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A Literature Review of The Health Effects of  
Plant-Based Diet Versus an Animal-Based Diet

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### Abstract

Health and nutrition can mean a myriad of things to many people in today's culture. The majority of the time people are unaware of the proper nutrients their body needs and how to get them from food. This thesis will seek to expose the health benefits that are associated with consuming a raw plant-based die, offering a more profound and encompassing view on nutrition. Investigating further into today's most common diseases such as diabetes, heart disease, obesity, cancer and autoimmune disorders, it will seek to discover and answer why we have so many health issues. This thesis will discuss the importance of using our food medicinally and examining the problems with our current health care system. What we put into our bodies is what we will get out of them. By radically changing our diets we could radically impact the health of our nation.

A Literature Review of The Health Effects of  
a Plant-Based Diet Versus an Animal-Based Diet

In today's culture there is a problem on our hands, a failing view of health and wellness has invaded our beliefs. Not only do we have a health system that does not cover everyone, it does not promote health and prevention of disease. We are all aware of these issues but no progress has really been made. The system seeks to cover up the problem, but never truly looks at the start of the problem. The simple answer is that what we put into our bodies and what we get out directly correlates. Adopting a healthy diet and lifestyle can prevent the majority of disease in the United States. Both diabetes and obesity are merely a result of diet and lifestyle, and can rarely be found apart from one another. However, more serious diseases such as heart disease and cancer can also be impacted by diet and lifestyle. The healthy diet being discussed is a raw plant-based diet (Campbell, 2006).

It is believed throughout the world that these traditional plant-based diets have contributed to greater longevity and a lower risk of coronary artery disease. Although animal products are a major source of fat, a plant-based diet is not necessarily low in total fat. Complex carbohydrates, when compared to polyunsaturated and monounsaturated fats from plant oils, actually improve serum lipid profiles. Trading saturated fats for unsaturated fats in the diet is found to be more effective in lowering the risk of cardiovascular disease. However, a plant-based diet does not exclude all animal products, unless it is considered to be a strict vegetarian diet. Moderate amounts of fish, poultry, and low-fat dairy do not impact the risk associated with cardiovascular disease.

Conversely, a diet laden with red and processed meats, refined grains, sweets and high-fat dairy products have a positive impact on the risk associated with cardiovascular disease. Another area in which there is a misunderstanding with plant-based diets is protein. The main source of plant protein comes from soybean, nuts and legumes. These sources offer the highest amount of quality protein used in the body. A diet moderately high in the consumption of protein has been noted to decrease the risk of cardiovascular disease and diabetes. The greatest potential of a plant-based diet has been shown to reduce the risk of chronic diseases. The benefits are due to the high consumption of amino acids, fiber, minerals, antioxidant vitamins and phytochemicals. However, there is no perfect diet for everyone, as long as the diet consists of health types of fat and carbohydrates (Fung, 2003).

Phytochemicals are nonnutritive substances in plants that possess health-protective benefits. The main phytochemicals in plants are called Flavonoids, and they have extensive biological properties that promote human health and reduce the risk of disease. They extend the activity of vitamin C, act as antioxidants and protect LDL cholesterol from oxidation to unsafe cholesterol oxides. They also contain anti-inflammatory and antitumor properties. Most of these flavonoids are found in the color pigmented part of the plant; therefore, different colored plants will provide protection in different ways. Anthocyanins are water-soluble, reddish pigments that are found in strawberries, cherries, cranberries, grapes and blueberries. Anthocyanins inhibit HMG-CoA reductase, therefore inhibiting cholesterol synthesis. Since this type of phytochemical reduces the production of cholesterol, they reduce the risk of cardiac

disease. The other powerfully colored plants are yellow and this color contains carotenoids. Carotenoids act by fighting against free radicals in the body that enter in on a daily basis. Free radicals are what cause our skin to wrinkle and cause slow damage to many other parts of the body. This phytochemical also provides protection against oxidative damage and stimulates immune function. Oxidative damage is what we know as the slow aging process of our body. As a result the consumption of plants high in phytochemicals have a significant benefit to our health (Winston, 1997).

Overall, it is safe to say that eating plant-based foods is vastly different nutritionally than eating animal-based foods. Plant-based foods have almost 300 times more vitamin C, 10 times more vitamin E, twice as much calcium and 20 times more iron. Plant-based foods have a drastically higher amount of antioxidants, fiber, and minerals than animal-based foods. Vitamins that are higher in animal-based foods include vitamin A and vitamin D. However, the higher amount of vitamin D is due to the fortification in dairy products. Despite the higher amount of vitamin A, this vitamin can be synthesized in our body from the break down of beta-carotene, which is commonly found in carrots. If nutrition were better understood and prevention more accepted among the medical community, we as a nation would not pour so many resources into the wrong areas. The United States has the most expenditure when it comes to health care, yet we are one of the most chronically ill countries (Campbell, 2006).

