THE FAT BIBLE

A Comprehensive Guide to Fats

(The Good, The Bad & The Ugly)

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INTRODUCTION

Fat is a complicated topic that inspires much debate among scientists and nutrition experts, but there's one thing everyone can agree on: There is no such thing as simply "fat." There are many different kinds of fats: some good, some good or bad, depending on certain factors, and some downright evil.

Foods often contain a wide variety of fats. For example, butter contains saturated fat, omega-3 fats, omega-6 fats, and monounsaturated fats. Some fatty foods such as nuts also contain protein and/or carbohydrates, which influence the effects of different fats on your body. Saturated fat, for instance, is bad when eaten with carbohydrates, but when eaten alone, not so much. See what I mean when I say it's easy to be confused about fat?

Because everyone looks at just part of the story, very smart scientists can have completely opposing views on fat. Some say omega-6 vegetable oils are healthy and others suggest they are lethal. Some promote the benefits of saturated fats, while still others declare their dangers. There is a way to think through these contradictory views.

There is a new framework for thinking about human biology. It tells a holistic story of how everything is interconnected. So much of our nutrition research is made up of population studies that suggest linkages but don't prove anything. For example, I could design a study to see if having sex leads to babies, but if I included only couples over 60 years old, I would conclude that sex does not result in babies. Silly, yes, but a lot of our research is done that way. Having an overarching theory allows us to make sense of the data. So what is that theory?

In systems biology, the dynamic real-time connections and interactions between environment, diet, and genetics can be mapped. The practical application of this approach is Functional Medicine. At its core, it addresses the root causes of imbalances that drive disease — imbalances that result from the interaction of diet, environment, and genes. This is personalized medicine; medicine that recognizes that we are all genetically and biochemically unique but are also hugely adaptable and as a species have thrived in diverse habitats and environments, on widely different diets. In Chapter 10 of my book *Eat Fat, Get Thin*, I review what I have come to understand as the foundational principles of an optimal human diet, which can vary greatly from culture to culture and be adapted to different preferences but is guided by a basic theoretical framework of what makes sense from an evolutionary and historical perspective.

Science is discovering the multidimensional role of food in health. Food is not just calories; it is information that instructs your body's minute-to-minute functions, which control all aspects of your health and risks for disease. We have co-evolved with the food in

our environment and use it to regulate every single bodily process, including our gene expression, inflammation, oxidative stress (damage from oxygen, like when an apple turns brown or a car rusts — think of it like rusting on the inside), hormonal function, immune function, gut flora balance, detoxification, metabolism, and much, much more. Insights from our historical diet can help guide us to choose foods that our bodies thrive on.

While Eat Fat, Get Thin is about fat, what it is, what types we should eat, and how much we should eat, there are wide differences in diets in different populations. For example, the Japanese consume 15 percent of their calories in the form of fat, the Mediterranean cultures consume 40 percent of calories as fat, and the Pacific Islanders and the Masai warriors consume mostly saturated fats. Yet none of these populations have the high rates of modern civilization diseases such as obesity, heart disease, diabetes, cancer, and dementia that we have in America.

The quality of our diet matters most. The starting point must be real, whole, fresh, unadulterated, unmodified foods. There are other things that contribute to weight gain and obesity besides what we eat — such as our genetics, activity levels, stress levels, gut flora, and environmental toxins and obesogens (toxins that cause obesity) — and that modify our risk of disease and even our response to different foods. But it is still true that the biggest determinant of our weight and our health is the food we eat.

And, a review of the research shows that for many traditional cultures across the globe, fat is coveted, special, and necessary. Tibetans put butter in their tea. In China, pork fat is sold as a delicacy and preferred to the meat. Traditional cultures always preferred the organs of animals, which are high in fat. The Plains Indians ate the liver and organs of the buffalo first. And most of us thrive on higher-fat diets, especially those with pre-diabetes and type 2 diabetes, or what I like to call diabesity.

Our diets are so different today than they were 12,000 to 14,000 years ago when we were hunter-gatherers. The agricultural revolution and the advent of animal husbandry led to the replacement of traditional foods with cereal grains and dairy. However, all food was still organic, grass-fed, and whole. Because of the Industrial Revolution, our diet has been transformed more in the last 100 years than it was in the previous 10,000. For example:

- the manipulation of crop genetics through increased hybridization and genetic modification;
- intensive animal husbandry in confined animal feeding operations;
- the refining of vegetable and seed oils, as well as cereal grains;
- the development of trans fats and high-fructose corn syrup;
- the dramatic decrease in omega-3 fats we obtained from wild foods; the increase in refined omega-6 oils;

- the use of chemicals (pesticides, herbicides, fertilizers, antibiotics, and hormones);
- and the depletion of nutrients in the soil.

The quality of our diet has dramatically declined. From the perspective of food as simply a source of energy and calories, none of this would matter, but the science has peeled back this simplistic view to reveal a powerful understanding of the role of food in all of our biological processes, from the regulation of which genes get turned on or off, to the regulation of hormones, the production of immune messengers and neurotransmitters, the balance of gut flora, and even the structure and composition of our cells, tissues, and organs.

Let's dig into the wide world of fats, so you can make sense of the different kinds and how they affect your biology.

PART I

Dietary Fats: The Good, Bad and the Ugly

Dietary fat, especially saturated fat, has been given a bad rap. The purpose of this eBook is to clear up the confusion and evaluate the science behind dietary fat. Simply put, we don't have to fear fat - the right type of fat that is. In Part 1, we will review Fatty Acids (the good), Trans Fat and their impact on our health (the bad) and Toxins in Fats (the ugly).

Fatty Acids

The building blocks of fat that are present in our bodies and in the food we consume are fatty acids. Because fats are so important to the structure of our cells, the quality of the fats we eat translates directly to the quality of our cells.

Your body breaks down fat into fatty acids, which are made up of carbon, oxygen and hydrogen and also include weak acids, called carboxyl groups, forming a bond on one end of the molecule and forming new properties. "Triglycerides are created by three fatty acids molecules joining together." Your body also makes triglycerides from carbohydrates.

Fatty acids perform many essential jobs in the body, including storing energy. When there isn't any glucose (a kind of sugar) available to be used for energy, our bodies switch to burning fatty acids as fuel for our cells. This method of using fat as an energy source is healthier and definitely more efficient.

The three kinds of fatty acids are saturated, monounsaturated, and polyunsaturated. Their structure is what defines them. A saturated fat is full of hydrogen; thus it has no double bonds. A polyunsaturated fatty acid contains more than one double bond. These double bonds are described as "kinks" that are present in the chain. When exposed to heat, light, and oxygen, the double bonds are unstable.

Although we call certain fats "saturated" or "monounsaturated," the fat content in foods are made of various kinds of fatty acids, which we label by their most prevalent one.[1]

1 Abida, A. (2015). Is it Safe to Cook with Olive Oil? Web. http://www.mysticmedicine.com/diet-lifestyle/is-it-safe-to-cook-with-olive-oil

So if a food contains mostly saturated fat, we say it is saturated. But one type of fatty acid rarely comprises a food, and the truth becomes more complicated. Coconut oil (classified as a saturated fat) has just 60 percent saturated fatty acids. The rest becomes monounsaturated and polyunsaturated fat. Soybean oil is about 60 percent polyunsaturated fat. Olive oil is made of 70 percent oleic acid, a monounsaturated fat.

Saturated Fat

Saturated fats like butter, dairy, fats from different types of meat, coconut oil, and palm oil are usually solid at room temperature. Conventional nutrition believes these traditional fats are the culprit in most of the diseases we see today, like cardiovascular disease, cancer, obesity, diabetes, cellular damage, and nervous system disorders such as multiple sclerosis. Newer studies regarding saturated fat and dietary cholesterol, however, show them to be harmless.

So what are the truly unhealthy fats? A number of studies show processed liquid vegetable oil, loaded with toxins that cause free radical damage and artificially hardening trans fats, as the true "bad fat." This toxic oil becomes prevalent in the American diet, more than ever before, and becomes the real reason for our most common diseases.

In other words, we've gone after the wrong target. Saturated fats are actually essential in providing the correct structure of our cells and tissues. When we consume the wrong kinds of toxic fats such as liquid unsaturated oils, our cell membranes can't maintain correct structure and therefore do not function properly. They become "floppy" and not as sturdy as they should be. When we take in a great deal of trans fats, which are not as soft at room temperature, the cell membranes stiffen or harden up. Both of these scenarios affect what is allowed in and out of our cell membranes or walls.

Saturated fats perform many vital functions in the body. These important fats actually make your immune system stronger and are help communicate to tell your cells what to do. This means they can protect us from cancer. In other words, these fats will communicate to hair cells or skin cells or liver cells and say, "OK, I'm supposed to replicate and be hair cells, or skin cells or liver cells." Not, "I'm going to become a cancer cell and replicate and take over the whole body."

Fats help the receptors in your cells work and communicate properly. This also includes receptors for insulin, protecting us from diabesity. Your lungs cannot do their jobs properly without saturated fats, which is precisely why kids who are given traditional kinds of fats like whole milk and butter tend to suffer less with asthma than kids who are given margarine and low fat milks.

Saturated fats also help kidneys and hormones perform at peak. We need saturated fats for the nervous system. Our brains are made up of more than 50 percent saturated fat.

I hope you're seeing an important pattern here. The government food industry wants you to believe saturated fats are bad for you and you must eat chemical-laden low-fat foods, which are highly processed. But I'm here to tell you that is simply not true.

Saturated fats also decrease inflammation, the true culprit for most modern diseases. They also carry the extremely important fat-soluble vitamins A, D, E and K2, that we really need in optimal amounts in order to be healthy.

The saturated fat found in the organs of grass-fed animals and some types of fish, like wild-caught salmon, contains vitamins that activate fat absorption. Vitamins A, D and K2 and the animal form of vitamin K are the fat-soluble activators. We refer to these vitamins as activators because they assist mineral absorption. Without them, your body cannot utilize minerals no matter how abundant they are in your diet. Diets back in the day contained about 10 times the level of these key nutrients compared with modern-day diets that consist mostly of sugar, white flour, and vegetable oil.

Especially important are saturated fatty acids that provide excellent energy sources include lauric acid (found in coconut oil), myristic acid (also in coconut oil), and palmitic acid (found in palm oil, meat and dairy fats). Palmitic acid plays an important role in hormone production and regulation, and both palmitic and myristic acid help in cell communication and immune system function.

