses and infectious diseases (11).

Most fail in understanding just how healthy our ancestors were 10,000 years ago. Further from the common belief that they were plagued by diseases, Cordaine explains that our Paleolithic ancestors were: "Lean, fit, and free from heart disease and other ailments that plague Western countries" (12). In addition, archeological evidence proves that our ancestors had strong teeth and bones that were free of osteoporosis and rickets (1). In sum, the pre-agricultural diet should be considered in great depth when evaluating modern day human nutritional needs.

Eating the way our ancestors ate which was in accordance to our genetic requirements is simple. The Paleolithic diet consists of eating lean meats, fish, seafood, fruit, and non-starchy vegetables (e.g. carrots, broccoli, cabbage) and drinking only fresh water. Foods to be avoided

are: cereals, legumes, dairy and processed foods (12). Our ancestors consumed more animal protein than the average American. For more than 55% of their diet consisted of lean meats, organ meats, fish and seafood. However, an important balance in their diet was established by consuming large amounts of fresh fruits and non-starchy vegetables. Loren Cordain, PhD, the world's leading expert on the Paleolithic diet, has introduced Seven Keys to implementing the Paleolithic Diet in his book, *The Paleo Diet*. The Seven Keys follow:

- (1) In comparison to the standard American diet, eat large amounts of lean animal protein.
- (2) Eat lots of carbohydrates in form of fresh fruits and vegetables but avoiding all grains and refined sugars.
- (3) Increase fiber intake through eating fruits and vegetables.
- (4) Consume more good fats (mono-unsaturated and poly-unsaturated) verses bad fats (saturated). Also, consume equal amounts of omega 3 and omega 6 fatty acids.
- (5) Eat foods with a low sodium but high potassium content.
- (6) Eat a diet that produces a net alkaline load where this is an appropriate acid-base balance within the body.
- (7) Eat foods that are high in phytochemicals, anti-oxidants, vitamins, and minerals.

The guides for following the Paleolithic diet are simple since these candidate foods are representatives of what our ancestors had available in their environment for consumption.

To achieve health we need to supply our body with the foods we originally created to eat; which were the same foods our ancestors having the same genes as modern humans consumed. The Paleolithic diet is the only diet that is based on our genetic requirements, for it is based on millions of years of nutritional history (12). Our ancestors simply ate what was around them: lean wild meats, fruits, and vegetables. They never consumed dairy and did not have regular access to grains (21). With the continual rise of chronic illnesses, modern day humans must learn to live and eat as naturally as possible, for these illnesses are highly reversible. "The most practical solution for reducing the incidence of chronic degenerative diseases...is to realign our current maladaptive diet and lifestyle to stimulate the milieu for which we are genetically

designed” (1). It must be understood that the Paleolithic diet is not another “fad diet” but a lifestyle diet implemented to restore health through providing the body the nutritional requirements needed to thrive.

To gain more perspective into the Paleolithic diet, a comprehensive and objective analysis of this diet is essential. A computer analysis of a sample menu representative of this diet will occur to gain understanding of its’ exact nutritional implications. This will be done in attempts to compare the nutritional value of this diet with the Recommended Dietary Allowance (RDA) as proposed by the Food and Nutrition Board of the National Academy of Sciences. The RDAs are one of four reference values making up the Dietary Reference Intakes (DRI), indices established to avoid diseases related to nutritional deficiencies in entire populations. The RDAs represent the approximate daily dietary consumption level that is adequate to meet the nutritional needs of the majority of healthy individuals (3). Throughout the remainder of this literature review, an inquiry will be made as to how the Paleolithic diet met the needs of our ancestors and how it compares to the current nutritional needs of modern human beings through investigating current research that supports this diet.