### **Diabetes**

As a nation we think we are well informed on nutrition, but the truth is we just follow fad after fad. A healthy lifestyle is about changing the way you eat and live and as

a result health will follow. The plan is simple: it is about the multiple health benefits of consuming a plant-based diet. Nutritionally speaking a plant-based raw diet contains phytochemicals that are contained within those foods. These phytochemicals are what give color, texture, flavor and smell to our vegetables. These phytochemicals are found to boost enzyme production, block carcinogens and fight malignant cells (Hodges, 2004). However, when plants are conventionally grown they are given no time to properly produce these phytochemicals and thus contains no benefit to our body. A true raw plant based diet consists of organically grown plant products containing these phytochemicals. Therefore it is a diet rich in nutrients, boosting enzyme production and providing defense for our bodies. Dr. Campbell (2006) provided this analogy:

Flocks of birds in flight or schools of fish darting about are able to shift direction in a microsecond without bumping into each other. They seem to have a collective consciousness that knows where they are going and when they will rest. Colonies of ants and swarms of bees also integrate varying labor chores with great proficiency...I see these same characteristics, and more, in the way that the countless factors of plant-based foods work their magic to create health at all levels within our body, among our organs and between our cells and among the enzymes and other sub-cellular particles within our cells. (p. 361)

While type 2 Diabetes is the most common form, all cases of diabetes are either type 1 or type 2. Type 1 Diabetes is found to develop in children and accounts for roughly 10% of all cases in the United States. Type 2 Diabetes is a heterogeneous condition that is characterized by the presence of hyperglycemia and relative insulin deficiency. In both

cases the disease involves dysfunctional glucose metabolism. The food that is digested is broken down into simple sugars, most of which is glucose. The simple sugars then enter the blood stream and insulin is produced by the pancreas to bind and transport the simple sugars to areas of need in the body. In both cases there is inadequate production of insulin and the sugar in the blood has no place to be used (Campbell, 2006). Most people with type 2 Diabetes have developed it over time, occurring in those who are severely overweight. Insulin resistance stimulates an increase in insulin secretion, often at a level of hyperinsulinemia, as the beta cells in the pancreas attempt to maintain normal blood glucose levels. This process of increased demand for insulin causes exhaustion to the beta cells, resulting in elevated blood glucose (Porth, 2009). Common signs and symptoms of diabetes are polyuria, polydipsia and polyphagia. When the blood glucose levels are elevated the amount of glucose filtered by the kidneys exceeds the amount that is reabsorbed. This results in glycosuria causing large doses of water in the urine; otherwise known as polyuria. Polydipsia is an increase in thirst, this is caused by intracellular dehydration. As glucose levels rise in the blood, water is being pulled out of the body cells, including the hypothalamic center. Polyphagia is an increase in hunger and often does not take place in type 2 diabetes and is more common in type 1. It is the result of cellular starvation from the depletion of carbohydrates, fats and proteins. Abnormalities of glucose and insulin are common among primary hypertension. Insulin resistance is thought to be a risk factor for the development of hypertension. High insulin levels stimulate sympathetic nervous system activity impair the nitric-oxide vasodilatation pathway (Lewis, 2011). Not only does insulin contribute to hyperglycemia, increasing



evidence shows that it also contributes to other metabolic abnormalities as well. It contributes to high levels of triglycerides, low levels of high-density lipoproteins, abnormal function of the vascular endothelium and macro vascular diseases. This list of abnormalities is often referred to as Syndrome X (Porth, 2009).

Despite the damaging course of this chronic condition, the food we eat can have enormous influence over this disease. The proper diet cannot only prevent this disease, but it can also reverse it. The significant correlation between diet and diabetes includes high fat versus high carbohydrate diets. The high fat diets were those that most resembled the western or American diet. The high carbohydrate diets included large consumption of fruits and vegetables. As carbohydrate consumption increases and fat consumption decreases the prevalence of diabetes plummets (Campbell, 2006). In a study done among the Seventh-day Adventists, their diet was examined to discover a link to diabetes. People of this denomination are interesting to study because of their eating habits. About one half of the Seventh Day Adventist population is strictly vegetarian, while the others consume some animal products. The animal products consumed are proposed to be the sources of fat in their diets. The moderate meat eaters would consume about three servings of beef per week and about one serving of chicken or beef. The results showed that compared to the meat eaters, the vegetarians had about half the rate of diabetes (Snowdon, 1985).