Our brains depend on saturated fats for optimal performance. Considering a large part of your brain is saturated fat, you can understand how crucial it becomes on so many levels. A recent article in Psychology Today discusses a study that showed consuming saturated fats had the potential to reduce the risk of dementia by 36 percent. Saturated fats also make it possible for the brain to make new nerve cells.

Saturated fats also help reduce inflammation, a huge part in many of today's diseases like arthritis, cancer, heart disease, diabetes, dementia Crohn's colitis, Celiac disease and much more. One study done by researchers at Virginia Tech found that conjugated linoleic acid (CLA), a saturated fat in grass fed meats and dairy, is a powerful anti-inflammatory agent. CLA is also produced by friendly probiotic bacteria and can be taken as a supplement.

New research has emerged exonerating saturated fat content in red meat from being the culprit in heart disease and other issues. Instead, certain chemical activities that take place when we consume red meat could be the real culprit. A substance called trimethylamine-N-oxide (TMAO) could be responsible for this increase in heart disease risk.

More research needs to be done here, but recent thinking finds a link between red meat, choline/L-carnitine presence, and the activity of the gut microbiota. It is not so cut and dried to say "red meat causes heart disease."

Polyunsaturated Fats

Polyunsaturated fats tend to be liquid, even when cold, because of their structure. These fats have two or more double bonds. The more double bonds that are present in a fatty acid, the more reactive it is going to be. Polyunsaturated fats usually react with oxygen causing chain reactions, which damage vital components like DNA.[2] Polyunsaturated fats also tend to develop destructive free radicals when exposed to heat, like during processing and cooking.

Soybean oil, canola oil, safflower oil, flax oil, and fish oil are all examples of polyunsaturated fats. Other food sources high in polyunsaturated fatty acids (PUFAs) include walnuts, sunflower, sesame, pumpkin, chia seeds, and fish.

Essential Fatty Acids 101- Omega-3 and Omega-6

Essential fatty acids like omega-3 and omega-6 are long chain polyunsaturated fatty acids. Scientists actually named these nutrients as "essential," which means they can't be made in the human body and they have to be obtained by the diet.

According to modern nutrition books, there are only two essential fatty acids naturally found in food:

1. Linolenic acid or (LA) – this omega-6 fatty acid is found in commercial seed and vegetable oils, and certain nuts and seeds.
2. Alpha Linolenic acid (ALA) – this omega-3 fatty acid is found in animal organs, wild fatty fish, egg yolks from pastured animals, macadamia nuts, and flaxseed oil.

There are long-chain omega-3 and omega-6 derivatives that can be made in the body, which are considered "conditionally essential fatty acids." As long as omega-3 and

2 Gunnars, K. (2013). 6 Reasons why Vegetable Oils can be Harmful. Web. http://authoritynutrition.com/6-reasons-why-vegetable-oils-are-toxic/

omega-6 fats are consumed in proper amounts, these derivatives can be synthesized in the body.

1. Docosahexaenoic acid or (DHA) – this omega-3 fatty acid becomes a derivative of ALA. DHA and is best for our brain health.
2. Eicosapentaenoic acid or (EPA)– this omega-3 can also be a derivative of ALA and is a great anti-inflammatory.
3. Arachidonic acid (AA) – this omega-6 fatty acid is wonderful for cellular health and structure, can be derived from LA
4. Gamma linolenic acid (GLA) – this omega-6 fatty acid is derived from LA. Foods include: hemp seed oil, borage oil, black currant oil, and evening primrose oil.

We as humans have evolved quite effectively with a proper balance of omega-3 and omega-6 fatty acids. However, diets of today consist of way too much omega-6s found predominantly in many processed foods, corn and safflower oils, conventionally raised meat, and vegetable or soy-based oils.

Our modern diet also does not provide enough omega-3s like wild-caught fatty fish, fish oil, and grass-fed meats. That's unfortunate, considering these fatty acids serves as vital energy for our cells, provide proper function and structure, and play important roles in various functions in the body.

When omega-6s and omega-3s become unbalanced, things can start to go completely haywire. Too many omega-6s and a deficiency in omega-3s have been shown to decrease the immune systems functionality dramatically.

In fact, massive amounts of omega-6 polyunsaturated fatty acids (PUFAs) and a very high omega-6 to omega-3 ratio provide the perfect storm for inflammation, which can be the very culprit of diseases, like heart disease, cancer, and autoimmune disorders. Increased levels of omega-3 PUFAs, on the other hand, reduce inflammation.

Refined vegetable oils like corn, safflower, and soybean oil contain vast amounts of omega-6 fats. Although these oils have been considered the "healthy" alternative to saturated fats in the past (and unfortunately still today by modern nutrition dogma), we now know the health dangers that come from refined oils, the main issue being the damage that rancid, oxidized oils create in our bodies. Avoid all refined oils.

Unrefined oils become a better choice while still keeping the omega-6 to omega-3 fat ratio in mind. Unrefined oils are cold-pressed or expeller-pressed. These processes do not use harmful chemicals or solvents commonly used in the oil refining process. The polyunsaturated unrefined oils that have the best omega ratio are flax seed oil, walnut oil, and hemp seed oil.

The Beneficial Omega-6 Fatty Acid: GLA

A great source of omega-6 fat is gamma linolenic acid (GLA), a plant-based omega-6 mostly found in seeds of an eastern flower known as borage. While a member of the omega-6 family, GLA is metabolized differently than other omega-6s. New research shows the tremendous capability of this nutrient to combat chronic inflammation, eczema, dermatitis, asthma, rheumatoid arthritis, atherosclerosis, diabetes, obesity, and cancer.

Most people become deficient in GLA because they do not get enough of this fatty acid. As we age, the ability to metabolize it decreases because enzymes responsible for producing anti-inflammatory molecules from the fats we eat begins to decline. By converting into beneficial prostaglandins (PGE1s), GLA compensates for this enzyme deficiency that exists. The results can dramatically reduce the impact of inflammation on heart disease, lung function, autoimmune conditions, and diabesity. GLA plays a huge role regulating inflammation throughout the body, especially when dealing with the immune system cells.

GLA and other beneficial fatty acids also reduce inflammation by activating the peroxisome proliferator-activated receptor or PPAR system. PPARs are receptors inside our cells that regulate cellular function and responses to inflammation.

Considering the fact that the body requires less omega-6 oils than are present in the typical western diet, and needs way more omega-3s, shifting our focus on consistent intake of omega-3s becomes a wise choice to ensure good health. The omega-3 oils found in grass-fed meats, wild-caught cold-water fatty fish and seafood, high-quality fish oils, and full-fat dairy are the best sources.

Among the numerous conditions that omega-3 fats help with chronic health issues are:

- Diabetes
- Asthma
- Prostate cancer
- Breast cancer
- Colon cancer
- ADHD
- High cholesterol
- Cardiovascular disease
- High blood pressure
- Depression

- Bi-polar disorder
- Cognitive decline
- Skin issues (like eczema and psoriasis)
- IBS (Inflammatory Bowel Disease)
- Menstrual pain
- Macular degeneration
- Schizophrenia
- Rheumatoid arthritis
- Osteoporosis

How Fatty Acids Affect Brain Health

Diets that contain high amounts of healthy fat support optimal brain function. That makes sense when you consider your brain is made up of fatty acids. Essential fatty acids (EFAs) provide proper fluidity and flexibility of the brain's cells. They also provide structure and protection for brain cells. A flexible membrane which is also healthy allows the flow of the correct nutrients to flow back and forth. This becomes critical for better brain function, mood, memory, overall general health, and proper communication of cellular signals.

Studies consistently show omega-3s play a huge role in depression and become more effective than placebo in both adults and children in small controlled studies done on bipolar disorders, as well as depression.

A study comparing the healing benefits of omega-3 fatty acid eicosapentaenoic acid and Prozac in major depression showed that the omega-3 fatty acid EPA proved to be just as effective as Prozac in treating major depression.

It's important to note that eating processed foods and oils like crackers, chips, cereals, margarine, doughnuts, Crisco, Pam cooking spray, I Can't Believe It's Not Butter, and any other hydrogenated or partially hydrogenated fat products is foreign to our systems. The unsaturated fatty acids in these seed and plant oils are unstable and easily damaged.

These unhealthy, unstable oils become even more dangerous when exposed to high heat and high pressure. The damaged fatty acids in these foods replace the healthy fats in our cells and cause damage, causing them to become structurally damaged. This causes communication and fluidity problems and brain cells are less capable of their functions.

Omega-7 Fatty Acids

The omega-7 monounsaturated fatty acid, known as palmitoleic acid is found commonly in human adipose tissue. This type of fat is made from saturated palmitic acid. This is the most abundant fat found in human sebum (an oily secretion from the sebaceous glands), which acts as a natural moisturizer. This type of fat is very effective at producing positive effects on our blood lipids. The very opposite is seen with the highly oxidative unsaturated fats. So palmitoleic acid, being very similar to sebum makes for a highly effective skin moisturizer.

Monounsaturated Fat

Monounsaturated fats lack two hydrogens and consist of one double bond between two carbons. These types of fats are usually going to be liquid when at room temperature; however, they can turn into solid matter when they are stored in the refrigerator. The more common monounsatu-rated oils are rapeseed oil, canola oil, lard, peanut oil and olive oil.

Monounsaturated oils are considered to be stable and can be used for low-heat cooking. Monounsaturated fats are also in foods like avocados, peanut butter, olives, certain kinds of fish, and nuts and seeds like pecans, cashews, almonds, sunflower seeds, and pumpkin seeds.

Monounsaturated fats are high in vitamin E and other antioxidants. Among the benefits of monounsaturated fats include reduction of diabetes risk, breast cancer risk, reduced pain in people with rheumatoid arthritis, weight loss, and a decrease in belly fat. The most well-known benefits are to the heart and circulatory system.

The American Heart Association states that monounsaturated fats can help to lower your cholesterol while decreasing your risk for heart disease and stroke.

Remember these benefits become negated if the process by which some oils are produced makes them unhealthy and even toxic to the body. Let's look at canola oil, a long-touted "healthy" oil.