MATERIALS AND METHODS

A dietary software program entitled *FoodWise* was used to analyze the Paleolithic diet. A sample 7-day menu of this diet (see Table 1.1 below) was entered into the software program. Based upon the components of this sample menu, an analysis of the calorie distribution, fat content, vitamin and mineral levels, and nutrient energy intake was calculated and compared with the established RDA and DRI values. The sample 7-day menu was based upon the established guidelines of consuming: lean meats, fish, seafood, fruit, and non-starchy vegetables (mostly raw) while avoiding cereals, legumes, dairy and processed foods. The book, *The Paleo Diet*, from Dr. Cordaine provided assistance in creating a menu consisting of a variety of meals. Each item on the menu was entered as a single serving equivalent (unless noted differently); serving sizes are listed in Appendix A, B, and C (10). The following profile was entered into the program:

Gender: Female

Height: 63 inches

Activity Level: Moderate – normal active exercise

Weight: 125 lbs

Age: 26

BMI: 22.19

Eating instructions for the diet are simple. Individuals are instructed not worry about counting calories but to focus more on the content and quality of the food being consumed. The sample 7-day menu was created based on a traditional plan consisting of three meals and two snacks in between meals. The seven day meal plan that was put into the computer software program is shown below in Table 1.1 (on page 9).

TABLE 1.1

	BREAKFAST	LUNCH	DINNER
Day One	<p>Salmon (2 servings), Strawberries, Grapes, Cantaloupe and Apple Juice</p> <p>Snack: Beef Jerky wrapped in Collard Greens served with Celery</p>	<p>Grilled Skinless Turkey Breast topped with a serving of Green Tomato served with a double serving of each: steamed Broccoli and Carrots with one serving of Artichoke Hearts and Water</p>	<p>Tossed Green Salad made with equal parts of honey and fresh lemon juice (one serving each), bell pepper, carrots, and tomatoes. In addition, steamed asparagus, broiled Halibut. Water</p> <p>Snack: Fresh bowel if blueberries, raisins, and almonds (one serving each)</p>
Day Two	<p>Herbal Tea, Poached Egg, Sardines, Orange, Cherries</p> <p>Snack: Mango, Dried Black Walnuts, and V-8 juice</p>	<p>Ambrosia Salad: Carrots, Pineapple, Raisins, Walnuts, Sunflower seeds, Lemon Juice, Figs, and Turkey Breast</p>	<p>Snack: Small Salad (Beef Jerky, Romaine Lettuce, Cherry Tomatoes, Sunflower Seeds, Italian Salad Dressing)</p> <p>Dinner: Chicken Breast seasoned Lemon Juice and Lemon Pepper served with cooked Kale and Peppermint Tea</p>
Day Three	<p>Omelet with grapes and water on the side. Omelet: Egg (2 servings), Spinach, Black Pepper, Broccoli, Shrimp and Tomato</p> <p>Snack: A bowel of Figs, Grapes, Cherry Tomatoes, Strawberries and Almonds</p>	<p>Soup: water, chicken breast, garlic, onion, yellow tomato, carrots, black pepper, zucchini</p> <p>Snack: Sardines, Tahini and Celery Sticks with Grapefruit and V-8 juice</p>	<p>Meatloaf (lean ground beef, red onion (1/4), Serrano red pepper (1/8), 1/4 tsp cumin, olive oil) served with cauliflower florets</p>
Day Four	<p>Grapefruit and Cold Beef Slices (1.5 oz)</p> <p>Snack: Cranberry Juice, Plums, Carrots (2 servings), Broccoli And Sardines</p>	<p>Beef and Shrimp Salad (Raw Kale, Turnip greens, lemon juice, and Cold Beef Slice and Shrimp)</p>	<p>Tuna Medley (Canned Tuna in water, two large mushrooms, Beets, Spinach)</p> <p>Snack: Kiwi, Papaya, Cherries and a couple slices of turkey breast</p>
Day Five	<p>Salad (Beef slices, cucumber, raw spinach, scallops, chicken breast and Tahini) with blackberries and Orange Juice</p>	<p>Steamed Crab (2 servings) with Collard Greens (radishes, bell pepper, onions, garlic) served with an apple and orange</p> <p>Snack: Fresh peaches mixed with figs and almond butter watermelon.</p>	<p>Butternut Squash with Zucchini topped with Marinara Sauce and honey served with Cabbage and Salmon</p> <p>Snack: 3oz Frozen Juice Bar and a turkey slice</p>
Day Six	<p>2 large eggs with Salsa, Sardines, and Fruit Juice</p> <p>Snack: Bowel of Prunes (3), Baby Carrots, fig, Cherries</p>	<p>Smoothie (fruit juice, blueberries, walnuts, sesame seed paste, and V-8 juice) and Baked Butternut Squash topped with honey</p>	<p>Snack: Celery and Almond Butter</p> <p>Trout (2 servings) Cooked Spinach Broccoli Asparagus</p>
Day Seven	<p>Citrus Bowel (grapefruit, 2 oranges, tangerine) with Turkey Breast and Orange Juice</p> <p>Snack: Apples and Pineapple mixed in Apple Sauce with boiled egg and water</p>	<p>Beef Wrap (beef slice, lettuce, and green tomato) with Cashews and lemon water</p> <p>Snack: Strawberries and Papaya blended in Ice Tea with Beef Jerky and Sardines</p>	<p>Chicken Salad (Chicken breast, green tomato, raw spinach, raw collard greens, turnips and grapes) served with water.</p>

