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The Right Type of Diet: A Thesis on the potential relations between your blood type and the way you eat

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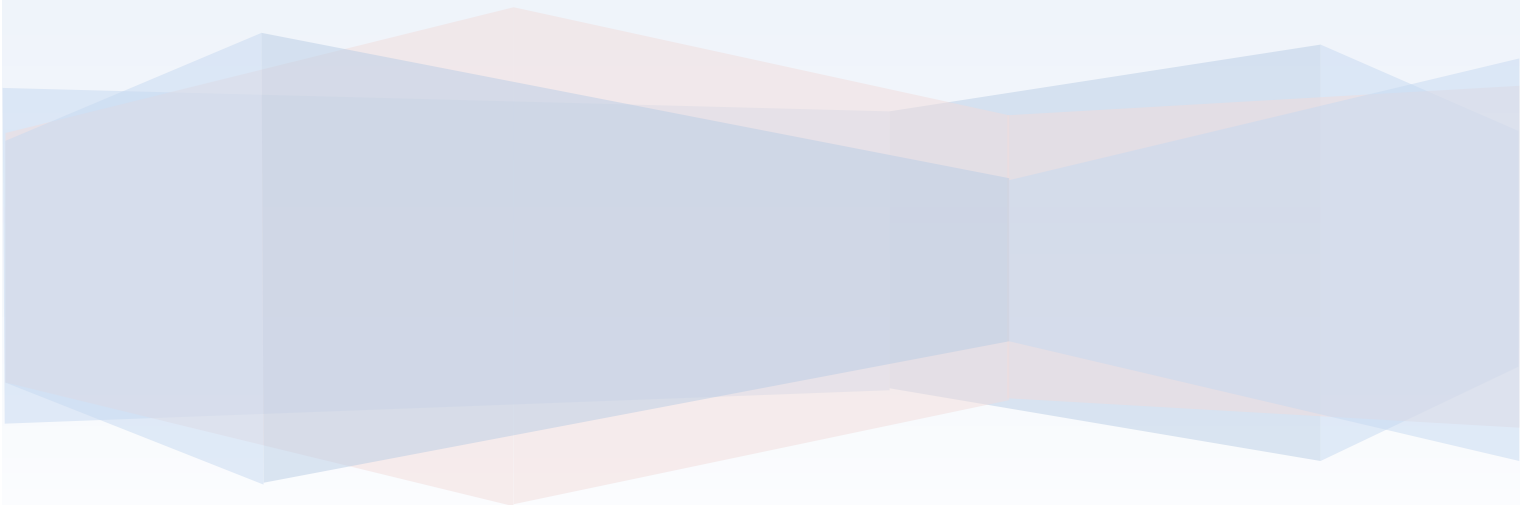
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The Right Type of Diet

A thesis on the potential relations between your
blood type and the way you eat

Drake Puryear



Abstract:

Is there one true way to diet? The work of Dr. Peter J. D'Adamo has made bold claims that the foods that work best for an individual are based upon their blood type. The interaction between blood and nutrients has led D'Adamo to believe that the Blood Type Diet is vital for living a healthy lifestyle, increasing metabolism, preventing disease, and living longer. This thesis aims to explore D'Adamo's claims, answering questions such as: How does this diet compare to other diets? What research has shown its effectiveness and potential flaws? And how could one apply it to their life?

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Table of Contents

My Story (pg. 5)

Blood in the Body (pg. 7)

- Process of Digestion (pg. 9)

The Four Types (pg. 9)

- Blood Type Inheritance (p. 11)
 - Table I (pg. 12)
 - Figure 1 (pg. 12)
- The Rh Factor (pg. 13)
 - Figure 2 (pg. 14)

The Blood Type Diet (pg. 15)

- A Father's Legacy (pg. 15)
- Blood Type Origins (pg. 16)
 - O: Hunter-gatherer
 - A: Vegetarian
 - B: Balanced
 - AB: Modern
- The Lectin Problem (pg. 18)
- What Can the Blood Type Diet Do For You? (pg. 20)
- Other Common Diets (pg. 21)
 - Paleo
 - Vegetarian
 - Mediterranean
- How to Apply the Blood Type Diet (pg. 23)
 - Table IIa-d: Type Food Lists (pg. 24-27)
- Survey Results (pg. 28)
 - Figure 3 (pg. 28)
 - Figure 4 (pg. 29)
- Research: For & Against (pg. 29)
- The Ideal Study (pg. 31)
- Snack Recipes (pg. 35)
 - Table III (pg. 37)

Conclusion (pg. 37)

My Story

Food is a way of life, literally. As a boy growing up who never needed to worry about his weight, I enjoyed anything that could keep me full. I grew up with a metabolism that my mother had trouble keeping content. I was the scrawny kid that barely had an ounce of fat on his body. I never had to worry about what I ate, the amount or the quality. The topic of eating healthy never truly made a big difference to me because it was not necessary for me. I ate what I wanted and continued to function just fine with whatever I put in my body. Then, I made a conscience decision during my high school days to begin eating just a little bit healthier. I cut out soft drinks, reduced intake of candy and other high-sugar foods, and started to choose “healthier” options. I do not have records that could help display my eating habits other than I just tried to eat better. My mom always made decently healthy meals for our household of six. We rarely ventured towards fast food restaurants despite the persistent begging for a Quarter Pounder. Compared to the typical American male I feel confident in the assumption that I had a decently healthy upbringing, which is mainly due to my mother but also from my personal choices of diet.

However, I began to notice that not all my “healthy choices” were to the benefit of my body. I recall that about my junior year of high school my body did not agree with certain things I was eating. Milk and wheat products consistently seemed to disagree the most out of what I was consuming. It was at about that same time that my mom had visited a doctor and had been told to avoid numerous foods, including wheat and milk. Our family was then introduced to the “gluten-free diet”.

As time went on my youngest brother, about 13 at the time, started noticing similar intolerances to milk- and gluten-containing products that my mom and I had noticed. Thus began our family's journey into unraveling the mystery behind our bodies' problems with food. By the time my mom, brother, and I had somewhat of an idea of how to handle our bodies' rejection of certain foods I left for college.

Instead of home-cooked meals from my mom, who knew what worked for me and what did not, I was eating mass-produced meals prepared for an entire college campus that were not specifically concerned with which foods did not sit well with *my* stomach. It was a difficult transition to make. I knew I needed to figure out some sort of system to make my options work as I began my college career. I began to study myself as I watched the foods I would typically eat and how my body tended to respond. With no specific plan or goals, I just tried to make good choices in my eating. I attempted to incorporate gluten-containing products back into my diet but that decision did not last very long. Dairy products were a definite exclusion, minus the occasional ice cream cone. For the purpose of clarity, when I say that a food did not sit well with my stomach it generally means that I felt bloated and my stomach hurt which was usually followed by flatulence after the meals and, in harsher but less frequent situations, diarrhea. Despite my best efforts to avoid gluten and dairy products, I still was not satisfied with how I consistently felt. I did not know where else to turn.