The process of creating canola oil and other vegetable oils includes applying high heat and using harsh chemical solvents in the refining process. The Weston A. Price Foundation, in an article titled, *The Great Con-ola* states, "Like all modern vegetable oils, canola oil goes through the process of caustic refining, bleaching and degumming-all of which involve

high temperatures or chemicals of questionable safety. Also, because canola oil is high in omega-3s which easily become rancid and foul-smelling when subjected to oxygen and high temperatures, it must be deodorized."[3]

Rancidity or oxidation is a problem within the body. In her book *The Mood Cure*, Julia Ross explains: "Oxidation is the process that turns it [an apple] brown and makes it go bad. If you eat vegetable oils that are already oxidized from heat and light in processing, you are exposing your own healthy tissues to a volatile substance that will damage them".

Some of the best sources of monounsaturated fats include olive oil, avocados, almonds and other nuts.

We've long known the benefits of olive oil, which have been well researched. Olive oil has shown to be effective in reducing the risk for heart disease, cancer prevention, and has tremendous capabilities in improving immune function, and decreasing inflammation in the body.

Quality becomes crucial when buying olive oil. A great deal of the extra-virgin olive oil found in the United States is contaminated with different oils like soybean or rapeseed. Choose 100 percent olive oil to take advantage of its vital health benefits. Also be aware of the term "Pure Olive Oil," which indicates it could contain both refined olive oil and possibly other oils, like soybean or canola oil. It is essential to know the source of your olive oil, and to watch out for extra virgin imposters.

Avocados are an excellent source of monounsaturated fat. This wonderful superfood is an anti-inflammatory agent, and has proven to have benefits like helping to relieve arthritis (both rheumatoid and osteoarthritis) symptoms in some people. A study done in 2007 demonstrated that the phytochemicals found in avocados "selectively induce cell cycle arrest, inhibit growth, and induce apoptosis in precancerous and cancer cell lines."

Another excellent source of monounsaturated fat is raw nuts. Several significant studies have demonstrated that consuming nuts decreases the risk of cardiovascular disease. Almonds are well known for helping with diabetes and have the potential to help people lose weight and can also help you keep the weight off. Other healthy nuts with similar benefits include macadamia nuts, walnuts, pecans, and chestnuts.

3 (2013). Fats and Oils. Web. http://tuberose.com/Fats_&_Oils.html

Trans Fats

Scientists first created trans fats in 1980 with the development of hydrogenation. According to the Food and Drug Administration (FDA), "trans-fat is created when hydrogen is added to vegetable oil (a process called hydrogenation) to make it more solid."[4]

Making some oils solid became helpful for both storage and transport. In the early 1900s we had an abundance of soy and a shortage of butter. The creation of margarine from soybean oil solved this dilemma.

Hydrogenated fat like Crisco began to replace lard in baked goods such as, bread, pies, cookies, and cakes around 1920. Food makers found that it had a long shelf life and was very inexpensive. Money and convenience usurped our health, and although the tides are slowly turning, not much has changed today.

By the 1960s trans fats began to replace animal fats like butter and lard (both traditional fats) in the U.S. and abroad. Because trans fats were classified as unsaturated fat, "health" advocates jumped at the chance to state that margarine was a healthier choice over butter, which contains saturated fat.

Regardless, studies from around 1988 found trans fats could be a major cause of heart disease. It was stated in 1994 that around 30,000 deaths annually from heart disease were caused by the consumption of trans fats in the U.S.

The FDA finally took action and ruled any trans fat content had to be clearly listed in all foods as of January 1, 2006. But what's important to note is that any product labeled "trans fat free" can still contain up to .5 grams of trans fat. Once again, the logical approach would be to choose foods that don't need labels!

In 2013, the FDA began the process of declaring trans fats as no longer on the list of foods "gen-erally recognized as safe." We hope this will lead to the total elimination of trans fats from our food supply.

4 MH Staff. (2015). 6 Reasons to Eat More Avocado. Web. http://www.mh.co.za/food/news-food/6-reasons-to-eat-more-avo-including-reduced-cancer-risks-eye-health-and-athritis-symptoms/

Trans Fats and Health

If you haven't already, become aware where trans fats hide in processed foods. Baked goods, especially crackers, cookies, cakes, snack foods like chips, microwave popcorn, frozen meals like pizza and TV dinners, Crisco, Pam cooking spray, fake butter spreads, margarine, coffee creamer, pre-made frostings, and of course fast food likely contain trans fats.

Avoiding processed foods, packaged foods, avoiding fast food, asking for food to be cooked in real butter at restaurants, and checking ingredient labels for the words "*partially hydrogenated oil*" are all ways to keep trans fats out of your body.

On the bright side, a good number of food makers are taking hydrogenated fats out of their foods in an effort to keep profits high, but eating a real, whole, unprocessed foods diet becomes the only real way to keep these dangerous fats fully out of your diet.

The Harvard School of Public Health reported on a study done in Scotland in 1981 that specu-lated a link between trans fats and heart disease. And a study done by Harvard in 1993 demon-strated a strong link between partially hydrogenated oils and heart attack risk. The study stated that "researchers estimated that replacing just 2 percent of energy from trans fats with healthy unsaturated fat would decrease the risk of coronary heart disease by about one-third." We also know that trans fats increase LDL cholesterol and decrease HDL cholesterol, possibly leading to heart attack and stroke.

A study also shows a strong connection between trans fats and weight issues. A study from Wake Forest University Baptist Medical Center found "Diets rich in trans fats cause a redistribution of fat tissue into the abdomen and lead to higher body weight even when the total dietary calories are controlled." The same study also demonstrates how trans-fat consumption leads to heart disease and diabetes. Researchers also found a strong link between trans-fat and weight gain. Trans-fat consumption becomes a surefire ticket to diabesity.

A strong link also exists between trans fats and cancer. A study done on trans fats and colon cancer showed that post-menopausal women had a "two-fold increase in the risk of devel-oping colon cancer from high levels of trans-fatty acids in the diet. Researchers stated that trans fats should be avoided.

Another significant study by the American Journal of Epidemiology (AJE) found eating trans fats causes pre-cancerous polyps. And a European study found in the AJE "scientists showed that the risk of breast cancer was doubled in women having higher serum levels of trans-fatty acids."[5]

Toxins in Fat

Animals store toxins within their fat tissues as a means of protecting their vital organs from damage. When we eat animal fats that have been exposed to GMO feed, antibiotics, hormones, and other toxic chemicals, these harmful substances are passed on to us. Especially when we eat any fatty parts of the animal like milk, butter, cheese, meat fat, etc.

The FDA has also reported that animal fats can contain dioxin. An article from the FDA says "studies suggest that exposure to dioxin-like compounds (DLCs) may lead to a variety of adverse health effects, including reproductive and developmental problems, cardiovascular disease, increased diabetes and increased cancer. The World Health Organization states: "Dioxins are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer."

DLCs most likely build up in the fat of animals we eat, so meat, poultry, eggs, fish, and dairy could be the way humans are exposed to low levels of DLC.

Dioxins get into animals as a result of environmental exposure. Grass-fed and pasture-raised meats live in cleaner, healthier and sustainable environments compared with conventionally raised animals. Easy lesson: Know the source of your food and choose wisely.

5 Butter Believer. (2012). PUFA: What is it and why should it be avoided? Web. http://butterbeliever.com/what-is-pufa/

A Case for Organic

Organic always becomes the best choice, especially when it comes to dietary fats (but really, about all foods). Whenever possible, choose organic. Conventional foods, even if good fats are chosen they will contain pesticides, chemicals and antibiotic residues.

A significant study conducted by Washington State University found whole organic milk contains significantly more omega-3 fats than conventional milk and even lower fat organic milks. So, choosing whole organic milk helps raises your intake of omega-3s and becomes an easy food choice to make that can lead to a balancing of the overly exposed omega-6 content in the average diet.

PART II

Animal Fats

Feedlot Beef

Feedlot or conventionally raised beef has no real health benefit in the human diet, and it poses important problems for the body. Cows raised in feedlots are fed diets of genetically modified (GMO) grains, corn, barley, and soybeans to increase weight gain quickly.

Studies show serious health risks are linked to genetically modified food such as infertility, immune problems, quicker aging, improper insulin function, and changes in vital organs including the gastrointestinal system. The American Academy of Environmental Medicine has asked doctors to advise their patients to avoid GM foods.

Cows are meant to eat grass. Their bodies are not equipped to digest the grain-filled diet forced on them. This naturally causes them digestive issues and problems with their overall health. Digestive issues often cause nutritional deficiencies.

Feedlot cows are often given antibiotics and growth hormones to speed food production. When we eat feedlot meat, we are also exposed to the toxins and growth hormones as well as the antibiotics given to the animal.

Grass-fed Beef

Grass-fed beef demonstrates obvious health benefits as compared to conventionally raised beef. A study in *The Journal of Animal Science* found grass-fed beef provides many health benefits over conventional meat. Grass-fed beef is significantly higher in omega-3 fats, contains a healthier ratio of omega-6 to omega-3 fats, as well as CLA.

According to americangrassfedbeef.com, a grass-fed sirloin cut has about one half or one third of the fat content of a grain fed sirloin steak. Grass-fed beef is also lower in calories and has higher iron content than grain fed beef.

Grass-feeding also increases the nutritional content and quality of beef. Grass-fed beef contains higher amounts of vitamin E, beta-carotene, omega-3 fats, and CLA. Grass-fed beef is also lower in cholesterol. Studies have shown a decrease in cholesterol when switching from conventional beef to grass-fed beef of approximately 22 to 39 percent.

Useful shopping tips:

Buy grass-fed and grass-finished (the animal has been raised on grass for their entire life) beef whenever possible. Buying the beef from local farmers ensures you know the true quality and source of your meat.

Beef Tallow

Tallow is rendered beef fat. This is called Suet and comes from the cow's kidney and loin areas. Kidney fat of grass-fed cows makes the best tallow, as compared to conventional grain fed ones.

Some benefits of tallow: When tallow is rendered it is stable at room temperature. Unlike hydrogenated vegetable oil, it has a high smoke point, which makes it a good choice for deep-frying. Tallow can be stored in your pantry for years, and can also be refrigerated.

Tallow is a great source of selenium, niacin, vitamins B12, B6, K2, phosphorus, iron, potassium and riboflavin. Grass-fed tallow contains a high ration of CLA, which protects us against cancer. Tallow from grass-fed animals also has a small amount of vitamin D just like lard does. It's also a great source of vitamin K2.

Studies show tallow has a positive effect on breast tumors. A study from UC Davis found that "Beef tallow increases the potency of conjugated linoleic acid (CLA) in the reduction mammary tumor metastasis in mice."