RESULTS AND ANALYSIS

CHART 1.2

CALORIE DISTRIBUTION

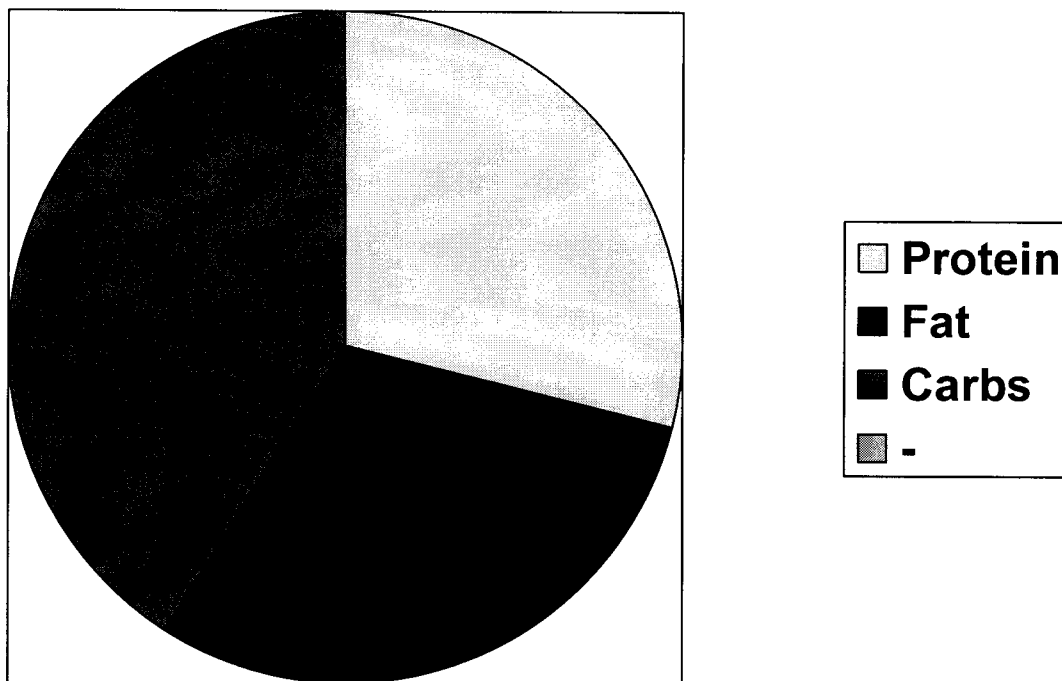


TABLE 1.3

	DRI	INTAKE
CARBOHYDRATES	45-65%	41.11%
PROTEIN	10-35%	28.88%
FATS	20-35%	30.00%

Based upon the data from the 7-day sample menu provided in Table 1.1, the Paleolithic Diet falls within DRI recommendation for calorie distribution of carbohydrates, protein, and fats. The carbohydrate content (41.11%) represents the largest distribution and falls within the DRI recommended range of 45-65% of total calories from carbohydrates. The protein content (28.88%) also falls directly within recommended ranges for protein of 10-35% of the total calories. The fat content (30.00%) also fell within the recommended range of 20-35% of total calories coming from fat sources.

TABLE 1.4
FAT BREAKDOWN

Total Fat: 68.39g

Fat	DRI	INTAKE	PERCENT
Saturated	<10%	12.23g	19%
Polyunsaturated	No record	19.21g	30%
Monounsaturated	No record	22.94g	35%
Other	No record	10.68g	16%

The breakdown of the various fats shows that the highest percentage is reflected in Monounsaturated fat (35%). Saturated fat represents 19% of the total fat and exceeds the DRI by almost double. Polyunsaturated represents 30% of the total fat with other unspecified types of fats representing the remaining 16%.

VITAMIN, MINERAL AND OTHER IMPORTANT NUTRIENT VALUES

TABLE 1.5

	<u>DRI</u>	<u>INTAKE</u>	<u>% DRI</u>
<u>VITAMINS</u>			
Thiamin	1.1 mg	1.42 mg	129%
Riboflavin	1.1 mg	1.96 mg	179%
Niacin	14 mg	36.17 mg	258%
Vitamin B6	1.3 mg	3.41 mg	262%
Vitamin B12	2.4 ug	13.65 mcg	569%
Folate	400 ug	649.37 mcg	162%
Vitamin C	75 mg	470.24 mg	627%