During Christmas break of 2014 my family visited my grandparents. Throughout our time there, I heard my grandma talking about a diet that she and my grandpa had been on and how much she enjoyed it. Having been on the diet for a

decent amount of time my grandparents said they were able to truly see results in the way they felt, the weight they had lost, and how much easier their bodies seemed to respond to the foods they were eating. Hearing of their success I wanted to check it out for myself so I asked to see the layout. My grandma showed me her book “Blood Types Body Types and You” by Joseph Christiano. She took me directly to a page that listed foods that were recommended for one’s blood type. Having recently given blood I knew my type was O positive and began to look at the recommendations for my blood type. I took pictures of the list with my phone and began to familiarize myself with the list. I wanted to see if this food list was everything my grandparents had claimed. With the beginning of a new year I aimed to follow this diet as much as I could and see what happened.

Now, writing this thesis two years later, I can honestly say that I am so thankful that I came across the concept of the Blood Type Diet. Because of the radical transformation this diet has made in my life, I gladly tell people why I eat the way that I do. My desire for this thesis is to provide exposure to a topic that most people are not aware of, explain how one could effectively follow it and then allow them to make a decision based on the information presented. I do not claim this to be the diet plan that puts all others to shame but I know that it has worked wonders for me.

Blood in the Body

Have you ever thought about how much your blood plays a role in your life? It is not a surprise that without the work of red blood cells circulating through our

arteries and veins life would not be possible. What is in the blood and what exactly is its function? Blood is a connective tissue that consists of multiple aspects: red blood cells (erythrocytes), white blood cells (leukocytes), platelets, and plasma. The red blood cells (RBCs) are the most familiar component of blood. RBCs get their red color due from the binding of iron to a hemoglobin subunit called heme. Once oxygen binds to the iron-heme complex, it will emit a bright red color. When the oxygen is released, the color will turn to a darker red. Contrary to popular belief, blood is never blue.¹

Our blood's primary function is to act as the transportation system for our body.² RBCs are responsible for transporting oxygen and digested nutrients but also serve to remove waste products such as carbon dioxide, urea, and lactic acid.³ Blood picks up oxygen in the lungs then drops it off at tissues throughout the body as it exchanges the oxygen for carbon dioxide or other waste products.⁴ The blood is responsible for picking up nutrients that have been broken down from digested foods. This process will be discussed in more detail in the next section.

In addition to the tasks of transporting oxygen and nutrients our blood also plays a significant role in homeostasis (process of keeping the body in a fixed range of biological processes), clotting wounds, transportation of waste products, and fighting infection.⁵ Blood has many fascinating aspects, however, we will focus specifically on blood's interactions with the nutrients in our bodies and how it affects the different blood types.

Process of Digestion

For the blood to be able to transport nutrients well those nutrients must first be in a transportable state. Digestion is a complex process that allows the body to break down food into elementary components that are either used or discarded.⁶ The process of digestion begins in the mouth as food comes into contact with saliva and its enzymes.⁵ There begins the breakdown of starches. As the food is swallowed it travels through the esophagus (no breaking down occurs here) landing in the stomach. Here the stomach acids work to break down proteins as the lower stomach muscle contracts, mixing the food and acid even further. Slowly the stomach will release its contents into the small intestine. It is in the villi of the small intestine that nutrients are beginning to be absorbed into the bloodstream.⁴ The villi are tiny, fingerlike projections from the lining of the small intestine that are used to increase surface area of the hollow organ and increase digestion rate.⁷ From here the blood will deliver the nutrients all across the body. Whatever is remaining after moving through the small intestine is then delivered to the large intestine where water is absorbed to convert the wastes into stool. The stool is held in the rectum until a bowel movement expels it from the body.⁶ However, this overview of digestion is merely scratching the surface of the process as a whole.

The Four Types

Everyone has a blood type; it is a characteristic that is applied to all humans. Blood type is a factor that is determined by the antigens located on the surface of one's red blood cells. These antigens are present according to the inherited traits from an individual's parents. Antigens are simply surface markers on a cell that

allow the body to determine if cells are foreign or not. Foreign cells can be detected in the body by the way their antigens interact with the body's cells and the immune system then decides the best action to take. In the same way, our blood has antigens that allow for identification.

Up until 1900 there was no knowledge of a difference in blood types. Physicians believed that all blood was the same, even with animals.⁸ Eventually Dr. Karl Landsteiner began to notice how blood transfusions between humans would either result in death or keep the patient alive. In 1909 Landsteiner's work caught attention as he introduced the ABO blood groups to the world of science. For this work he was awarded the Nobel Prize in Physiology or Medicine in 1930. Landsteiner's advancement in medicine brought about an entirely new field of study.⁹

The four main blood types consist of O, A, B, and AB, otherwise known as the ABO group. Red blood cells are characterized based on the presence, or lack thereof, of particular antigens on the surface of their cell. Type A has A antigens, Type B has B antigens, Type AB has both antigens, and Type O has neither of these antigens. In the body, cells have antigens that serve as identification much as a passport would for us. These various antigens can either be sugars or proteins and the number of antigens on a single cell can be in the millions. The ABO antigens are sugars. There are multiple types of antigens other than just A or B that can be located on an individual's RBCs.

The functions of many of these additional antigens are unknown, but their absence also does not seem to have much impact on RBC function.⁸ Antigens are

useful to the body by helping the immune system decide whether something is foreign or not. The immune system skips over the recognized or familiar blood type antigens but quickly reacts to other markers as needed. Let's go back to the passport analogy. If someone were attempting to enter their home country, for which they have a passport, there would be no difficulties in their process of returning. However, if they do not own a passport to a specific country, there may be some sort of hold-up simply because they are coming into a country that is not where they originated. Keep this analogy in mind as we continue discussing blood types.

Blood Type Inheritance

As stated earlier, the genes you inherit from your parents determine your blood type. In the inheritance of genes traits are either dominant or recessive. The dominant trait will be displayed whenever it is present but the recessive trait will only be shown if there is no dominant trait to mask it. When talking about blood type we are only concerned with three alleles: the A, B, and O alleles. Alleles are variations of a specific gene.¹⁰ For example, if a gene codes for hair a certain allele would determine the hair color. If an individual inherits an A allele they will display that antigen on their red blood cells and if they inherit a B allele they will display that antigen. However, if one inherits an O allele there is simply a lack of antigen displayed. This is illustrated below in Table I:

From the information in Table I we can tell that the A and B alleles are both dominant alleles and the O allele is recessive. The O allele does not produce an antigen. The A and B alleles are co-dominant meaning that when they are present

they will produce an antigen.¹⁰ Below, in Figure 1a-d, shows an example of what the various blood types and their antigens look like.

Table I: Inheritance of Blood Type Alleles. Diagram modeled after Emory University Medical School¹¹

Parent 1 Allele	Parent 2 Allele	Offspring's Genotype	Offspring's Phenotype (Blood Type)
A	A	AA	A
A	O	AO	A
B	B	BB	B
B	O	BO	B
A	B	AB	AB
B	A	AB	AB
O	O	OO	O