In another study Anderson (1986) changed the diet of type 1 Diabetics., and reaped dramatic results using dietary means alone. His study included a whole foods plant-based diet that was high in fiber and carbohydrates, but low in fat. All of the

diabetic patients involved were hardly overweight and all required the use of insulin. The course of the study lasted three weeks and at the end he performed a blood test. Results showed a decrease in blood sugar, cholesterol and medication requirements. One of the most astounding results included a 40% reduction of insulin by type 1 Diabetics. Their blood sugar dropped so dramatically that the need for insulin was so miniscule. Just as important was a 30% reduction in cholesterol levels. Because diabetic patients are at risk for stroke and heart disease these findings were very significant (Anderson, 1986). As you can see these findings indicate a lifestyle intervention can be all it takes to cure and prevent common diseases such as diabetes. Not only can this type of lifestyle diet change impact the metabolism of blood sugar, but it can also make an impact with heart disease (Anderson, 1986).

### **Heart Disease**

Heart disease is the number one cause of death in the United States and has been for almost one hundred years (Braunwald, 1997). This disease does not limit itself to gender or race, everyone in this nation are affected by it. A common misconception is that women are more affect by breast cancer, and most, if asked, would agree. However women's death rates from heart disease are eight times greater than that of death rates from breast cancer (Anderson, 2002).

Cardiovascular disease includes, high blood pressure, stroke and heart disease. High blood pressure is also known as and is defined as blood pressure greater than 140/90 millimeter of mercury when measured with a sphygmomanometer. Hypertension causes shear stress on the walls of blood vessels resulting in micro abrasions. Platelets

adhere to these abrasions and collect cholesterol, depositing fatty streaks on the walls of the blood vessels. These lesions can eventually harden the walls of the vessels, increasing pressure on the blood and worsen the problem. Often pieces of the lesions break off and form clots. Myocardial infarctions occur when a clot occludes a coronary artery, cutting off the blood supply to the heart muscle (Porth, 2009).

High cholesterol in the blood or hypercholesterolemia is synonymous with the development of atherosclerosis with an attendant risk of stroke. An elevated level of LDL's or low-density lipids present in the blood and a decreased level of HDL or high-density lipid leads to hypercholesterolemia. LDL's are made up of 25% protein, 50% cholesterol and 10% triglycerides; they are often referred to as the bad cholesterol. HDL's are considered to be the better cholesterol, composed of 50% protein, 20% cholesterol and only 5% triglycerides. Depending on the balance of these two types of cholesterol, hypercholesterolemia can be either classified as primary or secondary (Porth, 2009). Secondary hypercholesterolemia is associated with other health problems and behaviors. Dyslipidemia is seen with abnormally high level of triglycerides, low HDL and modest elevation of LDL. As stated before, increased levels of triglycerides or lipids are often a direct result of insulin resistance. Type 2 diabetes, hypertension, and high cholesterol levels are all components of Syndrome X. Each contributing to elevated serum cholesterol, which not only aid in the development of atherosclerotic lesions that block arteries, but also prevents vessel relaxation (Porth, 2009). Each new complication builds on each other increasing the patient's ability to form clots and cause vascular damage.

Dyslipidemia is the primary risk factor for cardiovascular disease. Current guidelines recommend diet as first-line therapy for elevated plasma cholesterol concentrations. Large prospective trials have demonstrated that populations following plant-based diets, particularly vegetarian and vegan diets, are at lower risk for ischemic heart disease mortality. The investigators therefore reviewed the published scientific research to determine the effectiveness of plant-based diets in modifying plasma lipid concentrations. Twenty-seven randomized controlled and observational trials were included. Of the 4 types of plant-based diets considered, interventions testing a combination diet demonstrated the greatest effects, followed by vegan diet. Interventions allowing small amounts of lean meat demonstrated less dramatic reductions in total cholesterol and low-density lipoprotein levels. In conclusion, plant-based dietary interventions are effective in lowering plasma cholesterol concentrations (Pekkanen, 1990).

In an effort to study the course of heart disease the National Heart Institute conducted a study on the population. They compared people who had heart disease and who didn't. After centuries of watching who got heart disease and who did not, they developed a list of risk factors. Risk factors included blood pressure, cholesterol, physical activity, obesity and cigarette smoking. This study is known as the Framingham Study and has been used by doctors for everywhere. The key risk factor to this study is cholesterol. The research showed that a cholesterol level of over 244 mg/dL would increase the risk for heart disease by a factor of three. Before this study was conducted many doctors believe that heart disease was an inevitable part of aging. But now we can

see that certain risk factors can be modified and preventing heart disease holds some ground (Kannel, 1961).

Dr. Morrison (1960) conducted a study to put to test the relationship of fat intake and heart disease. This study was done with one hundred different heart attack survivors. Fifty of these survivors were placed on their regular diet and the other fifty were place on a raw plant-based diet. After eight years of being on their normal diet only twelve out of the fifty survived. However out of the fifty survivors who were placed on the plant-based diet, twenty-eight of them were still alive. While some still died in the special diet group, it was proven that they reversed their heart disease by changing their diet. It is understood that Morrison did not find a cure for heart disease; however, he did find a way to dramatically alter its course (Morrison, 1960).