Grass-fed lamb, although not as popular as red meat from cows, comes loaded with CLA to improve immune function, bone mass, blood sugar, and lean body mass. About 40 percent of the fat in grass-fed lamb is from oleic acid, a monounsaturated fat in extra-virgin olive oil which is linked with decreased risk of heart disease.

Poultry

Chicken

Chickens, contrary to popular belief (because of misleading big food producers), are definitely not herbivores or vegetarian but are omnivores.

Cows are strict vegetarians and have a unique digestive tract which allows the animal to get the greatest nutrition from eating only grass. Chickens on the other hand, thrive on a diet of many different types of proteins like grubs, insects and worms found on a pasture. When chickens are allowed to pasture, they can find all of the foods they prefer to eat. This includes insects of many kinds, grasses, clovers and many different kinds of plants. This is the reason why you should look for “pastured or free-running eggs” to ensure optimal nutrition and quality.

Most naturally occurring omega-3 fats occur in dark meat and skin of a chicken. Chicken with skin contains about a third more omega-3 fats compared to white meat. Studies show pasture-raised chicken meat to be superior and more nutrient-dense. Chicken is known for its high protein content. Pasture-raised chicken breast in the amount one 4-ounce serving provides around 35 grams of protein, or 70 percent of the Daily Value (DV).

Chicken contains all of the B vitamins, particularly vitamin B3 with 98 percent of the Dietary Reference Intake (DRI) per serving.

Look for chicken at local farms where you can inquire about how the chickens are being raised. There are many misleading labels that are perfectly legal, not regulated, with labels like “cage free”, “pastured,” or “pasture-raised.”

We have no guarantee to know if these chickens were given full or any access to the outdoors. At the very least, go for organic chicken raised without antibiotics and hormones. All types of pasture-raised poultry like turkey are much higher in omega-3 fats. Duck has a richer taste and the highest amount of omega-3 fat of all poultry. Duck is also very high in B vitamins and minerals. Duck fat can be used for cooking and is an excellent alternative to processed vegetable oils. It has a high smoke point, which allows for high heat cooking.

Eggs

Another health staple unfairly demonized in past years: Truthfully, eggs are considered to be one of earth's most perfect super-foods. As in poultry and meat, pasture-raised eggs are high in nutrients.

Simply put, if the animal is raised in its natural environment and allowed a healthy diet of its preferred food, it will be of optimal nutritional quality.

Egg whites contain the majority of the protein content, while the yolk contains the most important nutrients of the egg including omega-3 fats, vitamins A, D, E, and K, vitamins B5, B6, B12, folate, choline, calcium, phosphorus, zinc, copper, iron, and carotenoids (hence the deep orange-yellow color).

That bold color becomes one indicator a hen was raised on pasture as opposed to conventional-raised hens. Eggs are also a great source of selenium and iodine, minerals necessary for healthy thyroid function. Some really exciting research shows the natural diet of a hen can increase the omega-3 fat content.

Unlike popular brands from big food companies that use omega-3 enriched eggs that most likely involve adding processed oils to a highly unnatural diet, pasture feeding is a much healthier choice. This provides the hens with a vast amount of legumes rich in omega-3's such as alfalfa and clover (Non-GMO of course).

Be cautious of popular brands that market their eggs as Omega-3 rich eggs. You are better off with a local farmer or health food store's already omega-3 rich pastured eggs.

Egg Tips:

There are some considerable differences between egg sources, just as all sources of our food.

- Eating conventionally raised eggs does pose some risk. The chickens laying these eggs are fed a grain-based diet, kept in cages, and treated with hormones and antibiotics.
- Omega-3 eggs, which big food companies love to promote, are basically the same as conventional eggs but have a source of omega-3 fats added to their diet like flax seeds.
- Local, farm fresh eggs are the best choice.
- Be aware of "vegetarian fed" eggs as well. Another favorite marketing scheme of big food companies. Remember, chickens are not vegetarians. They enjoy grubs, worms,

and insects in addition to plant foods. They thrive on these foods and are healthiest when allowed to pasture. Make sure they are truly pastured and allowed to roam free and are truly organic.

Following these tips will ensure you choose the most nutrient-dense eggs. Be mindful of common egg allergies. Be safe when handling raw eggs. Always clean any surface and cooking utensils that may have been contaminated with raw egg.

Pork

A five-ounce pork chop provides 39 grams of protein. Regular consumption of lean fresh pork can provide the body with some really great benefits. Pork fat contains 45 percent monounsaturated fat. Depending on the source or how the animal was raised including diet and environment, most of the fat content is oleic acid, the same kind of fat in olive oil.

Pastured pork also provides a rich source of vitamin D, an excellent source of protein, minerals and vitamins, especially highly absorbed iron, B12, and Zinc. Pork meat also has the very important CLA, which protects the heart, prevents cancer, and boosts our immune system.

Some helpful tips to keep in mind:

Conventionally raised pork is produced using antibiotics, hormones and pesticides, just like many other meats. Consider the source and how the animal was raised. Conventionally raised pigs are also confined to enclosed pens and fed GMO corn and soybeans. An unhealthy diet makes for unhealthy pigs, which makes for unhealthy people that eat them. Pigs, much like cows and chickens grazing in open pastures eating and living in the way nature intended, are your best choices for consumption.

Always go for organically raised pork products (bacon, salami, prosciutto, etc.).

Conventional meats are also cured with nitrites and nitrates, which when the meat is cooked creates a toxic cocktail of carcinogenic nitrosamines. Pork may be stored in the fridge for three to five days fresh, and should be frozen if it is not used within this time frame. It is easy to tell when it has spoiled from the smell just like with chicken.

A big concern with eating pork is trichinellosis or trichinosis. This is a parasitic infection that humans can get from eating undercooked pork that contains the larvae of the trichinella worm. This parasite is very commonly found in pork. The Center for Disease Control (CDC) recommends cooking pork really well and freezing it prior to cooking to kill off any worms.

Lard

Lard is a traditional fat that has been used in cooking for thousands of years. A 250 lb. pig makes about 15 to 20 pounds of lard. Lard contains healthy fats along with nutrients like vitamin D. Lard provides excellent flavor to foods and allows for fat-soluble vitamins to be optimally absorbed.

A study found lard eaten by mother rats protected their young from breast cancer. The study states "contrary to our expectation, exposure to high levels of lard during early life decreased later susceptibility to breast cancer."[6]

When choosing lard, as with any animal fat, purity and source become vital. Always go with 100 percent organic, free-range, pasture-raised lard. Lard from conventionally raised pigs is also bleached and deodorized.

Lard is excellent for use in baking and frying as it has a very high smoke point (370 degrees F, making it a highly stable oil).

6 Farrell, M. (2013) ZWNW Response to the NW Region Waste Management Group Survey Web. http://derryair.eu/author/mf/

Fish & Seafood

Fish are the absolute best source when it comes to the complete omega-3 fatty acids, EPA and DHA. Issues of toxic mercury levels and farmed fish make it vital to choose fish from the best possible source. People who eat fish on a weekly basis have a lower risk for developing diabetes.

According to The Environmental Working Group (EWG), the best sources of omega-3 fish that also contain the lowest levels of mercury are wild salmon, sardines, mussels, rainbow trout, and Atlantic mackerel. The fish we should avoid are king mackerel, marlin, orange roughy, shark, swordfish, and tilefish. To avoid toxins, we should always choose wild and high quality fish sources as much as possible.

Risks and warnings to be mindful of: the biggest concern is mercury toxicity when it comes to consuming any fish. Try to avoid the fish in the "avoid" category above as much as possible and choose the good sourced fish listed above as much as possible. Women who are pregnant or nursing or women who may become pregnant as well as children should especially be careful about eating fish high in mercury like tuna steaks, king mackerel, shark, swordfish, marlin, orange roughy, tilefish, and escolar.

Salmon, because of its very high content of omega-3 fats has earned quite the reputation as a healthy superfood. It is very common for a four-ounce baked or broiled piece of salmon to contain at least two grams of omega-3 fats. This is much more than the average U.S. adult consumes from their food during many days.

The omega-3 fat in the form of EPA is about half and a bit lower in the amount in DHA. The amounts of these two important omega-3 fats are unusually higher than most foods.

Consuming omega-3-containing fish like salmon at least two or three times a week provides cardiovascular benefits. Eating omega-3-containing fish has also been linked to a decrease in risk of macular degeneration and chronic dry eye. When it comes to macular degeneration (an eye disorder where deterioration of the center of the retina occurs, causing loss of vision), two servings of fish per week has demonstrated a significant drop in risk. For the reduction in the risk for developing chronic dry eye, a higher amount of omega-3 fish (two to four servings each week) was the amount in the least amount needed, with five to six servings each week demonstrating an even greater reduction of risk.

Studies also show that salmon contains what's called "bioactive peptides" that may

protect joint cartilage, promote insulin sensitivity and control GI tract inflammation.[7]

Omega-3 fats are also helpful with the nervous system. Omega-3 fats improve brainpower, memory, learning, and the way the brain communicates with the rest of the body.

The brain is extremely sensitive to age-related oxidative damage. Studies show consumption of omega-3 fats is linked with a significant decrease in risk for depression, decreased levels of aggressive behavior in teens, and a decreased risk of declining brain function in elderly people. Other studies have demonstrated a link between IQ and omega-3 consumption.

A good number of studies show benefits of supplementation of omega-3 fats in several psychiatric conditions as well as in inflammatory, autoimmune and diseases of the brain. Studies have find omega-3 fats become preventative against other conditions like those of the heart, brain, skin and rheumatoid arthritis.

Important tips to consider:

A good amount of the salmon available in supermarkets may be contaminated with high levels of mercury and pesticides from the farming process. The best source to choose for salmon is wild-caught Alaskan salmon to ensure it is the purest form of fish. I do not recommend farm-raised salmon. If you are eating farm-raised salmon, you should at least remove the skin, since this is where most toxins reside.

Sardines

Sardines are excellent eaten fresh. However, they are most commonly found canned as they spoil so easily.

Sardines are considered to be at the bottom of the food chain as they eat plankton only, so they don't have the heavy metal toxicity levels like mercury found in other larger fish. Sardines are among one of the most concentrated forms of omega-3 fats EPA and DHA, which have demonstrated a lowering effect of triglycerides and total cholesterol levels. Just one can of sardines has over 50 percent of the daily value.