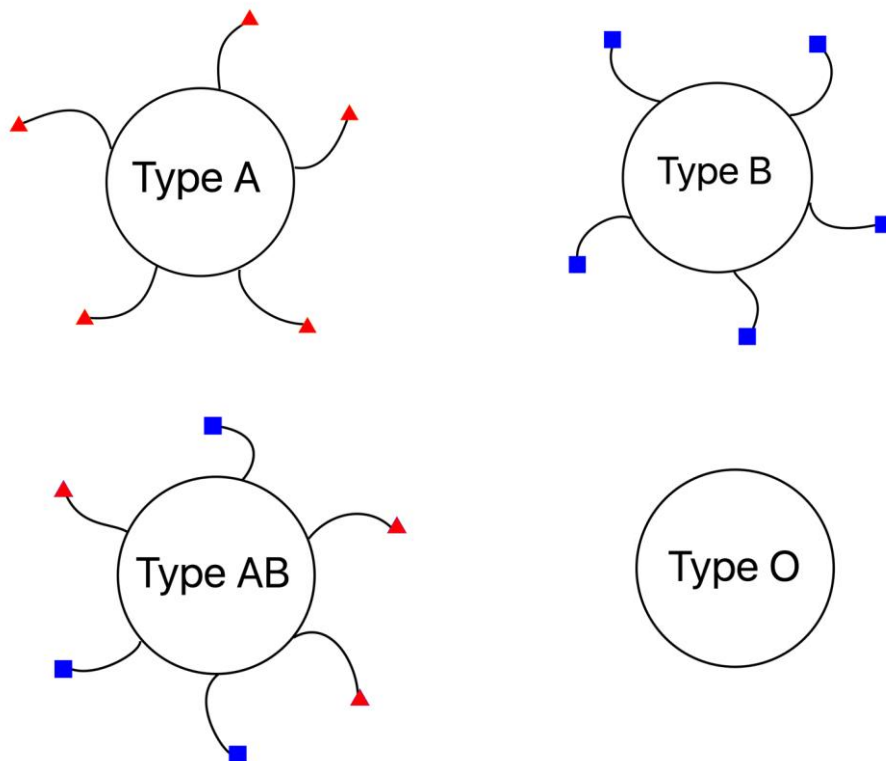


Figure 1: Representation of four blood types and their antigens

The Rh Factor

The Rh factor is another aspect of blood type. Rh is short for rhesus, as in the monkey. When Karl LandSteiner and Anthony Wiener discovered this antigen in 1940, there was thought to be a connection between humans and rhesus monkeys. However, it was later noted that there was indeed no correlation. However, the label “Rh factor” had already been coined.¹² The Rh antigen is present on an individual’s red blood cells if the gene is inherited, meaning it is a dominant trait. There are two alleles, D (which is dominant) and d (which is recessive). Those that are homozygous dominant (DD) and heterozygous (Dd) will be Rh positive. The only way one is Rh negative is by being homozygous recessive (dd).

The most important information concerning the Rh factor is involved during pregnancy when a woman, who is Rh negative, has a child with a father who is Rh positive. The reason this is an issue is because during birth the mother’s and the baby’s blood could mix, causing the antibodies in the Rh-negative mother to react with the Rh antigens present in her baby’s blood.¹³ This particular condition, known as mother-fetus incompatibility, does not typically result in complications. Palomar College reports that only “1 out of 1000 babies are born with this condition” in the United States. Studies in Europe also showed that a significantly low percentage of births that deal with mother-fetus incompatibility end up having major complications.¹²

The Rh factor does not show a noticeable differentiation concerning the blood type diet.¹⁴ But it is useful to know what transfusions can occur without harming results. Figure 1 shows the ways a transfusion can successfully occur. The

donor's blood type is listed on the left side going across and the recipient's blood type is on the top going down. For this figure, the donor is only donating RBCs, not plasma which contains antibodies. A green box means a successful transfusion can occur. A red box means a beneficial transfusion would not occur.

		Recipient Blood Type							
		O+	O-	A+	A-	B+	B-	AB+	AB-
Donor Type	O+	Green	Red	Green	Red	Green	Red	Green	Red
	O-	Green	Green	Green	Green	Green	Green	Green	Green
	A+	Red	Red	Green	Red	Red	Red	Green	Red
	A-	Red	Red	Green	Green	Red	Red	Green	Green
	B+	Red	Red	Red	Red	Green	Red	Green	Red
	B-	Red	Red	Red	Red	Green	Green	Green	Green
	AB+	Red	Red	Red	Red	Red	Red	Green	Red
	AB-	Red	Red	Red	Red	Red	Red	Green	Green

Figure 2: Compatibility of blood type transfusions

The Blood Type Diet

The importance of blood to the human body is undeniable. But someone's blood type has another important factor. The idea of eating healthy has a vast amount of definitions. What comes to mind when "healthy foods" are brought up? A salad with a light, non-fat dressing? The lower calorie option? Baked instead of fried? Many claims come across as being *the* answer to health and dieting. All of these possibilities mean one thing: one has to take careful consideration of what they are going to implement within their lifestyle concerning their food choices. And amidst all of the options there is a claim that an individual's blood type could provide a link in determining how one should eat.¹⁴

A Father's Legacy

The Blood Type Diet was introduced in 1996 by Dr. Peter J. D'Adamo when he released his book "Eat Right 4 Your Type". To date this book has sold more than seven million copies worldwide and has been translated into 65 different languages. NutriBooks says it is "one of the ten most influential health books ever written." Dr. Gerhard Uhlenbruck from the University of Cologne said that Dr. D'Adamo is "one of the most creative scientists in the Western world."¹⁵ The 20th Anniversary Edition was just recently released with updated lists and new information based on the movement of medicine in today's world.

Though D'Adamo's book and work has been widely successful, it was from the research of his father that the concept of the Blood Type Diet was conceived. Dr. James D'Adamo was a naturopathic physician who trained in the United States, Germany, and Switzerland and also worked in parts of Canada, Europe, and

Mexico.¹⁶ His pursuit of blood type connections began as he worked at several of the “great spas” in Europe. He started noticing how many of his patients thrived on a strict vegetarian diet while others had no improvements or had a decline in their health. As he set out to find some kind of link a correlation began to show up in his patients concerning their blood type, diets, and physical activity.¹⁴ He saw that individuals with blood Type A seemed to benefit the most from the vegetarian-based diet but react poorly to diets high in animal protein, while the Type O patients thrived on higher amounts of animal protein in their diet. He also noticed that Type A’s felt much more energized after lighter forms of exercise, such as yoga, as opposed to Type O’s who enjoyed the more intense activities, like jogging or aerobics.¹⁴

His conclusions were compiled into his book *One Man’s Food* which was published in 1980.¹⁶ At this time, Peter D’Adamo was in his third year of naturopathic school at John Bastyr College. In 1982, Peter was in his senior year and took it upon himself to research his father’s blood type connection theory. The evidence given at that point had mostly been out of speculation; there was no statistical data that was able to prove any conclusions from the proposed theory. Peter’s initial findings suggested that there might be connections between stomach diseases and specific blood types, which was all he needed to kick-start his passion that resulted in the Blood Type Diet.¹⁴

Blood Type Origins

As discussed previously, blood typing is placed into four main categories: A, B, AB, and O, otherwise known as the ABO system. According to Dr. D’Adamo, this

system determines what kind the kinds of food one should eat, the exercises that benefit them the most, diseases they may be susceptible to, and other factors that effects one's lifestyle. D'Adamo even goes so far to claim that "(y)our blood type is older than your race and more fundamental than your ethnicity."¹⁴ Here is the origin story of the four groups according to D'Adamo:

Type O:

Type O is said to be the oldest of the blood types. D'Adamo proposes that it appeared around 40,000BC in Africa. Their diet was dependent on protein from large animals. In times when food was scarce, the Type O's were forced to incorporate roots, berries, nuts, and smaller animals into their diet.¹⁴

Type A:

Type A codes for agrarian and is said to have resulted from moving of Type O populations into other areas that forced them to become accustomed to dietary changes. Progressive mutations that were initiated by the change in lifestyle were said to have created the rapid change from the Type O allele to the Type A. Instead of a diet high in animal protein they were introduced to livestock and grains. These people were said to have "initially appeared somewhere in Asia or in the Middle East between 25,000 and 15,000 B.C."¹⁴

Type B:

Type B can be remembered as the balanced blood type. This blood type is said to have come about in a portion of the Type O population that moved to the colder climates of the Himalayas, a stark change from the hot savannahs in Africa. From there the new blood type group split, some going north into the Eastern parts of

Europe, and the rest to India and Asia. Their cultures were centered on herding and domestication, which meant a diet of meat and dairy products.¹⁴

Type AB:

Type AB stands for modern. According to D'Adamo, it is the youngest and the least common of the four types. D'Adamo claims it originated from the Type A Caucasians intermingling with Type B Mongolians just ten to twelve centuries ago. D'Adamo also says, that "Type AB is rarely found in European graves prior to A.D. 900."¹⁴

The Lectin Problem

From discussing the process of digestion earlier, we see that food is broken down primarily in the stomach and that nutrients begin to enter the blood stream through the villi of the small intestine.⁴ Here is where lectins come into play. Lectins are defined as a family of proteins with binding properties that create a type of glue that serves a multitude of purposes within an organism.^{17, 18} Lectins are found within foods, plants, animals, and microorganisms.¹⁴ They play a role in the blood type diet because of the way they interact with the blood and other bodily cells. D'Adamo says, "When you eat a food containing protein lectins that are incompatible with your blood type antigen, the lectins target an organ or bodily system . . .and begin to agglutinate blood cells in that area." When cells agglutinate, or clump together, it can cause inflammation and problems within the body. For example, agglutination "can cause irritable bowel syndrome in the intestines or cirrhosis in the liver, or block the flow of blood through the kidneys".¹⁹ When the body breaks down foods, certain responses could come about depending on what lectins are present in the food and how they interact with one's blood type.

Lectins play a major role in the workings of the body as they digest the nutrients in foods. Lectins can either be harmful or helpful components to one's body depending on how they interact with the antigens present on their cells. The harmful lectins cause agglutination of the blood cells that tends to slow down the metabolic rate, causing irritation, inflammation, and other less than desirable processes. When metabolic rates slow down it is a result of the body becoming distracted as it takes care of the clumping of cells. The slowed metabolism causes weight gain because as agglutination occurs, the immune system receives a message that something is not right and until that issue is properly taken care of, the body will slow down its rate of function to focus specifically on this new situation.¹⁹ If all the foods one consumes create situations like this in their body, weight gain can be a very possible byproduct.

However, the same mentality can be used when speaking of the helpful lectins only with beneficial byproducts. As stated before, lectins can be a sort of biological glue. When working in favor of the body this glue is quite effective in the removal of toxic components that intend to harm. In this way the lectins are helping with the metabolic process because there is no distraction or message sent that says something is not as it should be. The body is able to work as efficiently as it was designed to. According to Joseph Christiano, author of *Bloodtypes Bodytypes and You*, "eating compatible food for your blood type assists the body in losing weight by eliminating excess toxins that are stored in the fat cells, which in turn shrinks the size of your fat cells." He also compares the compatible foods to medicine, that they "heal and repair bodily functions."¹⁹

What Can Blood Type Diet Do For You?

With all of the diets available in today's world there is a constant basis that coincides them all: that being on a specific diet will help you lose weight. Losing weight is a wonderful goal to strive for and one that is not always easy to attain. The methods for losing that weight can vary amongst different diets; some promise rapid weight loss in very short periods of time and others promote the more gradual decline on the scale. But what if losing weight was just one factor among others that came along with a diet? Dr. D'Adamo, and other Blood Type Diet advocates, believe that the blood type diet will not only help you lose weight but also bring about some other useful qualities that add to one's well-being.

First off, the primary reason anyone should want to incorporate a diet in their life is to become a healthier individual than they were when they started. The blood type diet promises healthy benefits as more beneficial foods are incorporated and the harmful ones are dodged. Yes, weight loss is likely result of following this diet. Along with that D'Adamo has reason to believe that by following the blood type diet, one could have a "Power over disease" such as "aging diseases, allergies, asthma . . . autoimmune disorders. . ." and even cancer.

One of the more prevalent topics when discussing blood type and disease is the link to cancer. Blood Type Diet advocates and those not affiliated with it agree that some blood types are more prone to cancer than others. Studies have shown that non-O blood groups have a higher risk of gastric cancer than type O, with significant risk seen in type A and type B.²⁰ Another study has shown the greater risk for non-O blood types contracting pancreatic cancer as well.²¹

Other Common Diets

One of the ideas Christiano stressed is the individual aspect of dieting. During my interview with him he gave an example of individuality between him and his wife. Both of them are Type O. One of the foods listed on the “Avoid” section for their blood type is black pepper. Despite it being listed in that category Christiano says that his wife has no problem with adding this seasoning to her meals. However his body negatively responds whenever he consumes any. Though we might share blood types with others, the lists might not be so cut-and-dry. Nutritionist Julie Daniluk says that our bodies might be just as unique as our personalities.²² Taking that into consideration can give reason to why some diets other than the blood type diet work well for others. Here are a few of the more common ones and how they might relate to the blood type theory.

The Paleo Diet

The Paleo Diet originated from Walter Voegtlin and his book “The Stone Age Diet” which was written in 1975. Since then the works of Dr. Loren Cordain have popularized the diet. The Paleo Diet proposes that the human body will benefit the most from eating foods similar to the ones that humans ate in the Stone Age. This includes meat from grass-fed animals, fish or seafood, fresh fruits and vegetables, eggs, nuts and seeds, and healthy oils including olive, walnut, flaxseed, macadamia, avocado, and coconut. The types of foods recommended to avoid are cereal grains, legumes and peanuts, dairy products, refined sugar, potatoes, processed foods, refined vegetable oils, and salt.²³

This diet regimen lines up closely with the Type O diet. Like the Paleo diet, type O relies heavily on animal protein, whereas Type A and AB would especially not do well on the Paleo diet. Type B would suffer on the Paleo diet because of its exclusion of dairy products. Type O is one of the more common blood types, which might relate to why the Paleo Diet has been successful for many people.

The Vegetarian/Vegan Diet

Vegetarians only eat foods that do not come from animals. Some include dairy products and eggs in their diet (ovolactovegetarians) and some do not (vegan). In addition to these food choices, many vegans prefer to not use any products that either come from or are tested on animals. For example, some vegans do not consume honey, since it is a product of bees.²⁴

According to D'Adamo the vegetarian diet would fit well for those with blood type A. This is because they do not have any meats listed as beneficial to their diet. However there is some seafood listed as beneficial to those with type A blood. A vegetarian diet could be beneficial to many people since blood type A is one of the more common blood types.²⁵

The Mediterranean Diet

The Mediterranean Diet is another popular eating style. This is a diet that relies heavily on fruits and vegetables, whole grains, olive oil, beans, nuts, seeds, herbs and spices²⁶. Fish and poultry are recommended at least two times a week whereas red meat is placed with sweets in the very limited category (a few times a month at most). This diet is similar to the Type A plan because of the importance of

vegetables and fruits, the neutrality of chicken and seafood, and the avoidance of red meat.