In a later study conducted by Dr. Esselstyn, a surgeon of eleven years, revealed the same truth about a plant-based diets effect on heart disease. It was 1985 and Dr. Esselstyn had a goal of reducing patients cholesterol lower than 150mg/dL. It was a study done over five years with eighteen people. Prior to the study these eighteen people had collectively suffered through forty-nine coronary events, including angina, bypass surgery, strokes and heart attacks. They were instructed to follow a strict diet that consisted of cutting out virtually all animal products and added fats, consuming all plant-based foods. During the course of the study the average cholesterol level was 132mg/dL. This was huge success for these people, considering their extensive heart disease. After the course of the study was complete there was a total of one cardiac event. As a result not only had the disease pattern halted, it was reversed. It was reported that, “Seventy

percent of my patients have seen an opening of their clogged arteries” (Campbell, 2006, p. 12). The magnitude of this study is shown through the degree of sickness his patients were in at the start of this study. People who have heart disease to that degree do not just heal or halt their disease on their own (Campbell, 2006).

In addition, the National Cholesterol Education Program writes, “Lifestyle changes are the most cost effective means to reduce the risk for Coronary heart disease” (Expert panel, 2001, p.1). With promoting a healthy lifestyle being more accepted among the medical community we are uncovering the truth that surrounds the mysteries of diet and nutrition. A whole foods plant-based diet is able to prevent and even reverse heart disease. This information is not new to anyone in the medical community, but I believe it is kept undercover for the sake of business. There is a lot of money to be made on sick hearts, but at what expense? Our nation is full of sick hearts, with three thousand Americans having heart attacks every twenty-four hours. While heart disease runs rampant on the American people, autoimmune diseases come in at a close second to devastating our population (National Heart, 2002).

### **Autoimmune Disease**

The immune system is truly a complex network that is set out to fight the invaders of our bodies. It is comprised of many different smaller groups of cells, which have a specific purpose. These cells are produced by the bone marrow and adapt to different circumstances. Invaders of the body are called antigens, which seek to corrupt. Therefore when our immune system detects these antigens it seeks to destroy them. As a result our immune system customizes itself against each attack. Despite how wonderful this system

can be, it has the capability to attack itself. Some antigens are identical to our own cells and our immune system then destroys it. Antigens are made up of proteins and therefore get confused with our bodies natural proteins. One very common example of the process is called Rheumatoid Arthritis (Campbell, 2006).

Rheumatoid arthritis (RA) is a chronic inflammatory disease that affects the major joints in the body. This disease is caused by an inappropriate response on the immune system that causes the inflammation of the synovial joints and destroys the integrity of the joints. It is thought that rheumatoid arthritis is caused by an activation of the helper T-cells, cytokines, and antibodies that work in the body's immune system as defense mechanisms against invading pathogens. Rheumatoid factor (RF) is commonly found in the blood, synovial fluid, and synovial membranes of patients who have RA. RF is an antibody that the body makes that reacts with immunoglobulin G (Porth, 2005).

Rheumatoid arthritis is considered an autoimmune disease because the bodies own immune system attacks it and causes the problem. Different types of white blood cells, including neutrophils, macrophages, and lymphocytes, migrate to the joints that are affected by the disease. The neutrophils and macrophages ingest the RF for destruction, which is a helpful process. However, while this is occurring, the white blood cells also release enzymes that can cause harm to the tissues of the joint. The body responds to this damage with an inflammatory response. The inflammation not only causes painful swelling around the joints, but attracts more cells to the site of damage. Inflammation involves vasodilatation and increased blood flow, which causes swelling, redness, and warmth around the joints. Rheumatoid arthritis also causes new blood vessels to develop

in the joints. The newly formed tissue is called pannus, and it is the major cause of cartilage destruction because all the inflammatory cells are drawn to the area. This cycle causes chronic inflammation in joints. Chronic inflammation leads to pain and decreased mobility (Porth, 2005).

Autoimmune diseases on the surface seem to have no relevance to our diet and what we eat. However, research has shown that the antigens that confuse our immune system to attack our good cells could be from the food we eat. It happens during the process of digestion that proteins from the food we eat slip into the bloodstream before ever being broken down. These proteins are treated as antigens and our immune system will create a specialized way to destroy them. One of the most common foods tested to fit this notion is cows milk. Cows milk protein is very similar in nature to the protein in our body. Therefore the body begins to recognize itself as an antigen or invader and begins to attack (Campbell, 2006).