Sardines are also a great source of vitamin B12. Vitamin B12 is good for the heart and overall health and is uniquely involved in keeping homocysteine levels (an inflammatory marker for heart disease) in balance.

7 Fit for Life. (2015). Tips for Keeping the weight off Web. http://cucinathings.com/category/uncategorized/

Sardines are also very high in Vitamin D and phosphorus. Pacific sardines are listed on the Super Green List of the Monterey Bay Aquarium's Seafood Watch.

The Super Green List is considered "the best of the best" in seafood. In order to be featured on this list need to score the highest ratings in sustainability, provide 250 mg of omega-3 or more in an 8-ounce serving, and also have very low levels of mercury.[8]

Useful tips:

Always choose bisphenol-A (BPA) free canned wild caught sardines. Canned in olive oil is preferred over soybean oil.

You can store canned sardines in the kitchen cupboard, so they are not exposed to high heat. They have a considerably long storage life. You'll want to check the expiration date to know when you should eat them by. Turn the can often to expose them to the olive oil they are packed in. This will keep them moist.

Rainbow trout is also a smaller fish that contains less mercury than larger, longer-living fish such as swordfish and tuna. Larger fish store most of the toxins in their meat. Rainbow trout becomes a great source of omega-3 fats including DHA, EPA and ALA content, plus it is an excellent source of B vitamins.

Choose fresh rainbow trout when purchasing. Rainbow trout is excellent grilled, broiled, or pan fried.

Atlantic Mackerel

Atlantic mackerel is loaded with vitamin B12 and selenium. Its high omega-3 fats benefit blood health, heart health, metabolism, and immune function. Mackerel is also helpful for those with arthritis, nervous system issues, and mental health issues, plus it is also great for cancer prevention, especially breast, prostate, and colon cancer.

Useful tips:

The purest sources of mackerel come from Eastern Canada and the Northeast Coast of the U.S. Avoid other types of mackerel, as they have high mercury levels. Fresh mackerel filets or steaks should look nearly translucent. Mackerel contains an oily meat where all of its health benefits are. Compliment the oily meat of mackerel with citrus or vinegar as a

8 Wood, R. (2015) World's Most Healthiest Foods Web. http://www.worldshealthiestfoods.net/genpage.php?tname=foodspice&dbid=147

marinade or sauce.

Shellfish

Shellfish are a great source of healthy fats. As always, it is best to choose the best source just like when choosing fish. Look for wild caught, not farm raised whenever possible. The shellfish listed below are those listed from Seafood Watch.

Seafood allergies should be taken into consideration as it is a common food allergen and may be severe.

Clams

Clams are high in omega-3 fats, including DHA, EPA, and ALA, plus CLA (the good kind of omega-6). Clams also contain iron, B12, and selenium. Clams benefit Alzheimer's disease, anemia, and arthritis. Clams are also helpful with bone density, skin health, and stabilizing blood pressure.

Useful Tips:

Clams can be chosen in many forms. Always choose the best source possible. You can choose whole fresh live clams, which are traditionally eaten raw. Use caution since eating raw clams does carry a risk of foodborne illness.

It is best to cook clams to avoid unnecessary illness. Whole clams and half-shell clams can be found frozen. The easiest way to cook clams is to steam them. Cook clams as soon as possible after buying them and get rid of any clams that are not completely closed as they may be spoiled. Your bag of clams should smell of the sea. You can add a small amount of wine when steaming clams for great flavor.

Oysters

Oysters are very high in vitamin B12, zinc and copper. They are also a great source of omega-3 fats, which include DHA and EPA.

Oysters have also been known to be an aphrodisiac, boosting libido and sexual function, especially in men. Zinc deficiency has been linked to erectile dysfunction, so the high amount of zinc in oysters can help combat sexual function disorders in men.

Oysters are a huge help with joint inflammation and stiffness, support heart health, and boost brain and nervous system function. Oysters also help with mental health.

Useful Tips:

As with all foods, choose the best source possible when choosing oysters. It is possible to get too much of a good thing. Because of the very high vitamin and mineral content of oysters, one can experience toxicity or mineral overdose especially from zinc, copper, selenium, vitamin B12, and vitamin D. The same risks of foodborne illness exist when eating raw oysters as when eating raw clams. Oysters can be steamed or grilled just like mussels and clams and there are many great recipes available.

Mussels

Mussels are a wonderful source of selenium and iron as well as omega-3 fats, including DHA and EPA. Along with the same benefits as both oysters and clams listed above, mussels have shown to have many unique health benefits. Studies show Greenshell mussels to be very effective at fighting arthritis and relieving pain and inflammation. They also display benefits for treating asthma in children.

Useful tips:

Just like clams and oysters your mussels should smell fresh like the sea. Mussels can live out of the water for eight to 12 days. It is recommended to store them on ice. Open mussels can be spoiled, though you can test by tapping on the shell to see if they close. As long as the mussel is alive (it is closed or moves when tapped) they are fine to eat. Steam them for about 4 minutes until they open up. They are delicious steamed with some garlic and white wine.

Crab

Crab comes in a lot of varieties based on where you find them. King and Snow crab come from Alaska, Dungeness crab are from the west coast, and Blue crab from the east coast.

Crabs are great for heart health as they contain a high amount of omega-3 fats, which also lower your risk for stroke. Crab is very high in DHA, EPA, and CLA similar to the benefits of many other types of seafood.

Crab is high in vitamins and minerals, especially B12, zinc, copper and selenium. These nutrients along with the healthy fat content make crab good for the immune system, reducing inflammation, helping with brain function, and keeping your heart healthy.

Useful tips:

Just as the case with all of your food, you want to ensure high quality, ethically sourced crab. Cook live crabs for the freshest meat possible. However, you can find quality canned crab meat as well. Go to The Washington Department of Fish and Wildlife for great tips on cleaning and preparing crab.

Lobster

Based on good fishing methods, the California Spiny lobster is the recommended type. The Spiny lobster is loaded with omega-3 fat, including EPA and DHA, which makes it heart healthy and improves nervous system function. This particular lobster is also a great source of B12, zinc, and selenium.

Useful tips:

Choose live lobster to ensure the freshest meat. Lobsters can live for up to a day out of water, in a moist place. The texture of lobster meat should be firm and the meat whitish/translucent. As with all food, make sure the source is high quality. Lobster of any kind is great with just a bit of lemon and butter.

Shrimp

Shrimp is another great source of omega-3 fats. Shrimp in particular as a high EPA and DHA content. This makes it great for heart health and nervous system health.

Shrimp are a great source of astaxanthin, which is one of the most powerful anti-inflammatories and antioxidants in the world. It is not uncommon for one 4-ounce serving to have 1 to 4 mg of astaxanthin.

Astaxanthin is a carotenoid highly noted for its anti-inflammatory and antioxidant properties. Astaxanthin can benefit the nervous system and musculoskeletal system in animal studies. Some of these studies have shown a decrease in the risk for colon cancer and certain diabetes-related problems.

Shrimp is also very high in selenium. Research shows the selenium contained in shrimp is highly absorbable in humans. One study shows an 80 – 85 percent total selenium absorption from shrimp. Selenium deficiency poses a higher risk of cardiovascular disease, and other problems such as type 2 diabetes.

Useful tips:

Fresh shrimp are best, though frozen shrimp have a longer shelf life. You must clean and de-vein your shrimp before cooking, like removing the dark line on the back of the shrimp which is the shrimp's digestive tract. Allergic reactions to shrimp are common and you should be mindful of those who may be sensitive to shrimp and shellfish.

Dairy

Got Proof? Lack of Evidence for Milk's Benefits

There is no human biological requirement for cow's milk. It is nature's perfect food but only if you are a calf. The evidence of its benefits is overstated, and the evidence of its harm to human populations is increasing.

The white mustached celebrities were paid by the Dairy Council to promote the wonders of milk in their "Got Milk" ads. Scientists are increasingly asking, "Got Proof?" Our government still hasn't caught on, in part because of the huge dairy lobby driving nutrition guidelines. When I once lamented to Senator Tom Harkin from Iowa that all we wanted was introduce the science as policy, he cocked his head and with a wry smile said, "that would make too much sense."

And the media is also influenced heavily by lobbying and advertising dollars. Once, when I was on a popular talk show, the dairy lobby sponsored the episode, and the fitness trainer on the show was forced to mouth the talking points of the Dairy Council, touting milk as a fabulous sports drink. Studies may show some benefit, but studies funded by the food industry show positive benefits eight times more than independently funded studies.

In a new editorial published in *JAMA Pediatrics*, two of the nation's leading nutrition scientists from Harvard, Dr. David Ludwig and Dr. Walter Willet and question our old assump-tions about milk. They suggest that, perhaps milk doesn't help you grow strong bones, and that it may increase the risk of cancer and promote weight gain.

It is bad enough that the dairy industry recently petitioned the FDA to sneak artificial sweeteners into chocolate milk. They want their "shake and eat it, too" by pushing milkshake-like flavored milk drinks into schools as a "healthier" option, even though they have 30 grams of sugar per 8 ounces. By cutting the sugar and adding artificial sweeteners to low-fat or non-fat milk drinks, the idea is that they would be healthier. Except for the fact that recent studies have found that one diet drink a week increases your risk of type 2 diabetes by 33 percent and a large diet drink increases your risk by 66 percent.

What about low-fat milk or non-fat milk? These are the healthier options, right? Wrong.

Ludwig and Willett note that there is scant evidence that fat makes you fat, despite this commonly held mistaken belief. Reducing fat in milk reduces its ability to satisfy the

appetite (which fat does) and can promote overeating and hunger. Often, the fat in the diet is replaced with sugar and refined carbohydrates, which clearly has been shown to promote obesity and type 2 diabetes.

Studies show that reducing fat in the diet, which parallels an increase in starch and refined carbohydrates in the diet, not only increases hunger but also may actually slow metabolism. In one study, Dr. Ludwig found that those who ate a low-fat, higher glycemic diet burned 300 calories less a day than those who ate an identical calorie diet, but was higher in fat and lower in glycemic load. Those who ate the higher fat, lower glycemic diet, automatically burned more calories - that's like exercising an extra hour a day without doing anything!