A meta-analysis published in 2008 compiled studies from 1966 to 2008 that tracked over 1.5 million individuals who lived by the Mediterranean diet to see detect any “association between adherence to a Mediterranean diet, mortality, and incidence of diseases”.²⁷ The study indeed saw that those individuals following the Mediterranean diet had decreased risk of mortality from cardiovascular disease, incidence of Parkinson’s disease and Alzheimer’s disease.

How to Apply the Blood Type Diet

Now for the important part: what can, or should, one eat for their respective blood type? Within *Eat Right 4 Your Type* Dr. D’Adamo has compiled a vast list of foods, some very common and some that may be hardly known. Each of the food items have been placed into one of three categories for each blood type: Highly Beneficial, Neutral, or Avoid. On the three categories, D’Adamo says, “High Beneficial is a food that acts like a Medicine . . . Neutral is a food that acts like a Food . . . Avoid is a food that acts like a Poison.”¹⁴ But what makes a food be characterized by one of those categories? It comes down to how the food interacts with the body, specifically their blood.

Now, based on what is known about the origins of blood types and the problem with lectins let’s look at the kinds of food that should either be avoided or incorporated for someone who is following the Blood Type Diet (Table II). Notice, however, that these lists are more of a brief overview of the extensive lists that have been compiled by Dr. D’Adamo. Access to those lists can be found in the book *Eat*

Right 4 Your Type¹⁴ or by visiting dadamo.com.¹⁵ In the following table, the foods listed are those that are, for the most part, more common.

Table IIa

Type O

Category	Highly Beneficial	Neutral	Avoid
Meat/Poultry	Beef, Veal, Venison	Chicken, Turkey	Pork (all)
Seafood	Cod, Rainbow trout, Swordfish, Yellowtail	Crab, Lobster, Mahi-mahi, Mussels, Oysters, Shrimp, Tuna	Barracuda, Catfish, Herring, Smoked Salmon, Octopus
Eggs/Dairy	None	Chicken egg, farmer cheese, Feta cheese, Goat cheese, Mozzarella cheese	Buttermilk, Cheese (American, Blue, Cheddar, Colby, Cottage, Gouda, Monterey Jack, Parmesan, Provolone, Ricotta, String, Swiss), Ice cream, Milk (Cow, Goat, Coconut), Whey, Yogurt
Oils/Fat	Flaxseed, Olive oil	Canola, Sesame	Corn syrup, Peanut
Nuts/Seeds	Flaxseed, Pumpkin seed, Walnuts (black/English)	Almonds, Pecans, Sesame seeds/butter,	Cashew, Peanut & peanut butter, Pistachio
Beans/Legumes	Adzuki bean, Black-eyed peas	Bean (Black, Green, Lima, String)	Kidney, Lentil, Navy
Grains/Breads	Essene bread	Bread (Gluten-free, rice, spelt, soy)	English muffin, Cornmeal, Wheat
Vegetables	Broccoli, Collard greens, Kale, Lettuce (romaine), Onion, Sweet potato, Spinach, Turnip	Asparagus, Beet, Carrot, Celery, Lettuce, Radish, Squash, Tomato, Yam, Zucchini	Cauliflower, Corn, Mustard greens, Black olives, Pickles, Potatoes (non sweet),
Fruits	Banana, Fig, Plum, Prune	Apple, Cranberry, Grape, Grapefruit, Lemon, Lime, Peach, Pear, Pineapple, Raisin, Raspberry, Strawberry, Watermelon	Blackberry, Cantaloupe, Honeydew melon, Orange, Plantain, Tangerine

Table IIb

Type A

Category	Beneficial	Neutral	Avoid
Meat/Poultry	None	Chicken, Turkey	Pork, Beef, Lamb, Veal, Venison
Seafood	Cod, Salmon, Sardine, Snail, Trout	Bass, Mahi-mahi, Shark, Swordfish, Tilapia, Tuna	Catfish, Crab, Crayfish, Frog, Lobster, Mussel, Octopus, Oyster, Shrimp
Dairy/Eggs	Soy milk	Egg (chicken, duck), Cheese (Farmer, Feta, Goat, Mozzarella), Yogurt	Cheese (American, Cheddar, Cottage, Cream), Butter, Ice cream, Cow's milk, Whey
Oils/Fats	Flaxseed, Olive oil	Canola oil	Corn, peanut
Nuts/Seeds	Flaxseed, Peanut/peanut butter, Pumpkin seed	Almond (butter, milk), Pecan, Sesame seed & butter, Sunflower seed & butter	Cashew, Pistachio
Beans/Legumes	Bean (Black, green, soy), Black-eyed pea,	Pea (green, pod, snow), Cannellini bean	Bean (Copper, Kidney, Lime, Navy), Chickpea
Breads/Grains/Pasta	Ezekiel bread, Oat Flour, Soba noodles	Corn muffin, Gluten-free bread, Spelt bread, Rice,	English muffin, pumpernickel, whole wheat bread
Vegetables	Beet greens, Broccoli, Carrot, Collard greens, Garlic, Onion, Pumpkin, Spinach, Turnip	Asparagus, Beet, Brussel sprouts, Cauliflower, Corn, Cucumber, Iceberg lettuce, Squash, Zucchini	Cabbage, Eggplant, Black olives, Peppers, Potatoes, Tomato, Yam
Fruits	Blackberry, Blueberry, Cherry, Cranberry, Grapefruit, Lemon, Pineapple, Plum, Prune	Apple, Avocado, Grape, Kiwi, Peach, Pear, Pomegranate, Raspberry, Star fruit, Strawberry, Watermelon,	Banana, Coconut, Mango, Honeydew Melon, Orange, Papaya, Plantain, Tangerine

Table IIc

Type B

Category	Highly Beneficial	Neutral	Avoid
Meat/Poultry	Lamb, Rabbit, Venison	Beef, Turkey, Veal	Pork, Chicken, Duck, Quail
Seafood	Caviar, Mahi-mahi, Pickerel, Salmon, Sardine	Catfish, Squid, Swordfish, Tilapia, Tuna	Anchovy, Bass, Crab, Crayfish, Frog, Lobster, Oyster, Shrimp
Dairy/Eggs	Cheese (Cottage, Farmer, Feta, Goat, Mozzarella), Milk (cow, goat), Yogurt	Butter, Cheese (Cheddar, Colby, Cream, Parmesan, Swiss), Chicken egg, Sour cream, Whey	Cheese (American, Blue, Soy, String), Ice cream, Egg (duck, goose, quail), Soy milk
Oils/Fats	Olive oil	Flaxseed	Avocado, Canola, Coconut, Corn, Peanut, Sesame
Nuts/Seeds	None	Almond, Pecan, Walnut	Cashew, Hazelnut, Pistachio, Peanut, Pumpkinseed, Sesame, Sunflower
Beans/Legumes	Bean (Kidney, Lima, Navy),	Bean (Copper, Green),	Bean (Black, Pinto, Soy), Black-eyed pea, Chickpea, Lentil
Breads/Grains/Pasta	Bread (Brown rice, Ezekiel), Flour (Oat, Rice, Spelt)	Gluten-free bread, Quinoa, Rice (white, brown, basmati)	Corn muffin, Bread (Gluten, Whole Wheat, Rye, Pumpernickel), Buckwheat, Couscous, Wild rice
Vegetables	Broccoli, Cabbage, Carrot, Cauliflower, Collard greens, Eggplant, Peppers, Sweet potatoes	Asparagus, Celery, Cucumber, Lettuce, Horseradish, Mushroom, Spinach, Squash, Turnip, Zucchini	Artichoke, Corn, Olive, Pumpkin, Radish, Tomato
Fruits	Banana, Cranberry, Grape, Pineapple, Plum, Watermelon	Apple, Blackberry, Blueberry, Cherry, Grapefruit, Lemon,	Coconut, Persimmon, Pomegranate