Dr. Nenonen (2007) tested the effects of a raw plant-based diet, rich in lactobacilli enzymes, in rheumatoid patients randomized into diet and control groups. The group with a change in diet experienced subjective relief of rheumatic symptoms during intervention. A return to a diet filled with animal products and added fat actually aggravated symptoms. There was a decrease in the disease activity with high vegetable intake, increase in fiber intake, and no need for steroid medication. The results showed that an uncooked vegetable diet, rich in lactobacilli, decreased the symptoms of rheumatoid arthritis.



Autoimmune disease is not just limited to Rheumatoid arthritis, even though it is very common in our aging population. Autoimmune diseases as a whole are very similar. In all autoimmune disorders the immune system of the body attacks its own proteins, not being able to distinguish from foreign invaders. Another similarity is that a group of the same diseases tend to affect the same people. For example, Parkinson's, a non-autoimmune disorder is often found in someone who also has Multiple Sclerosis. Nutrition, as stated above, also brings a commonality to these types of diseases. It has been shown that animal based foods; especially cow's milk increases their risk (Campbell, 2006). Dr. Swank did a study on Multiple Sclerosis (MS) in the coastal areas of Norway. His study found that in areas where fish consumption was high, mainly the coast, there were fewer incidences of MS. It is believed that the Omega-3 fatty acid in the fish is what helps people on the coast to protect themselves from MS. While this is true, the consumption of dairy and added fats to their diet was never examined. In fact their consumption of these foods were far less then those who lived more inland (Swank, 1990).

Dr. Campbell (2006) proposed a theory that involves vitamin D and the affects of animal protein on autoimmune disease. Going outside is the first step that affects the vitamin D in our body. Sunshine hits your skin and vitamin D is produced. The vitamin must then be activated in your kidneys to be useful to help against autoimmune diseases. However, the activation of vitamin D can be affected by the food we eat. It is inhibited by foods that are high in calcium, as well as acid producing, namely cow's milk. Vitamin D works by inhibiting the production of cytokines, which are cells that initiate the

autoimmune response (Campbell, 2006). Carol Potera (2009) of Environmental Health says:

T cells with antigen receptors that could respond to normal "self" proteins must be destroyed to prevent an autoimmune response. The researchers reason that a lack of vitamin D in the thymus in early life could limit this process, thus enabling "self-directed" T cells to survive and trigger an autoimmune response to the myelin sheath on nerve fibers - a classic feature of MS. (p. 2)

There is a strong connection with the food we eat and what reactions take place in our body. A raw plant-based diet gives our body and blood what it needs to take care of itself. Autoimmune diseases are crippling a portion the American population and our struggle with weight does not help.

### **Obesity**

The struggle with weight in this country rarely goes unnoticed. The usual measurement is called the body mass index, which represents body weight compared to body height. A body mass index of 25 or greater is considered overweight. Becoming obese affects all areas of role performance in life. Having extra weight affects physical mobility, work, self-image and social life. While no one desires to be overweight, the solution does not match up with why a large portion of country is obese. The issue is not in a lack of funds being poured into health care, because we already have enough. The issue lies in a lack of information. Our nation is in a severe deficit of knowledge towards losing weight and keeping it off. As stated earlier there are to many fads and flashy ways to lose weight. What this country needs is a sustainable lifestyle change to the way they

look at health and nutrition. The problem is that it does not fund and fuel big business. The solution to losing weight is a whole food raw plant-based diet, a lifestyle change to the way we eat. While it minimizes the risk of chronic diseases, it will also sustain weight loss. Solving this problem is no mystery or magic trick; there is no calorie counting or genetic variations (Campbell, 2006). A study was conducted on several overweight subjects and they were told to eat as much vegetables as they wanted. Their diets were low in fat, whole food and plant-based. Within three weeks those research participants lost an average of seventeen pounds (Shintani, 1991).

The common misconception to a raw plant-based diet is that an individual would be considered to be a vegetarian. A strict vegetarian diet is vastly different than a raw plant-based diet, because some vegetarians only cut out animal products. However they still consume large amounts of oils, refined carbohydrates and sweets. This diet is not nutritious at all, filled with empty carbohydrates and sugar. Keeping body weight off permanently, especially in obesity, is a lifestyle choice. Losing weight cannot be looked at as a race, or by identifying what you can't eat anymore. The key to reversing obesity in the country lies in the decisions we make everyday. It lies in the way we look at nutrition and what we are putting into our bodies. Dr. Campbell (2006) addresses the issue of feeling hungry by saying, "Feeling hungry is a sign that something is wrong, and prolonged hunger causes your body to slow the overall rate of metabolism in defense. Moreover, there are mechanisms in our bodies that naturally allow the right kind of plant-based foods to nourish us, without having to think about every morsel of food we put in

our mouths” (p. 141). By giving our body the right food it will be allowed to perform the proper way.