More concerning still is that, in studies of kids and adults, those who consumed low-fat milk products gained more weight than those who ate the full-fat whole milk products. They seemed to increase their overall intake of food because it just wasn't as satisfying as the real thing. In fact, those who drank the most milk overall gained the most weight. It makes logical sense. Milk is designed to quickly turn a little calf into a big cow and contains over 60 different hormones, most designed to boost growth.

But shouldn't we stick to low-fat milk to reduce our intake of saturated fat? The fact is that, while your LDL (or bad cholesterol) goes down by reducing saturated fat in the diet, the protective cholesterol, HDL, actually goes up by eating saturated fat. This improves the ratio of total LDL to HDL cholesterol, which is the most important marker of your risk of heart disease. Switching out saturated fat for carbohydrates actually increased the risk of heart attack in a 12-year study of 53,544 adults. In fact, the whole story of the evil of saturated fats is in great debate. The evidence for linkage to heart disease turns out to be pretty weak indeed.

If you ate only whole foods, fruits, vegetables, beans, nuts, seeds, and whole grains (not whole grain flour), you might be better off overall (although a recent scientific review of satu-rated fat dismissed the very notion that it is bad for you). But sadly, that is not what most Americans do when they switch to low-fat.

The worst part is that many schools and "healthy" beverage guidelines encourage the idea that flavored milk is better than soda and that getting kids to drink more milk by any means is a good idea. This is dangerously misguided.

There are 27 grams of sugar in 8 ounces of Coca Cola and a whopping 30 grams of sugar in 8 ounces of Nestlé Chocolate Milk. Sugar is sugar and drives obesity and diabetes. It is not a good way to get kids to drink milk.

But that begs the bigger question. Do kids need milk? Is milk necessary for healthy bones and preventing osteoporosis? The evidence is clear, but our government policies don't reflect the science.

Dairy and milk products do not promote healthy bones. In a large meta-analysis, milk did not reduce risk of fractures. Other studies have shown it can increase fracture rates. And the countries with the lowest milk consumption have the lowest risk of osteoporosis and fractures. Calcium is not all it's cracked up to be. Studies show that higher calcium intakes are actually as-sociated with higher risk of fracture.

Milk may not grow strong bones, but it does seem to grow cancer cells. Milk increases the hormone called IGF-1, or insulin-like growth factor; it's like Miracle-Gro for cancer cells. Dairy products have been linked to prostate cancer. And cows are milked while pregnant (yes, even organic cows), filling milk with loads of reproductive and potentially cancer-causing hormones.

There are other problems with milk, as well. It increases the risk of type 1 diabetes. Dairy is a well-known cause of acne. And of course, dairy causes millions around the world (75 percent of the population) to suffer digestive distress because of lactose intolerance. It causes intestinal bleeding in 40 percent of infants leading to iron deficiency. Allergies, asthma, and eczema all may be triggered by dairy consumption.

The US Department of Agriculture's new My Plate initiative recommends three cups a day of milk for everyone! If you are two to nine years old, you get away with only two to two and a half cups. And the "key consumer message" is to switch to 1% or non-fat versions.

There is absolutely no biological requirement for milk, and the evidence for low-fat milk is lacking, along with the bone benefits. The dairy lobby has its tentacles deep in the US De-partment of Agriculture. One scientist friend of mine, who advises the government on food poli-cy, confided to me that when he protested that there was no evidence for the government's rec-ommendations that we all drink three glasses of milk a day and that doing so may be harmful, he was patronized with a "yes, we know, but the dairy lobby makes it difficult to make science into policy."

Let's just forget the science and spend taxpayer's dollars on promoting foods that we know are harmful, because money runs politics. To heck with the health of our citizens.

The Reason I Have Problems with the USDA Dietary Guidelines

I'm aware that my advice to avoid dairy flies in the face of the new, "up-to-date" Dietary Guide-lines from the United States Department of Agriculture (USDA). The guidelines recommend drinking three glasses of milk a day. What's wrong with that? Well, for one thing, it's not a rec-ommendation that's based on strict science.

Some of the "experts" who helped create the pyramid actually work for the dairy indus-try, which makes the USDA's recommendations reflect industry interests, not science or our best interests.

In fact, Walter Willett, M.D., Ph.D. - the second most cited scientist in all of clinical medicine and the head of nutrition at Harvard's School of Public Health - is one of the guidelines' most vocal critics. He's even called the USDA guidelines "utterly ridiculous." That's not something a Harvard scientist says lightly.

But Dr. Willett is right.

The Truth about Dairy

According to Dr. Willett, who has done many studies and reviewed the research on this topic, there are many reasons to pass up milk, including:

1. **Milk doesn't reduce fractures.** Contrary to popular belief, eating dairy products has never been shown to reduce fracture risk. In fact, according to the Nurses' Health Study , dairy may increase risk of fractures by 50 percent!
2. **Less dairy, better bones**. Countries with lowest rates of dairy and calcium consumption (like Africa and Asia) have the lowest rates of osteoporosis.
3. **Calcium isn't as bone-protective as we thought**. Studies of calcium supplementation have shown no benefit in reducing fracture risk. Vitamin D appears to be much more important than calcium in preventing fractures.
4. **Calcium may raise cancer risk**. Research shows that higher intakes of both calcium and dairy products may increase a man's risk of prostate cancer by 30 to 50 percent. Plus, dairy con-sumption increases the body's level of insulin-like growth factor-1 (IGF-1) - a known cancer promoter.
5. **Calcium has benefits that dairy doesn't**. Calcium supplements, but not dairy products, may reduce the risk of colon cancer.
6. **Not everyone can stomach dairy**. About 75 percent of the world's population is genetically unable to properly digest milk and other dairy products - a problem called lactose intolerance.

Based on such findings, Dr. Willet has come to some important conclusions:

- Everybody needs calcium - but probably not as much as our government's recommended daily allowance (RDA).
- Calcium probably doesn't prevent broken bones. Few people in this country are likely to reduce their fracture risk by getting more calcium.

- Men may not want to take calcium supplements. Supplements of calcium and vitamin D may be reasonable for women.
- Dairy may be unhealthy. Advocating dairy consumption may have negative effects on health.

If all that isn't enough to swear you off milk, there are a few other scientific findings worth noting. The Federal Trade Commission (FTC) recently asked the UDSA to look into the scientif-ic basis of the claims made in the "milk mustache" ads. Their panel of scientists stated the truth clearly:

- Milk doesn't benefit sports performance.
- There's no evidence that dairy is good for your bones or prevents osteoporosis - in fact, the animal protein in it may help cause bone loss!
- Dairy is linked to prostate cancer and heart disease.
- Dairy causes digestive problems for the 75 percent of people with lactose intolerance.
- Dairy aggravates irritable bowel syndrome.

Simply put, the FTC asked the dairy industry, "Got Proof?" And the answer was NO!

Plus, dairy may contribute to even more health problems, like:

- Allergies
- Acne
- Sinus issues
- Ear infections
- Type 1 diabetes
- Chronic constipation
- Anemia (in children)

Due to these concerns, many have begun to consider raw milk an alternative. But that isn't really a healthy form of dairy either …

Yes, raw, whole, organic milk eliminates concerns like pesticides, hormones, antibiotics, and the effects of homogenization and pasteurization; but to me, these benefits don't outweigh dairy's potential risks.

From an evolutionary point of view, milk is a strange food for humans. Until 10,000 years ago, we didn't domesticate animals and weren't able to drink milk (unless some brave hunter-gatherer milked a wild tiger or buffalo).

If you don't believe that, consider this: The majority of humans naturally stop producing

sig-nificant amounts of lactase - the enzyme needed to properly metabolize lactose which is the sugar in milk - sometime between the ages of two and five. In fact, for most mammals, it is normal to stop producing the enzymes needed to properly digest and metabolize milk after they have been weaned.

Our bodies just weren't made to digest milk on a regular basis. Instead, most scientists agree that it's better for us to get calcium, potassium, protein, and fats from other food sources, like whole plant foods - vegetables, fruits, beans, whole grains, nuts, seeds, and seaweed.

So here is my advice for dealing with dairy.

5 Tips for Dealing with Dairy

- **Don't rely on dairy for healthy bones**. If you want healthy bones, get plenty of exercise and supplement with 2,000 IU of vitamin D daily.
- **Get your calcium from food**. These include dark green leafy vegetables, sesame tahini, sea vegetables, and sardines or salmon with the bones.
- **Try giving up all dairy**. That means eliminate milk, cheese, yogurt, and ice cream for two weeks and see if you feel better. You should notice improvements with your sinuses, post-nasal drip, headaches, irritable bowel syndrome, energy, and weight. Then start eat-ing dairy again and see how that makes you feel. If you feel worse, then you should try to give dairy up for life.
- **If you can tolerate dairy, use only raw and organic products**. I suggest focusing on fermented products like unsweetened yogurt and kefir, occasionally. And try sheep or goat dairy which may be less allergenic and better tolerated for many.
- **If you have to feed your child formula from milk, don't worry**. The milk in infant formula is hydrolyzed or broken down and easier to digest (although it can still cause allergies). Once your child is a year old, switch him or her to real food and almond milk.

Bottom line:

Milk is not nature's perfect food unless you are a calf and should not be con-sumed in large quantities by most people, because it can promote weight gain, cancer, and even cause osteoporosis. Write to your Congressmen to encourage them to support changes to our food and farm bill policies that shape our nutritional guidelines and urge them make the policies evidence based. The answer to the question, "Got Proof?" **is a resounding** "Heck no!"

Still got milk? I hope not! Remember, dairy is **not** crucial for good health. I encourage you to go dairy-free and see what it does for you.

But What If You Choose to Eat Dairy?

You are now clear that I do not think dairy is a requirement for a healthy diet, and in most cases it is better to be dairy-free or eat minimal amounts of dairy. But if you choose to eat some dairy, there are a few things you should know. Below, I review the research on dairy in a bit more detail so you have all the facts and can make the right choices for you and your family.

Industrial Whole Milk

For many years, whole milk has been demonized. As with many nutrition and health myths, but what does science really say? Well, one study published by the *Scandinavian Journal of Primary Health Care* came to a strong conclusion that "A high intake of dairy fat was associated with a lower risk of central obesity and a low dairy fat intake was associated with a higher risk of central obesity."[9]

This clear finding paved the way for a steady stream of studies uncovering the truth and debunking the myth that full fat dairy products cause us to be fat. We have become aware of the beneficial omega-3 fats found in full fat dairy products, that they actually help the body use fat, versus storing fat.