		Lime, Mango, Orange, Peach, Pear, Raisin, Strawberry	
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Table II d

Type AB

Category	Highly Beneficial	Neutral	Avoid
Meat/Poultry	Turkey	Lamb, Liver, Pheasant	Pork, Beef, Chicken, Venison
Seafood	Mahi-mahi, Pickerel, Salmon, Sardine, Tuna	Catfish, Caviar, Scallop, Shark, Tilapia,	Crab, Crayfish, Eel, Frog, Lobster, Oyster, Shrimp
Dairy/Eggs	Cheese (Cottage, Farmer, Feta, Mozzarella), Goat milk, Sour cream	Cheese (Cheddar, Colby, Cream, Monterey Jack, String, Swiss), Chicken egg, Milk (Almond, Cow, Soy)	Cheese (American, Blue, Parmesan, Provolone), Butter, Ice cream
Oils/Fats	Olive, Walnut	Canola, Flaxseed, Peanut	Cottonseed, Sunflower, Sesame
Nuts/Seeds	Chestnut, Peanut & Peanut Butter, Walnut	Almond, Cashew, Macadamia	Hazelnut, Pumpkin seed, Sesame seed, Sunflower seed
Beans/Legumes	Lentil, Navy bean, Soybean	Bean (Copper, Green, white)	Bean (Black, Kidney, Lima), Black-eyed pea, Chickpea
Breads/Grains/ Pasta	Bread (Brown rice, Ezekiel, Rye), Flour (Oat, Rice, Rye)	Bread (Gluten- free, Whole wheat), Couscous, Flour (gluten, whole wheat), Quinoa, Pumpernickel	Corn muffins, Kasha
Vegetables	Beet greens, Broccoli, Cauliflower, Celery, Collard greens, Cucumber, Eggplant, Kale, Sweet potato	Asparagus, Cabbage, Carrot, Lettuce, Onion, Potato, Spinach, Tomato, Zucchini	Artichoke, Corn, Olive, Pickles, Radishes
Fruits	Cherry, Cranberry, Grape, Grapefruit, Kiwi, Lemon, Pineapple, Plum	Apple, Blackberry, Blueberry, Lime, Nectarine, Peach, Pear, Prune,	Avocado, Banana, Coconut, Mango, Orange, Pomegranate

		Raisin, Raspberry, Strawberry, Tangerine	
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Survey Results

It is important for individuals to be aware of their blood type, mainly in case of an emergency when a blood transfusion might be needed. But how many people actually know their blood type? An anonymous survey was conducted on the campus of Ouachita Baptist University that asked this question along with a few others. The results of the 316 responses are given in Figure 2.

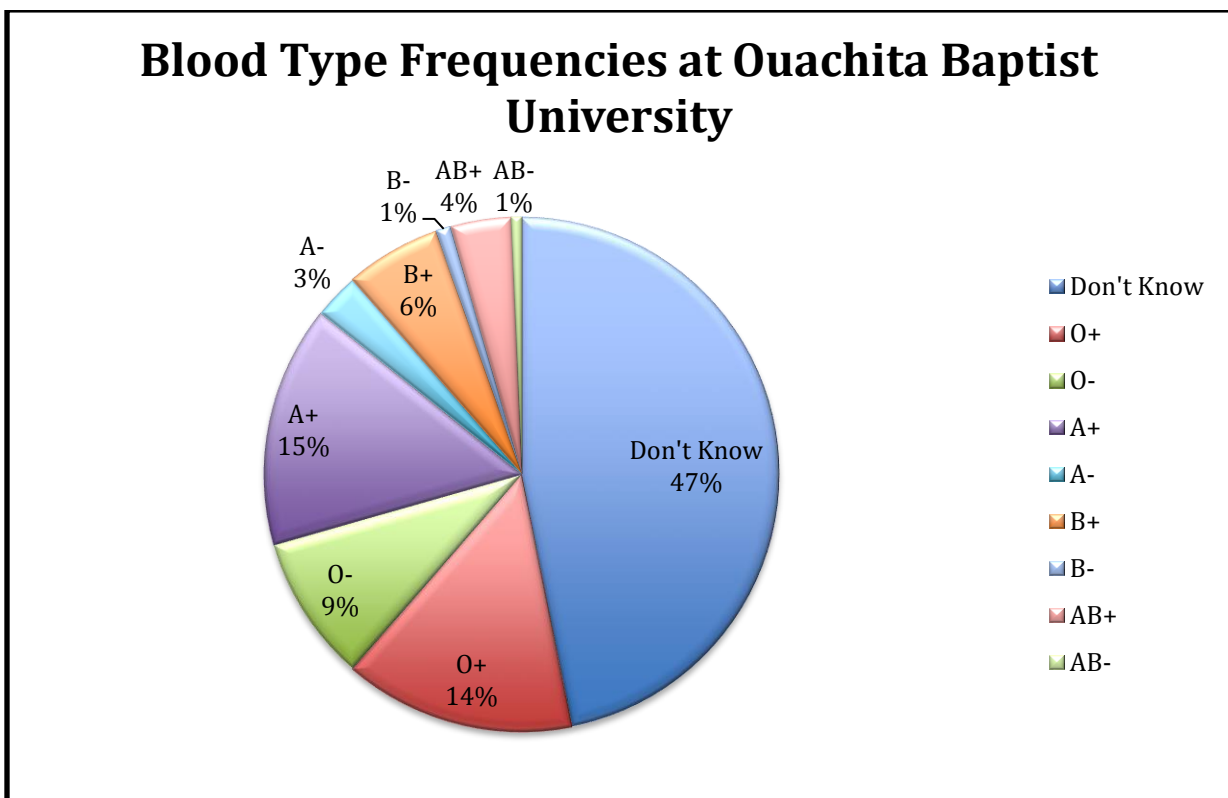


Figure 3: Percentage of known blood types of 316 responses. Percentages are rounded.

Before sending out the survey, I was expecting there to be an overwhelming majority of responses saying that they did not know their blood type. However, 53%

of responders claimed to know their blood type. Of that 53%, Type A+ was the most common (48 responses) and Type AB- was the least common (2 responses). A similar study was published in 2004 that also looked at the blood types frequencies but on a much larger scale. Those findings are shown in Figure II. This study had a pool of 3.1 million individuals, all of which gave blood at five different blood centers in the United States of America.²⁵