A whole foods raw plant-based diet is rich in fruits, vegetables and whole grains. These types of food are much less energy dense than animal products and added fats. With each serving of a plant-based diet there are less calories. Fat or animal based products contain nine calories for every gram, while vegetables and fruit only have four calories per gram. Also take into consideration that whole foods, especially fruits are high in fiber and help make you feel full. Therefore as a result of eating a plant-based diet, you may reduce the amount of calories but eat a significant more amount (Duncan, 1983). Obesity is the most ominous of all poor health states in the United States, because it rarely stands alone. It puts such strain on our health system, not only in treatment of comorbidities but in equipment as well. For an obese patient to stay in the hospital is much different than someone of normal weight. The bed they stay in must be much larger and the normal blood pressure cuffs no do fit. It also puts a much greater strain on the health care team of professionals, because it will take twice the amount of people to move these patients.

Obesity is not a condition that can be fixed quickly and people should beware of diets, pills and surgeries. The problem with these fads in our culture is that they do not change the person’s habits. The eating and lifestyle habits of that person are what put them in the condition they are in. A surgery to reduce someone’s weight will only provide but a temporary fix, until the person changes what he or she eat there will be no change. One could argue the case of genetics, however you are allowing yourself to

falsely blame what we cannot control. The purpose of searching for a specific gene behind obesity is to then develop a drug that will treat it. This method is very unproductive and does not seek a true cause. The true cause, as Dr. Campbell (2006) would put it is that we need to look at the end of our fork before it goes into our mouth.

### **Cancer**

Cancer can be a very encompassing topic due to the fact that there are many different variations based on the anatomical location. However the effects of nutrition on cancer according to Dr. Campbell (2006) “are all virtually the same for all cancers, no matter if they are initiated by different factors” (p. 157). Breast cancer, known among the medical community is to be caused by BRCA-1 gene, in hopes that they could change this gene. By changing this gene, scientists would be able prevent or treat the breast cancer. However, just because a woman has the gene for breast cancer does not mean they will get it. The BRCA-1 shows increased likelihood to develop breast cancer. The reason why breast cancer is such a hot topic in today’s society is because it is projected that one out of every 8 women will develop it (Desantis, 2011). Most of us think the only way to prevent breast cancer is through screening. While screening is a very well used tool in this process, nutrition and diet plays a large part as well.

Nutrition impacts four different risk factors associated with breast cancer. Early age of menarche and late age of menarche increase the risk for breast cancer. Women who have a diet high in animal based foods and a low amount plant-based foods increase their exposure to hormones. Exposure to higher levels of hormones in ones life causes an early onset of menarche and follows you further into age. Other risk factors include an

increase in levels of hormones in the blood and high cholesterol. Therefore, if breast cancer is heavily affected by the amount of exposure to hormones in our food, then the risk can be prevented (Campbell, 2006). The common argument however is that breast cancer is all in the family. Breast cancer, having a genetic component can be easily blamed on someone else. It is very belittling to say that it passed down from generations, but then again aren't most other habits. It is very common for similar diets to be shared among the family, meaning what one daughter sees her mom eating is what she will eat. One study proclaimed that only 3% of all cases of breast cancer could be linked to family history (Colditz, 2012). Cancer still seems to be a huge mystery among health care professionals and all they can do is either remove it or wait the course. What about preventing it through nutrition? Foods that are not plant have a major affect on our bodies and not in just one area. A raw plant-based diet has been shown to level out hormones and ease women into menopause. Nutrition gets over looked far too much for answers when it comes to western medicine (Colditz, 2012).

Second to breast cancer, colorectal cancer is leaving a massive path of destruction in the country. One of the links between nutrition and colorectal cancer is that of a diet high in fiber. A recent study on this type of cancer named EPIC collected data from 519,000 people all across Europe. Results showed that people who consumed the most dietary fiber, which was on average 34 grams per day, had a 42% lower chance of developing colorectal cancer. On the other spectrum, those people who consumed the least amount of fiber in their diets daily had the highest chances of developing this cancer. However it is important to note that the consumption of dietary fiber was not

through supplementation. All of the fiber that was consumed was sourced from the food that the participants ate. Therefore the foods that contain the highest amount of dietary fiber are fruits, vegetables and whole grains. These foods are all consistent with a raw plant-based diet (Bingham, 2003).

Other links between cancer and diet include a hormone called Insulin-like Growth Factor 1 (IGF-1). This hormone IGF-1 is very similar to cholesterol being a precursor to heart disease. Normally in the body this hormone is responsible for the growth of new cells. However too much of this hormone in an “unhealthy” state will result in over production of cells and accumulation of old cells. Cancer loves to grow in the state described as “unhealthy”. Consuming animal based foods will increase IGF-1 in the blood and cause “unhealthy” growth of cells. In essence the food we eat either contributes or prevents the growth of cancer in our bodies (Campbell, 2006). Dr. Campbell (2006) states:

There is no single mechanism that fully explains what causes diseases such as cancer. Indeed, it would be foolish to even think along these lines. But what I do know is this: the totality and breadth of the evidence, operating through highly coordinated networks, supports the conclusions that consuming dairy and meat are serious risk factors for cancer. (p.181)

The most amazing thing about the human body how everything inside it works together to either promote health or increase the risk for disease.