Conventional milk is a decent source of vitamin D and calcium. Whole milk contains 183mg of omega-3 fats. As with choosing beef, drinking conventional milk does come with certain risks. Conventional whole milk comes from cows that are fed the standard GMO-grain feed diet, and are raised on hormones and antibiotics. When you choose grass-fed organic milk you reduce the risk of ingesting toxic hormones and antibiotics, as well as gain the benefit of higher omega-3 and a higher nutrient content.

9 Naughton, T. (2013) Keto Cookbook. Web. http://75.103.90.164/index.php/category/news-and-reviews/page/2/

Grass-fed Whole Milk

Cows grazed in pasture year-round produce 100 percent grass-fed milk rather than cows fed a processed grain-based diet. Grass feeding is the cows' natural diet and ensures the greatest quality of milk produced. This milk is much higher in omega-3 fats, vitamin E, beta-carotene, and CLA versus milk from conventionally fed cows.

There are about eight grams of total fat in about eight ounces of whole grass-fed cow's milk. About 25 percent comes from monounsaturated fa, which is in the form of oleic acid, which is the fat found in olive oil. About 56 percent comes from saturated fat. About six to seven percent of this saturated fat is "short-chain" saturated fat and it can act as a "probiotic" that promotes the survival of friendly bacteria in the GI tract. Almost half of the saturated fat is "medium chain", the type of fat found in coconut oil. This type of fat is digested easier and used by the body efficiently, which also makes it beneficial to our immune system. Also included is 50-65 milligrams of omega-3s. Grass-fed whole milk has a low ratio of omega-6 to omega-3 fat around 2:1 to 3:1.

Grass-fed whole milk also contains CLA, which helps our immune system, heart and provides anti-inflammatory properties.

Whole milk is considered a whole, natural food because it is the least processed form of milk. 2 percent, skim or non-fat milk is highly processed and refined.

Benefits:

Grass-fed milk provides a great source of vitamin B12, iodine, vitamin B2, vitamin D, and phosphorus as well as calcium, pantothenic acid, selenium, biotin, protein, and vitamin A.

Research shows an eight-ounce glass of grass-fed cow's milk has about 75 milligrams of CLA. Sometimes you can get around three times this amount.

The amount of CLA tends to be more in the milk of cows 100 percent grass-fed. In fact, the amount of CLA from grass-fed cows is usually about five times greater than from conventionally fed cows.

Useful tips:

Choose organic. Organic standards help to lower your risk of ingesting milk from cows given contaminated feed. Also, organic milk tends to have a higher nutrient content. The organic designation alone doesn't ensure a totally naturally raised dairy cow.

Even better choice, go with 100 percent grass-fed. Don't be fooled by misleading food labels that name milk as "natural" or "pasture-raised." Labeling laws allow companies to

display these terms on their products even if the cows see the outside just for a little while or not at all in a natural pasture setting. Again, to be sure it must be 100 percent grass-fed. Have a conversation with your grocer or dairy cow farmer to investigate just how the animals are being raised.

Try visiting local farms. Organic, 100 percent grass-fed cow's milk may be obtained from local farms, which provide a truly natural, pastured environment for the cows. Two great sites that can help you find smaller local farms where you live are www.localharvest.org and www.eatwild.com. You can enter your zip code when doing a search in both sites.

Butter

Butter mostly comes from animal fat with very small amounts of dairy proteins and sugars. The amount of nutrition of an animals' meat depends on an animals' diet, and this is especially true for butter.

Both grass-fed and grain-fed cows produce butter rich in saturated fat. Grass-fed cows, however, produce butter with an omega-6 to omega-3 ratio of about 1:1. Cows that are fed only grain produce a much higher omega-6 content in comparison.

Benefits of consuming Grass-fed Butter

Both grass-fed butter and conventional butter has about the same nutrition facts listed. Grass-fed butter is much higher in CLA and has a better balance of omega-3 and omega-6 fats. Pasture feeding allows for dairy CLA levels three to five times that of grain-fed cows. Their special digestive tract allows cows to produce CLA internally when allowed to eat their natural diet, grass. CLA has been associated with tremendous heart health, anti-tumor, and obese and overweight individuals see greater fat loss.

Vitamin-wise, grass-fed butter is deep yellow because it contains much more carotene and vitamin A. Another vital part of grass-fed butter is vitamin K2. Dr. Weston A. Price came to the conclusion that only cows fed on pastures contained high amounts of this essential vitamin. Cow stomach fermentation turns K1 (found in leafy greens like kale, chard, spinach, and grass) into K2, which then is in the butter they produce.

Grass-fed butter also contains the fatty acid butyrate, which fights inflammation throughout the body, especially in the cardiovascular system.

Useful tips:

The best choice is to purchase organic butter from grass-fed cows. Kerrygold, an Irish

dairy company is one such popular brand that uses grass-fed cows only. Kerrygold can be found in your local supermarket and also in Costco. It is available in sticks and in a softer spreadable form. Other good brands to choose from are Anchor and Organic Valley.

Ghee

Ghee is also called clarified butter. It is melted down and allowed to simmer on low until most of the water evaporates, which leaves only the fat and milk solids. It has a higher smoke point than butter so it can be used to cook, sear, or fry.

Benefits of ghee are about the same as grass-fed butter. Ghee can be purchased online from great sources and can also be made from grass-fed butter. This recipe for ghee from The Ayurvedic Institute has detailed steps for how to make ghee.

Yogurt

Yogurt has the fat and nutrient benefits of other dairy. When milk becomes cultured, friendly bacteria known as probiotics form. This is what gives yogurt its thick, creamy texture. The probiotic in yogurt helps to maintain balance and promotes a healthy digestive tract.

The best to choice is whole fat, organic, plain yogurt. Conventional whole milk yogurt does pose similar risks as conventional dairy products like hormones and antibiotics. Going organic and grass-fed is the best way to go.

Greek Yogurt

Greek yogurt is thicker in consistency as the whey is strained out. You also want to go with whole fat, organic plain Greek yogurt.

Grass-fed whole milk yogurt is the superior choice. It is hormone-free, antibiotic-free, and contains much more nutrition, as well as CLA. It becomes a great source of iodine, B12, phosphorus, calcium, and zinc.

Goat Dairy

This is an excellent alternative to cow's milk, especially for those who experience digestive issues with consuming it. Goat milk only accounts for two percent of the world's milk supply.

Benefits:

Goat's milk is actually closer to human breast milk in its chemical makeup. It contains smaller fat cells than cow's milk and has more medium-chain fats.

For this reason, many find goat's milk easier to digest. Goat milk can be anti-inflammatory. According to the Global Healing Center, "Goat milk has traditionally been used in medical cultures to nourish and regenerate an over-taxed nervous system." The immune system may benefit from ingesting goat's milk, since it is high in selenium, a necessary nutrient for immune function.

Useful tips:

Goat dairy is becoming more popular and therefore more readily available, even in conventional supermarkets. If you haven't noticed already, demand drives supply. Again, always go with organic and grass-fed as much as possible. Raising goats for their milk is becoming more common, so it may be possible for you to find a local source for goat's milk.

Goat cheese has similar benefits on the digestive tract because it is easy to digest.

Goat yogurt is also a great choice for those who have a hard time with digesting dairy from cows. It has a similar protein and nutrient content as cow's milk.

Sheep Dairy

Sheep's milk has the highest amount of protein and calcium content of all the dairy milks.

Sheep's milk cheese is actually quite common. Feta cheese from Greece is made from sheep's milk and is very popular. The most common sheep's milk product in the U.S. is Pecorino Romano cheese from Italy. Both cheeses have similar benefits of sheep's milk, including omega-3 content.

Sheep yogurt is similar in nutrition to other sheep's milk products. Sheep yogurt, like sheep milk is high in calcium, phosphorus, riboflavin, and B12 vitamins.

Raw Dairy

Raw dairy is dairy that has not been pasteurized. RealMilk.com states that "Pasteurization was instituted in the 1920s to combat TB, infant diarrhea, undulant fever and other diseases caused by poor animal nutrition and dirty production methods." At the same time, Real Milk argues advances in the technology and changes in dairy production methods make pasteurization unnecessary.

Pasteurization potentially destroys nutrients and enzymes naturally occurring in raw milk like calcium, Vitamins A and D, B vitamins, and minerals. Raw and conventional milk share a similar nutrient profile RealMilk.com says, "The problem is that when you do an analysis for vitamins and minerals, raw milk does not look that different from pasteurized. But what is destroyed is the carrier proteins, which are destroyed by pasteurization."

The opposition says that raw dairy is dangerous and threatens public health. The Centers for Disease Control states: "A wide variety of germs that are sometimes found in raw milk can make people sick, including bacteria like Brucella, Campylobacter, Listeria, and other harmful parasite-causing toxins." The CDC recommends that people with compromised immune systems, people who are sick, infants and children, women who are pregnant and the elderly should avoid raw dairy. However, the documented cases of illness from raw dairy happen in people of all ages.

Know your state regulations when considering drinking raw milk. Go to www.realrawmilkfats.com and find your state to learn about raw milk laws where you live. There are many testimonials from those who choose to consume raw milk and report its many health benefits. According to Realmilk.com: "Raw milk helps to relieve asthma and allergies, and raw milk is digested much easier than pasteurized milk…it can help adult diseases such as osteoporosis, arthritis, fatigue, digestive issues, weight loss, and

potentially cancer." Realmilk.com also has testimonials that state raw milk helps with ADD/ADHD in children.[10]

Raw milk does have health benefits. Raw-milk-facts.com states, "Few people are aware that clean, raw milk from grass-fed cows was actually used as medicine in the early part of the last century…Milk straight from the udder, a sort of "stem cell" of foods, was used as medicine to treat, and frequently cure some serious chronic diseases. From the time of Hippocrates to until just after World War II, this "white blood" nourished and healed uncounted millions."[11]

Ensure the source of your raw milk is of high quality. Go to www.realmilk.com to find listings of raw dairy sources in each state. Get to know your farmer and talk to them about their process. Check out this power point presentation from RealMilk.com for excellent information on raw milk.

Realmilk.com lists key points of what to look for and verify when you choose a raw milk source.

Cows are allowed to graze on grass that has not been sprayed with pesticide except during cold weather and then are fed mainly hay in their barns. The herd is tested to ensure they are free of TB and brucellosis. The cow's teats are washed with iodine when a milking machine is used, to disinfect before putting the milking caps on. The milking shed and the areas surrounding it are thoroughly cleansed. The milk is stored very cold in tanks made of stainless steel. Milk is also tested quite regularly to make sure it does not contain harmful pathogens.