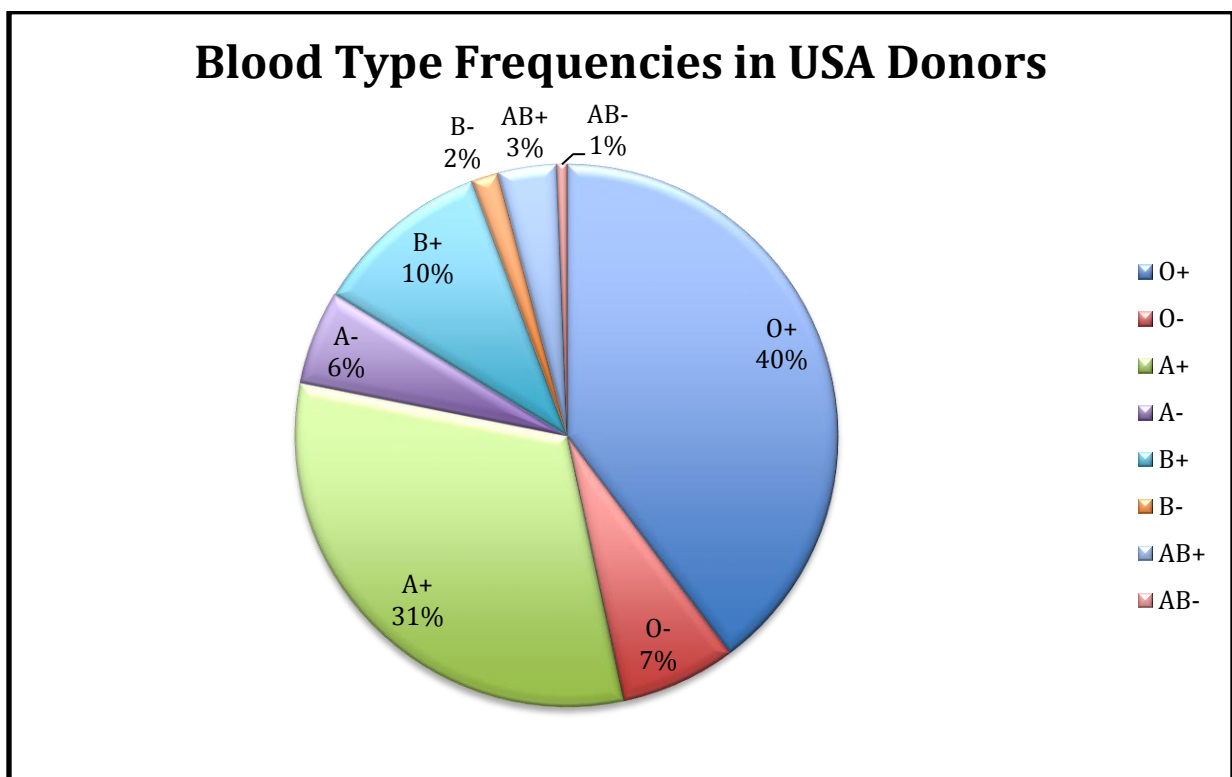


Figure 4: Blood Type Frequencies courtesy of Garratty et al.²⁵

Research: For & Against

How can one verify that the Blood Type Diet does indeed live up to all its promises? Dr. D'Adamo has different methods of demonstrating how lectins interact with certain blood types. For example, D'Adamo has purchased isolated food lectins from laboratories and can see under a microscope when agglutination takes place.

He has used this technique to test “virtually all common foods for blood type reactions, using both clinical and laboratory methods.”¹⁴ The Indican Scale is another resource used by D’Adamo. This is a type of urine test that measure bowel putrefaction, which is the shown by the amount of proteins not properly metabolized. For the Blood Type Diet, these improperly digested proteins are the lectins of foods that listed under “Avoid”. The lectins can create harmful by products called indols. Indican is a specific type of indol. The Indican Scale is measured on a range from 0 to 4 with 0 being the lowest and most favorable condition and 4 being the highest and least favorable condition. On average, patients will come to Dr. D’Adamo with an 2½ on the scale which is a score that shows “more than enough toxicity to indicate a problem.” D’Adamo says that “after only two weeks of faithfully following the Blood Type Diet, that person’s Indican Scale number will drop to 1 or even 0.” This is a test that can be conducted by request of your doctor.¹⁴

The trouble with convincing people to believe in the Blood Type Diet is the lack of available research. In “A Critical Examination of Blood Type Diets” Loren Cordain disagrees with Dr. D’Adamo on several points. Cordain says that D’Adamo’s success is due largely to the fact that his recommendations will work for the majority of the general population anyway. Cordain, the famous Paleo Diet guru, sticks to his guns and says that the Blood Type Diet appears advantageous because of the high Type O population that have a diet structured similar to the Paleo Diet. He also does not agree on D’Adamo’s origin stories of the blood types but insists that Type A is the oldest blood type.

Author and physician Dr. John Briffa stated that he believes that the Blood Type Diet might help certain people but he “doubts the benefits have anything to do with someone’s blood type.” He says that D’Adamo’s lectin-centered assumptions are not logical and that the testing methods D’Adamo discusses in his book do not suffice as reasonable evidence. Briffa says that “these experiments do not reflect what happens in nature.” He states that through the process of preparation, cooking, and digestion some lectins are rendered inactive before they reach the gut.²⁸

Briffa also brings up a systematic review from 2013 that analyzed published studies on blood type diet correlations. The goal was to answer a specific question: “In humans grouped according to blood type, does adherence to a specific diet improve health and/or decrease risk of disease compared with non-adherence to the diet?” The studies were identified using the GRADE approach (Grading of Recommendations, Assessment, Development, and Evaluation) and out of sixteen identified studies, only one met the criteria of this review. This single study examined “the variation between LDL-cholesterol responses of different MNS blood types to a low-fat diet.” It did not answer the stated question of the systematic review. Thus, the authors did not find any scientific evidence concerning the health advantages of following an ABO-focused diet.²⁹

The Ideal Study

One note that is consistently brought up amongst those who are against the blood type diet is that there is not enough adequate research to back up the conclusions made by D’Adamo, Christiano, and other Blood Type Diet followers. They do not believe that there is valid evidence that displays significance within the

theory. What studies have been released often have flaws in their testing methods. Though D'Adamo has conducted research of his own,¹⁴ there still seems to be holes in studies that have been carried out, leaving critics with unsatisfied results.

I was given the opportunity to speak with Dr. Joe Christiano, a naturopathic doctor and a certified nutritional counselor. He has been working in nutrition and exercise for over 35 years and is a successful advocate of the Blood Type Diet.³⁰ During the interview with Dr. Christiano, I brought up this issue of the lack of evidence and asked for his response. He said, "In order for there to be no scientific evidence within the Blood Type Diet, there must be just as strong evidence that it does not work."³¹ In the section containing the research against the Blood Type Diet, there was a particular study, the PLOS study, which concluded there was no reason to believe the usefulness of the Blood Type Diet.³² However, when carefully examining the methods the study used to test the diet, one can see that the tests were not carried out in a manner that followed the Blood Type Diet appropriately. Participants simply kept a record of the foods they consumed, with no preference to follow the Blood Type Diet guidelines. The results are not truly based on participants using the Blood Type Diet, and therefore neither prove nor disprove its effectiveness.

What would it look like to carry out a study that could accurately test whether the Blood Type Diet is in fact all that its advocates claim it to be? With the premise of an unlimited budget, I have conceptualized an ideal study that could properly examine whether the Blood Type Diet lives up to all of its claims.