The health benefits of a raw plant-based diet clearly outweigh that of a diet rich in animal based products. However, the direction of our nation is less than comforting.

Americans have a diet that is riddled with meat, because we think it's the only source of protein. Seventy percent of the protein that we consume comes from animal based foods (Smit, 1998). Not only do we consume a large amount of animal based proteins, we as a nation consume low amounts of fruits and vegetables. Common items we consider to be food are loaded with sugar, fat and salt. The majority of the problem lies in what we consider to be food. We have to be made aware of these findings as a nation and promote plant-based diets. There seems to be no funding in the prevention of diseases, but then again what would cause these chronic epidemics to remain chronic? Diabetes, cancer, heart disease, obesity and autoimmune disorders as a whole do not require any other special diet specific to the course of disease. A raw plant-based diet is all encompassing, creating good health and preventing disease states within the body. Nutrition and health is really very simple, by cutting out animal based products to a minimum and maximizing plant-based foods disease can not thrive. Disease and sickness within in the body takes place when it can not defend itself. Bacteria and viruses live in acidic environments. Animal based foods change the blood in our bodies to become more acidic than basic. However, plant-based foods have a cooling effect in our blood and create a basic rather acidic environment. Therefore in order for bacteria to thrive they need an acidic environment to live and grow in (Harrington, 2010).

### **Conclusion**

Since the 1990s our country has responded to this knowledge with national programs. One very famous program is called the "5 A Day", urging people to consume at least five servings a day of fruits and vegetables. However, the average American



consumes on average 1 serving of plant-based products per day. Actually one in every nine Americans surveyed they ate no plant-based foods at all during this campaign in the 90's and the statistics do not get better today. Along with many campaigns to encourage consumption of plant-based foods, The National Cancer Institute spent an excess of twenty million dollars over the course of five years in 1995 uncovering the potential of plant-based foods. Research has identified a host of active substances or phytochemicals that provide protection from disease. These beneficial chemicals block hormone actions and metabolic pathways that are associated with the development of disease (Winston, 1997).

Putting politics aside, the efforts of these scientists over the years to truly look for a cure will go largely unnoticed. A plant-based diet on every level gives the body what it needs to function at its highest level. The food we eat causes multiple chain reactions within our body, meaning that our body as a whole it being affected, not just one. Radically changing our diet and the way we look at food could radically change our nation. A healthy diet should not be focused on limiting any one substance such as sugar, carbohydrates or fat. A true healthy diet should target the body as a whole. The food we eat can either have a negative or positive effect on our body; it is time to start noticing what's at the end of our forks and weigh the options. It is clear that such a wide variety of plant-based foods have protective properties against disease. The US Department of Agriculture recommends that adults consume 5 to 9 servings of plant-based foods on a daily basis. Very few Americans achieve this in their diets and would benefit from a diet

with increased phytochemicals and antioxidants, such as vitamin C and E (Campbell, 2006).

## References

- Anderson & Gustafson (1986). Type II diabetes: Current nutrition management concepts. *Geriatrics*, 41(8), 28-35.
- Anderson, R. (2002). Deaths: Leading causes for 2000. *National Vital Statistics Report*, 50(16), 1.
- Alberti-Fidanza, A., G. Burini, et al. (2002). Trace elements in foods and meals consumed by students attending the faculty cafeteria. *Sci Total Environ*, 287(1-2): 133-140.
- Biali, S. (2006). The raw foods diet: A raw deal? *Medical Post*, 42(19), 25-25. Retrieved from <http://search.proquest.com/docview/2289>
- Bingham, S. (2003). Dietary fibre in food and protection against colorectal cancer in the European Prospective Investigation into Cancer and Nutrition (EPIC): An observational study. *The Lancet*, 361, 1496-1501. Retrieved January 1, 2013, from the Science Direct database.
- Braunwald, E. (1997). Shattuck lecture--cardiovascular medicine at the turn of the millennium: Triumphs, concerns, and opportunities. *The New England Journal of Medicine*, 337(19), 1360-1369. Retrieved from <http://search.proquest.com/docview/223963997?accountid=12085>
- Campbell, T. C. (2006). *The China study*. Dallas, TX: BenBella Books, Inc.
- Colditz, G., Kaphingst, K., Hankinson, S., & Rosner, B. (2012). Family history and risk of breast cancer: Nurses' health study. *Breast Cancer Research and Treatment*, 270, 1-8.