Vitamin D	5 ug	3.44 mcg	69%
Vitamin A	700 ug	4092.08 RE	585%
Vitamin E	15 mg	18.11 mg	121%
Vitamin K		439.05 mcg	488%
<u>MINERALS</u>			
Phosphorus		1927.85 mg	275%
Calcium	1000 mg	1063.82 mg	106%
Iron	18 mg	22.04 mg	122%
Magnesium	310 mg	552.76 mg	178%
Potassium	4700 mg	5776.86 mg	123%
Zinc	8 mg	16.75 mg	195%
Sodium	1500 mg	1801.67 mg	120%
<u>MISC.</u>			
Fat	65g	65.06 g	100%
Cholesterol	300 mg	517.77 mg	173%
Kilocalories	2005 kcal	1867.74 kcal	93%
Protein	50g	140.93 g	282%
Alcohol	0g	0.0	

As seen from Table 1.5 the items from the 7-day menu representative of the Paleolithic diet exceed RDA recommended values in all minerals and vitamins. Vitamin D representing 69% of the RDA value is the only exception. There are toxicity concerns with vitamins A, C, K, and iron. Vitamin A was 4092.08 RE representing 585% of the RDA value, vitamin C was 470.24g representing 627% of the RDA value, and vitamin K was 439.05g representing 488% of the RDA value. Although this diet is extremely nutrient dense, it does introduce concern of vitamin toxicities.

DISCUSSION

The Paleolithic diet highly emphasizes the reductions of cereal and dairy products which places it at odds with the current nutritional recommendations. On the other hand, although this diet seems risky and controversial in applying it to the needs of modern day humans, one must understand that this is current research of our ancestors and modern day hunter gathers thriving on this diet. An entire Paleolithic lifestyle has been uncovered revealing the vital factors that contribute to the success of this diet in meeting the needs of humans throughout history (13).