- Study population. An important way to detect effectiveness is by using a large study population. This can ensure that any significant patterns will have a greater chance of being seen. The more common results will be an accurate representation of how the general population would be affected. A study could be conducted that follows all the correct guidelines but if the study population is not very large, the results may not be viewed as reliable. For this idealized study, an optimal number of 100 participants for each blood type would be studied.
- Control group. This group would consist of 100 individuals who are not following any particular diet. In essence, they are just living a normal life. The same data would be collected from them as those on the Blood Type Diet to give a better understanding of the differences between the lifestyles.
- Length. Ideally the participants would be tracked over the course of at least three months. This would give enough time to be able to observe the any effects in the health of the participants that a change in lifestyle might produce.
- Preliminary condition. The starting conditions of each participant would be taken before the implementation of the diet. A blood type test would be conducted to ensure each individual was following the appropriate plan. Once the study is concluded, this initial data would be a reference to see any significant changes from following the diet. Preexisting conditions such as Crohn's disease, diabetes, acne/skin disorders, cholesterol levels, blood pressure, heart disease, and other similar factors would be noted. A family

history could also be included to determine any predispositions towards specific disorders.

- Food plan. The most vital factor in testing the effectiveness of the diet would involve diligently following the list of foods constructed by D'Adamo. To ensure that it is followed, foods might have to be pre-supplied and potentially prepared to guarantee adherence to D'Adamo's recommendations. An accurate log would also have to be maintained. This could be done either by a food journal or a smart-phone app. The objective would be to consume primarily beneficial foods with neutral foods present in lesser amounts. For the purposes of this study, the foods on the "Avoid" list would be excluded completely.
- Exercise. Not only should the patients eat correctly but they should supplement their lifestyle with the exercise recommended for their specific blood type. According to D'Adamo each blood type benefits from certain styles of exercise that can range from high-intensity training to meditation and yoga. A trainer, training videos, or a detailed description of exercises would be provided to confirm that proper routines are carried out.
- Demographics. The following factors would need to be considered: age, sex, and ethnicity. Preferably there would be half male and half female for each of the blood types and an even distribution of other factors.
- Laboratory tests. Preferably on a monthly basis, participants would go through blood tests. The use of blood tests could track levels of cholesterol (total, HDL, and LDL), glucose levels, triglycerides, insulin, and free fatty

acids. Waist circumference, weight, body mass index, and blood pressure would also be logged regularly. Indican Scale tests, which were previously discussed, can also be performed to detect toxins in the body.¹⁴

This list provides the basics of an ideal study where the Blood Type Diet could accurately be examined in all the blood types. However, there are other factors that could also be analyzed including, but not limited to, sleep, leukocyte counts, and the gut flora.

Snack Recipes

An easy way to incorporate the Blood Type Diet is through snacks. Changing your ways of eating is not an easy thing, especially when it comes to big meals for large families. While some sacrifice is expected for any dietary adjustments, that does not mean it should be impossible. Should one want to incorporate the Blood Type Diet into their lifestyle, making snacks is an easy way to get started. In his book *Bloodtypes Bodytypes and You* Dr. Joseph Christiano gives his readers a multitude of recipes for every meal, in addition to desserts and snacks.¹⁹ One of the snack options is trail mix and Christiano lists out the various ingredients used for the trail mix recipes. After going through the different ingredients he had listed for the trail mixes, many of them fell into the “Neutral” or “Highly Beneficial” categories for all four blood types. Taking those, I have a recipe for a universal trail mix that is good for all four of the blood types.

Universal Trail Mix recipe:

½ cup of apples (dried) or raisins or black currants

1 ¾ cup of walnuts or almonds or hickory nuts

½ cup of carob chips or chocolate chips (non-milk chocolate preferred)

*an addition of honey can be added for sweetness

Some other ingredients that Christiano listed for his trail mix recipes were red currants (O, B, AB), unsalted redskin peanuts (A, AB), cashews (AB), and sunflower seeds (O, A). These can be added to a trail mix, depending on the eater's blood type. For someone interested in integrating the Blood Type Diet into their life, there are many options available for finding meals, snacks, desserts and other information that comes from D'Adamo's and Christiano's work. However, snacks like this trail mix are an easy way to get started. By permission from Dr. Joe Christiano, here is a list of a few other trail mix recipes found in his book *Bloodtypes Bodytypes and YOU*.¹⁹ The Nutrient Analysis for each of these three recipes can be found below (Table III). The nutrients listed are the nutrients available within the entire recipe given.

Apple "Pie" Trail Mix – For A & O

¼ cup black currants

½ cup almonds

¼ cup dried apple pieces

¼ cup pumpkinseeds

1 cup walnuts

Apple Walnut Trail Mix – For B & O

¼ cup black currants

½ cup almonds

¼ cup dried apple

¼ cup pecans

1 cup walnuts

½ cup carob or chocolate chips

Peanut Chocolate Trail Mix – For A & AB

- ¼ cup black currants
- ½ cup filberts
- 1 cup unsalted redskin peanuts
- ½ cup carob or chocolate chips
- ½ cup almonds

Table III: Nutrient Analysis of Snacks

Nutrient	Apple “Pie”	Apple Walnut	Peanut Chocolate
Calories (kcal)	1103	1481.9	2602.1
Protein (g)	76.5	65.7	109.8
Carbohydrates (g)	24	75.8	112.1
Fat, Total (g)	213.7	250	285.1
Saturated Fat (g)	20	49.1	59.7
Sodium (mg)	54	32.6	924.3
Sugar (g)	38	38.3	12
Vitamin A (RE)	18.3	37.4	19.8
Vitamin C (mg)	8.3	7.4	0.28
Calcium (mg)	650.9	981.6	1250.4
Iron (mg)	16.8	10.2	17.7

Conclusion

Food is a big deal. It is an essential component of living and an enjoyable aspect of our daily routines. Food is fundamental to cultures and can be carried through families for generations. It is a way of life. For something as vital as food, there should be a natural inclination to eat in a way that supports our bodies the most. One of the arguments circulating throughout the world of nutrition is the idea that there is a diet that is the “One True Way”, a diet to end all others. As I have studied the Blood Type Diet and incorporated it further into my life, I have noticed

how I have personally benefited. However, I have nothing to go off of other than how I feel.

Personally I believe that there is something to the Blood Type Diet. After reading multiple success stories I can also tell that I'm not the only one for which it has worked. But I am aware that the Blood Type Diet might not be for everyone. I can understand the frustration behind searching for an effective diet; the amount of effort it takes to radically change one's lifestyle can be strenuous, time consuming, and still may not give desired results. What then? If changing the way you eat might not even work, why go through the process of making the change?

When asked about the discipline of getting healthy Hollywood star Chris Pratt gives some authentic yet practical advice. When asked how he dropped 60 pounds in six months he simply said, "Six months seems like a long time unless you're looking backwards... all you have to do is just a few things everyday and remain consistent, and time will fly just as fast as it flies if you're working hard or not. If you just cut the crap out of your diet, and if you spend an hour a day doing something physical that will make you sweat, six months will pass by, you will feel better mentally, physically, spiritually -- it all is tied together."³³

In my personal opinion, we owe it to ourselves to eat in a way that will set us up to live our lives to the fullest. I find myself thriving on of this diet designed for my blood type. By following it as best as I can for the past two years I have noticed changes in my health that I had never seen before. However, I would be lying if I said I always follow it. I cannot promise that changes will happen for everyone who tries it out but I would not be surprised if changes do come about.

Whatever diet, eating plan, or program you follow, stick with it and see whether your body benefits from it or not. Modify it to your own needs. Be willing to try new things that might be out of your comfort zone. And most of all be patient. In a culture laden with immediate gratification, one can so easily give up. As the old saying goes, nothing worth having ever came easy.

I would encourage anyone to try out the Blood Type Diet because I have been able to see the transformative aspects it has had on my life. But more importantly than a diet, I urge people to become informed on a subject that is so important.

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