- DeSantis, C., Siegel, R., Bandi, P., & Jemal, A. (2011). Breast cancer statistics, 2011. *CA: A Cancer Journal for Clinicians*, 61(6), 409-418.
- Duncan, K. (1983). The effects of high and low energy density diets on satiety, energy intake, and eating time of obese and nonobese subjects. *The American Journal of Clinical Nutrition*, 37(5), 763-767.
- Expert Panel. (2001). Third report of the national cholesterol education program (NCEP) expert panel on detection, evaluation, and treatment of high blood cholesterol in adults (Adult Treatment Panel III). *The Journal of American Medical Association*, 285(19), 2486.
- Fung, (2003). Plant-based diets: What should be on the plate? *The American Journal of Clinical Nutrition*, 78(3), 200-212.
- Greer, S. (2012, Feb 13). Raw food diet followers claim range of health benefits; challenge is planning. *The Canadian Press*, pp. n/a. Retrieved from <http://search.proquest.com/docview/921576306?accountid=12085>
- Harrington, K. (2010, May 05). RAW PASSION; more people who want healthy, energy-filled meals are turning to raw food diets. *Spokesman Review*, pp. 1. Retrieved from <http://search.proquest.com/docview/275681106?accountid=12085>
- Hodges, L. (2004). Plant-Based Diets. In D. C. S. James (Ed.), *Nutrition and well-being A to Z* (Vol. 2, pp. 138-139). New York: Macmillan Reference USA. Retrieved from

[http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE%7CCX3436200224&v=2.1&u=vic\\_liberty&it=r&p=GVRL&sw=w](http://go.galegroup.com.ezproxy.liberty.edu:2048/ps/i.do?id=GALE%7CCX3436200224&v=2.1&u=vic_liberty&it=r&p=GVRL&sw=w)

- Jennings, J., & Cheng, M. (2011). Does eating a raw food diet cause spleen qi deficiency? *The Journal of Chinese Medicine*, 97, 54-59. Retrieved from <http://search.proquest.com/docview/1018743503?accountid=12085>
- Kannel, W. B., Dawber, T. R., Kagan, A., Revotskie, N., & Stokes III, J. (1961). Factors of risk in the development of coronary heart disease--six-year follow-up experience. *Annals Of Internal Medicine*, 55(1), 33.
- Koebnick, C., A. L. Garcia, et al. (2005). Long-term consumption of a raw food diet is associated with favorable serum LDL cholesterol and triglycerides but also with elevated plasma homocysteine and low serum HDL cholesterol in humans. *J Nutr* 135(10), 2372-2378.
- Levin SM. (2010). Becoming raw: The essential guide to raw vegan diets. New resources for nutrition educators. *J Nutr Educ Behav*, 42(357), e1.
- Lewis, Heitkemper, Dirksen. (2011). *Medical-surgical nursing* (8<sup>th</sup> ed). St. Louis: Mosby.
- Morrison, L. (1960). Diet in coronary atherosclerosis. *The Journal of American Medical Association*, 173(8), 884.
- National Heart, Lung and Blood Institute. (2002). *Morbidity and mortality: 2002 chart book on cardiovascular, lung, and blood diseases*. Bethesda, MD: National Institutes of Health, 2002.
- Nenonen (2007). *Uncooked, lactobacilli-rich, vegan food and rheumatoid arthritis*.

Rheumatology, 37(3), 274-281 doi:10.1093/rheumatology/37.3.274

Porth, C.T. (2009). *Pathophysiology: Concepts of altered health states*. (7<sup>th</sup> ed.).

Philadelphia: Lippincott Williams & Wilkins.

Pekkanen. (1990). Ten-year mortality from cardiovascular disease in relation to cholesterol level among men with and without preexisting cardiovascular disease.

*N Engl J Med*, 10(322), 5-10.

Potera. (2009). Vitamin D regulates MS gene. *Environmental Health*

*Perspectives*, 117(5), 1-A196. Retrieved from

<http://search.proquest.com/docview/222658542?accountid=12085>

Shintani, T. (1991). Obesity and cardiovascular risk intervention through the ad libitum

feeding of traditional Hawaiian diet. *The American Journal of Clinical*

*Nutrition*, 53(6), 1647-1651.

Smit, E. (1998). *Animal and plant protein intake and blood lipids in United States*

*adults*. The Johns Hopkins University. *ProQuest Dissertations and Theses*, 125-125 p. Retrieved from

<http://search.proquest.com/docview/304418622?accountid=12085>. (304418622).

Snowdon, DA & Phillips, RL. (1985). Does a vegetarian diet reduce the occurrence of

diabetes? *Am J Public Health*, 75, 507-512.

Swank, R. (1990). Effect of low saturated fat diet in early and late cases of multiple

sclerosis. *The Lancet*, 336, 37-39.

Winston, C. (1997). Phytochemicals: Guardians of our health. *Journal of the American*

*Diabetic Association*, 97(10), 199-204.