Despite concerns of vitamin toxicity and excessive protein intake, overall, the computer analysis reveals the beneficial nutritional aspects of Paleolithic diet. For the macronutrient intake of our ancestors highly exceeds RDA requirements. It is important to note however that quality and source of these nutrients is much more vital in restoring health than the amounts or percentage intakes of these nutrients (13). This concept is illustrated in the table to follow.

Table 1.6	<u>Paleolithic (Ancestral) Diet</u>	<u>Typical Western Diet</u>
PROTEIN	Vegetable and Lean Wild Game (20-35%)	Industrially Farmed Fat Marbled Fish (15-20%)
CARBOHYDRATES	Fruits and Vegetables (25-40%)	Processed Grains, Sugar, Corn Syrup (45-55%)
FATS	Organic Meats, Fish, Vegetables, Nuts (30-45%)	Grain fed Meats, Dairy, Trans Fats (35-40%)

Hence, the percentages of macronutrients are only a minor in establishing the nutritional needs of humans. So simply eating within the percentage limits or “zone” as with current dietary fads will not in itself provide adequate nutritional needs for humans to thrive. In the end, it is the source and quality of the macronutrient that is most important. For sources such as natural fats from lean wild meats, vegetables and seeds along with fiber and carbohydrates from ripen fruit

and vegetables sources that will always be most important in implementing the Paleolithic diet (13).

The Paleolithic diet, nutrient rich as it is, introduces concerns of toxicity. As seen in Table 1.5 there is a potentially dangerous intake level of vitamins A, C, and K. Eaton conducted a similar analysis in 2002 of the nutritional value of this diet and found comparable levels of nutrients that were in excess. Eaton, expert in the Paleolithic lifestyle explains this phenomenon, “In each case the effects of high nutrient intake within Paleolithic nutritional development experimental framework might differ from those of the same nutrient level within affluent Western bio-behavioral settings.” (11) In other words, there may be unrecognized factors that play a role into how this diet worked tremendously well for our ancestors and for modern day hunter-gatherers as well. Therefore, it is not yet conclusive as the long term effects a diet such as this will have on individuals who chose to implement this way of eating. Despite what a computer analysis demonstrates, there is minimal research supporting toxicities illness related to high vitamin and mineral levels associated with the Paleolithic diet.

Vitamin D, representing 69% of the RDA value, was the nutrient deficient in the Paleolithic diet. Nonetheless, this is an insignificant finding. As a species human get the majority of vitamin D needed from the sun. Furthermore, it is exposure to ultraviolet radiation from sunlight that our bodies used to synthesize vitamin D. It is a fact that our ancestors spent a lot of time out in the sun. In sum, sunlight provides an important nutrient for health. Therefore, it is important to get plenty of it (12).

There are also concerns of protein toxicities. The current RDA daily value for protein is 50g daily. However, our computer analysis produced a value for protein almost three times this amount of 140g, a level seen in a “body builder” regiment (18). This value tallies to 282% of the

recommended RDA value. However, these findings are not alarming. Typically representing more than 30% of their daily caloric intake, protein consumption for our Paleolithic ancestors was remarkably high. With the current RDA recommendation of 12%, this is hard to imagine (11). This is the case even in today's era for current hunter-gatherer populations.

Approximately, 70% of the world's modern hunter-gatherer tribes obtain more the 50% of their caloric intake from animal sources (7). Based on this, many in the profession rule it to be obscure for human today to somehow be harmed by consuming protein on this level. It should be understood that our Paleolithic ancestors consumed high levels of protein in conjunction with high consumption of fruit and vegetables. In such a case, this is how a high protein diet is associated with increased plasma HDLs with overall lowered cholesterol levels and lowered cardiovascular risks (11). It is speculated that meat protein, instead of saturated fats common in western diets, has been unjustly named the culprit in cardiovascular disorders (12, 22). There is also little support that high protein diets increase the risks of osteoporosis through the urinary excretion of calcium. Western diets consisting of lots of meats, cheeses, and cereal grains can produce high acid loads within the human body that may promote osteoporosis by generating a metabolic acidosis. In distinction, however, regular consumption of fruit and vegetables produced a net alkaline load in the body demonstrating improved urinary calcium excretion rates (7). Furthermore, a past study showed no increased frequency of renal diseases among foragers whose intake of protein is comparables to that of ancient Paleolithic human beings (11). In sum, individuals who eat more fruit and vegetables exhibit healthier, increased bone density.

As previously stated, our ancestors consumed loads of fruits and vegetables which represented nearly of 40% of their diet (13). They are considered humanity's original carbohydrate supply and contain antioxidants, phytochemicals, and fiber which help in fighting

cancer, osteoporosis, and cardiovascular diseases (12). During the Paleolithic era however, the produce consumed was a higher quality source. Eaton explains, “They [fruits and vegetables] were generally consumed within hours of being gathered with typically minimal or no processing and often uncooked” (11). These fruits and vegetables were fresher, organic and therefore had a denser nutrient supply. Unlike much of the carbohydrates (potatoes, cereal, bread) consumed today, wild fruits and vegetables such as apples, strawberries, and broccoli do not demonstrate the large glycemic indices since with agents like potatoes. They are slowly digested and absorbed into one’s system. When successfully adapting this diet into one’s lifestyle, it is extremely important to eat plenty of fruits and vegetables. However, even more important is eating the freshest and finest produce available to insure maximal nutritional benefit.

Polyunsaturated fatty acids are abundant within the Paleolithic diet and it is no secret that the western diet is extremely low in omega 3 and incredibly high in omega 6 fatty acids. The current western diet is dangerously imbalanced in terms of omega 6: omega 3 ratio. The ideal ratio for the polyunsaturated fatty acids is 1:1 to 2:1. The current ratio in the modern western diet is as high as 22:1! (13) Maintaining a proper fatty acid ratio is important to the structure of cellular membrane fluidity. The content and quality of cell membranes influenced by nutrition and is often related to illnesses such as diabetes mellitus (17). Through hunting wild game, our Paleolithic ancestors had abundant access to omega 3 fatty acids. However, the majority of today’s meat comes from farmed animals fed grain and corn, thus one of the main contributors in the omega 3 deficiency in the western diet (1).

The Paleolithic diet is known to have a high ratio polyunsaturated to saturated fat ratio. Eaton (11) emphasizes the significance of this ratio as it relates to saturated fatty acids in protection against high cholesterol. “The ‘low’ serum cholesterol of hunter-gathers despite their

high intake adds credence to observation that the effect of dietary cholesterol on serum levels is mitigated as the ratio between polyunsaturated and saturated fat rises.” Hence a high polyunsaturated fatty to saturated fat ratio is key factor in stabilizing the effects of high cholesterol regardless of exogenous or endogenous sources.

There are research and field studies available supporting the healthy outcomes of the Paleolithic diet. For instance, a research project involving domesticated pigs and the effects of the Paleolithic diet was conducted in 2006. As indicated in humans, it is also conjectured that pigs are not particularly adapted to a grained base diet as well. Therefore, the goal of this research was to determine the long-term outcomes of this diet versus traditional cereal based swine feed. The duration of this study was 15 months. In this time, examined were glucose tolerance, insulin response, plasma C-reactive protein, and blood pressure. When compared to the traditional grain based diet, this study concluded that a Paleolithic diet conferred higher insulin sensitivity, lower C-reactive protein, and lower blood pressure (5). Two years later in 2008, there was additional research conducted regarding the management of cardiovascular disease which showed favorable results. This short-term study demonstrated an overall decrease in body weight and BMI among its’ participants along higher intake of antioxidants and lower blood pressure data in relation to hypertension prevention (4).

There is also current research involving modern hunter-gatherer populations. In 2002, Cordain and Eaton, leaders in the field, conducted a field study involving 20th century hunter-gatherers. Despite a high fat intake (28-58%) comparable to that of Western diets, this study showed these populations to be free of cardiovascular diseases. It is important to differentiate the quality of fat intake in hunter-gather diets. There was a considerable difference involving high levels of mono-unsaturated fatty acids and poly-unsaturated fatty acids along with a lower

omega-6 to omega-3 ratios. Ratios that would have protected against cardiovascular diseases not found too often in hunter-gatherer populations (7).

There are definitely other factors that contribute to the success of the Paleolithic diet. This was obviously the case with current modern day hunter-gatherers and our Paleolithic ancestors. In addition to an adequate diet, our Paleolithic ancestors were extremely fit. “It’s quite likely that relatively high intake of antioxidants and phytochemicals as well as more intense exercise/work patterns provide pre-agricultural further protection from CVD” (7). It is clear that a combination of eating well and working out is crucial in maintaining good health. It is unwise to consider physical fitness as a separate entity or optional factor in obtaining health (13).

Physical activity was not optional for our ancestors. It was a way of life for them; it meant survival. Although current day modern technology has lessened the dependency for physical exertion, physical activity is still a required asset in our health. We have adapted and are genetically programmed for a physically active lifestyle (1). Dr. Chestnut, chiropractor, physiologist and leading expert on wellness best explains this concept, “We have come to be brainwashed to perceive exercise...and physical fitness as optional tools for improving sports performance, achieving weight loss, or the way we look...in reality these things are essential nutrients required for homeostasis and health” (14). Furthermore, a sedentary lifestyle predisposes us to obesity which predisposes us to hypertension diabetes and cardiovascular diseases (1, 14). As with our Paleolithic ancestors, physical fitness is not optional but essential in overall health in human beings. Overall, the Paleolithic lifestyle consisting of fitness in combination with Paleolithic diet forms a vital force in combating modern day illness and developing overall great health.

CONCLUSION

It has always been the assumption that cereal, domesticated meats and dairy products have a valid nutritional base in our diet. Many believe that these items have always been apart of the human diet (12). However, review of current research and historical data reveal that this is not the case. Furthermore, a computer analysis of a sample menu from this diet has demonstrated the nutritional value of eating this way. As a species, humans have only eaten in this manner for less than 10,000 years. In terms of evolution on Earth, this represents only a small span of time. Before agricultural revolution, every human on this planet lived the same lifestyle and consumed the same diet which consisted of fresh fruits and vegetables and wild meat. This existence is vastly different from the lifestyle the majority of humans living today. Ten thousand years ago, “All Paleolithic hominids live by hunting and collecting wild foods, an aspect of existence that began to disappear only with the emergence of farming” (6). Through of all of this historical back tracking, there is an important lesson to gain from the healthy lifestyles of our ancestors. And, the moral of that lesson is: in regards to health, diet, and nutritional needs, our ancestors got it right! “For more than two million years, our ancestors ate a diet rich in lean protein. It gave them energy and combined with fruits and vegetables, helped them stay healthy” (12). Thus, as human beings, in going backwards in time to understand ancient dietary wisdom, we’ll end up light years forward in obtaining health.

At the start of this new millennium, we have become the first generation to realize the genetic and scientific implication of this diet. We have also come to realize how detrimental our modern industrial lifestyle is in maintenance of health. It is fact that we are, “Human beings living in industrial societies are equivalent to wild animals living in captivity” (13). When we remove wild animals from natural habitat and have them live in our industrialized environment

(captivity), they develop the very same diseases that plague human beings of western society. In other words, humans living in industrial society can be compared with sick animals living in captivity. This way of living is not congruent with our genetic make-up. Despite modern medical propaganda, the illnesses that plague modern society are not a product of genes! They are functions of environment and poor lifestyle choices (13). The main point to gain is that modern diseases are not only reversible but avoidable. This knowledge, as it relates back to our healthy Paleolithic ancestors, will go a long way in changing the lifestyle and health of modern human beings.

With this demand to save humanity from looming sickness, we now have the means, tools, and proper information to implement this diet. However, this is much more than a diet, it is a lifestyle. Dr. Joseph Mercola, a Chicago-based osteopathic physician, explains that modern day tools are not working in creating health and wellness in human beings, “Drugs, surgery, and hospitals are rarely the answer to chronic health problems. . . improving the diet, exercise, and lifestyle are basic” (23). Through observation of our Paleolithic ancestors, the good news is that implementing this lifestyle is straightforward. For there is only one rule, eat and exercise exactly in the manner in which our ancestors ate. The simplicity of this lifestyle is amazing. When implemented, the Paleolithic lifestyle has the ability to affect lives modern day human beings for the better.

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APPENDIX A

VEGETABLES

Vegetable	Amount in 1 serving
Artichoke	½ bud
Asparagus	½ cup or 4-6 spears
Beets	½ cup of slices
Bell Pepper	1 medium
Broccoli	1 cup of florets or spears
Cabbage, cooked	1 cup
Cabbage, raw	1 ½ cups
Carrots	1 medium or ½ cup of baby
Cauliflower	1 cup of florets
Celery	4 medium stalks
Cherry/Grape Tomatoes	8 or ~1 cup
Kale, cooked	2/3 cup
Lettuce	2 cups shredded
Marinara Sauce (natural)	¼ cup
Mushrooms	1 cup whole
Onions	½ cup sliced
Radish	25 medium
Salsa (natural)	¼ cup
Spinach, cooked	½ cup
Spinach, raw	2 cups
Squash, summer	¾ cup slice
Tomato	1 medium
Vegetable juice	¾ cup
Zucchini	¾ cup

APPENDIX B

FRUIT

Fruit	Amount in 1 serving
Apple	1 small
Applesauce, unsweetened	½ cup
Banana	1 small or ½ large
Blackberries	1 cup
Blueberries	¾ cup
Cantaloupe/Cantaloupe Wedge	1 cup cubed/ ¼ of small melon
Cherries	1 cup or ~1 dozen
Cranberry Juice	½ cup
Dates	3
Fig Dried/Fig Fresh	3 dried/2 fresh
Fruit Juice	½ cup
Grapefruit	1 small or ½ large
Grapefruit Juice	½ cup
Grapes	1 cup
Honeydew Melon	1 cup cubed
Frozen Fruit Juice Bar	3-oz bar
Kiwi	1 large
Mandarin Orange	½ cup
Mango	½ cup diced
Melon Balls	1 cup or ~8
Orange	1 medium
Papaya	½ medium or 1 cup cubed
Peach	1 large
Pineapple	½ cup cubed or 2 rings
Plums	2
Prunes	3
Raisins	2 TB
Raspberries	1 cup
Strawberries	1 ½ cups whole
Tangerine	1 large or ¾ cup
Watermelon	1 ¼ cups cubed or 1 small wedge

APPENDIX C

PROTEIN, FATS & SWEETS

Protein	Amount in 1 serving
Beef, lean	1 ½ oz (3 oz entered in Foodwise)*
Chicken	2 ½ oz (3 oz entered in Foodwise)*
Crab	3 oz
Egg	1 large
Fish	3 oz
Halibut	3 oz
Salmon	3 oz
Shrimps	3 oz
Tuna, canned in water	3 oz or ½ cup
Turkey	3 oz

Fats	Amount in 1 serving
Almonds	7 whole (1 TB entered in Foodwise)*
Cashews	4 whole
Walnuts	4 halves
Olive	1 tsp (1 TB entered in Foodwise)*
Peanut Butter	1 ½ tsp (1 TB entered in Foodwise)*
Salad Dressing (natural)	2 TB
Sesame	1 TB
Sunflower	1 TB

Sweets	Amount in 1 serving
Honey	1 TB

*This was the amount option able to be entered into the Foodwise computer program.