10 Jardim, N. (2011). Fat, You Need it! Web. http://nicolejardim.com/tag/raw-milk/

11 Jardim, N. (2011). Fat, You Need it! Web. http://nicolejardim.com/tag/raw-milk/

Non-Dairy Milk

As with all dairy, choose organic, homemade or raw non-dairy milks.

Cashew Milk

Cashews make a great alternative milk to dairy and you can make it at home yourself. Cashews are very high in minerals like copper, magnesium, and selenium, B vitamins, Vitamins A and D, and a great source of monounsaturated fats. Always be aware of allergies when consuming any milk.

Useful tips:

Cashew milk is available from several popular brands. Cashew milk is easy to make and there are some really great recipes for making it on your own online. Start with raw, unsalted cashews. Make sure you have a good blender. Here is one recipe from The Blender Girl for creamy cashew milk.

Soy Milk

Soymilk is very similar in its protein content to cow's milk. Other nut milks do not have as much protein as soymilk, which is lactose-, dairy-, and gluten-free.

Conventionally produced soy milk typically uses GMO soybeans. Even organic soymilk poses many significant issues, including:

Goitrogens - Elements that cause a blocking of the thyroid hormones being synthesized and also inhibit iodine metabolism.

Isoflavones: genistein and daidzein - Types of pro-estrogens known to disturb endocrine function, cause infertility, and cause breast cancer.

Phytic acid - These bind to metals and inhibit the absorption of specific minerals like calcium, magnesium, iron, and zinc. Soybeans contain the highest phytate levels of any grain or legume. These phytates are highly resistant to the normal phytate-reducing methods like longer, slow cooking. The only method that will greatly reduce soybeans' phytate content is a long fermentation period.

Anti-nutrients - Saponins, soyatoxin, protease inhibitors, and oxalates which are natural toxins. Some of them disrupt the enzymes we need to digest proteins. In small amounts, these anti-nutrients do not normally pose a problem.

Hemagglutinin - A substance that encourages blood clotting which causes red blood cells to stick together along with the cells which cause a situation where they not able to absorb and distribute oxygen to your tissues.

Hemp Milk

Hemp milk is a wonderful alternative to nut milks and soymilk. Dr. Andrew Weil states, "Hemp milk has a good fatty-acid profile; it has some omega-3 fats in it. It's a safe option for people who are allergic to tree nuts or soy."[12]

Hemp milk is becoming very popular and beginning to take its rightful place in the alternative milk business. Once vilified, because hemp is a part of the cannabis plant, more and more research reveals its health benefits. Hemp milk is a great source of iron, magnesium, Vitamin E, and is a balanced source of omega fats, having a 3:1 ratio of omega-3 fats to omega-6 fats.

Almond Milk

Almond milk is a great choice as it has the same health benefits as almonds. Very little protein is in almond milk so it is not a complete substitute for cow's milk. It is a great source of vitamins A, D, and E as well as calcium. Almond milk is lactose-, dairy-, soy-, and gluten-free.

Useful tips:

Boxed almond milk is not he recommended choice as it contains added fillers and synthetic vitamins and minerals. Almonds are unsaturated fat, making it a very delicate and unstable fat source sensitive to heat, light, and oxygen, all of which almonds are exposed to in commercial almond milk processing.

Homemade almond milk is the best way to go. It is very easy to make and you can find

12 Kasper, R. (2013). Dr. Andrew Weil on Milk Options. Web. http://www.splendidtable.org/story/dr-andrew-weil-on-milk-options-only-soy-has-comparable-protein

recipes easily online. Choose raw, unsalted almonds. Here is an easy almond milk recipe from OhNuts.com.

Coconut Milk

Coconut milk is another excellent source for a non-dairy milk. Coconut is not a common allergen, so coconut milk can be a great alternative for people with nut or soy allergies as well as cow's milk. Coconut milk actually provides 50 percent more calcium than cow's milk, making it the best choice for calcium among dairy and non-dairy milks.

Benefits:

The majority of the fat content that coconuts provide is in the form of medium-chained fatty acids, which the body uses efficiently for energy. One important MCFA present in coconuts is lauric acid. Lauric acid is antiviral, antibacterial, and antifungal.

Coconuts are extremely nutritious and high in fiber, vitamins C, E, B1, B3, B5 and B6 and minerals like iron, selenium, sodium, calcium, magnesium and phosphorus.

Useful Tips:

Choose organic, BPA-free, full-fat coconut milk. Do not purchase coconut milk in boxes, which often include synthetic vitamins and minerals as well fillers and other potentially toxic ingredients like carrageenan.

Quinoa Milk

Quinoa milk has been gaining popularity and will most likely be available on shelves next to coconut and hemp milk.

Useful tips:

Quinoa is also very easy to make at home. Quinoa milk has a nutty flavor and a light texture, very much like almond milk.

Nuts and Seeds

Choose certified organic, raw nuts and seeds. Try to avoid roasted or salted nuts, since high temperatures used by commercial roasting damages the delicate fats found in nuts and seeds. If you desire, you may light roast them yourself at low oven temperatures.

Buying raw nuts and seeds will allow you to control roasting time and temperature and avoid unnecessary destruction of healthy fats that are present in nuts and seeds.

If possible, soak your nuts and seeds to reduce lectins, phytates, and enzyme inhibitors. These are anti-nutrients that block nutrient absorption, cause digestive issues, and inhibit enzymes. Preparation of nuts and seeds is essential to unlocking their nutrition and to deactivate any substances that could irritate the gut.

Soaking and rinsing raw nuts and seeds effectively reduces the phytates and enzyme inhibitors then roasting does. Soaking also enhances the flavor.

Soaking is a relatively simple process: Soak raw nuts or seeds in warm salt water overnight for up to 24 hours. Make sure the nuts and seeds are fully emerged in the water. Add one tablespoon of sea salt to four cups of nuts or seeds. Once they are finished soaking, rinse them off thoroughly. Also very important is to let them dry fully. Lay them out in the sun or set on warm setting in the oven, not more than 120 degrees. With a dehydrator, you can set the heat setting to no more than 108 degrees to preserve most nutrients.

Studies show consuming nuts at least four times a week reduced the risk of cardiovascular disease by 37 percent versus those who never ate or very seldom ate nuts. Each additional serving of nuts each week was linked with an average 8.3 percent reduction in the risk of cardiovascular disease.

Another study from the Journal of Obesity showed people who ate nuts at least twice a week were much less likely to gain weight than those who almost never ate nuts. Researchers concluded: “Frequent nut consumption was associated with a reduced risk of weight gain. These results support the recommendation of nut consumption as an important component of a cardioprotective diet and also allay fears of possible weight gain.”[13]

13 Salyer, J. (2014). Organic Superfoods Review. Web. http://runonorganic.com/tag/antioxidants/

Almonds

Almonds are found in the fruit of almond trees. The almond nut is actually the seed of the almond fruit. The almond tree is cousins with the cherry, peach, and apricot trees.

Almonds contain 62 percent monounsaturated oleic acid, 24 percent polyunsaturated linolenic acid, and eight percent saturated fat.

Almonds are a great source of vitamin E, manganese, biotin, and copper. Almonds are also a great source of magnesium, molybdenum, vitamin B2, and phosphorus.

Benefits:

A study done on almond consumption and fatty acid profile found “almond consumption increases oleic acid and MUFA content in serum TAG and NEFA fractions, which are inversely associated with CHD lipid risk factors and overall estimated 10-year CHD risk.”

Almonds also reduce lipid oxidation in older adults with hyperlipidemia. Almonds improve insulin sensitivity in non-diabetics. Almonds improve blood sugar control and lipid profiles for people with type 2 diabetes.

Almonds are a great snack choice as the healthy fats keep you full. Almonds also contain powerful prebiotic fibers, especially in the skins, making it an excellent food source for friendly bacteria in the gut. Almonds also improve the endocrine profile of women with polycystic ovary syndrome (PCOS): reduced LDL cholesterol and apoprotein B, increased adiponectin, and reduced free androgen index.

Almonds help with preventing blood sugar spikes after meals and also provide a sufficient amount of antioxidants.

Eating almonds with foods that tend to have higher amounts of sugar greatly lowers the glycemic index of the meal and decreases spikes in blood sugar after eating. The more almonds consumed, the less rise is seen in people’s blood sugar after eating.

A study published in the *Journal of Nutrition* found that almond skins which contain high amounts of certain flavonoids in combination with vitamin E in their meat more than double the antioxidant power delivery when consumed without them. The study looked at how the almond skin flavonoids by themselves and then combined with the vitamin E content in the meat of the almond’s effects on blood samples containing LDL cholesterol. It was found that the almond skins by themselves did improve LDL’s resistance to oxidation by 18 percent. However, when vitamin E in the almond meat was also added LDL’s resistance to oxidation was increased by 53 percent.

Almonds are effective at reducing C-reactive protein (CRP), a marker for inflammation, just as much as statin drugs.

A study from the *International Journal of Obesity and Related Metabolic Disorders* found that a lower calorie diet that included almonds could help overweight people lose more weight compared to a lower calorie diet also high in complex carbohydrates.

The subjects on a diet that included almonds involved a 39 percent consumption of fat, 25 percent contained monounsaturated fat. The individuals on the complex carbohydrate diet consumed about 18 percent of calories as fat, which was five percent monounsaturated fat and 53 percent of calories from carbohydrate. Both of the diets provided the exact same amount of calories and equal amounts of protein. After six months, the individuals on the almond diet lost more weight, saw reductions in their waist size, reduced body fat, body water and blood pressure. The individuals who ate almonds saw a 62 percent greater reduction in their BMI and weight, lost 50 percent more from their waistline, 56 percent more body fat compared to the individuals on the complex carbohydrate diet. In 96 percent of the subjects on the almond diet with type I diabetes, their medications were reduced compared to 50 percent on the complex carbohydrate diet.[14]

Useful tips:

Most raw almonds advertised in supermarkets have been pasteurized. Buying directly from the farmer can help you get truly raw, unpasteurized almonds.

Almonds with their shells tend to have a longer shelf life. If you buy these, you'll want to look for ones where the shells are not split, moldy or stained. Also, smell the almonds. To test whether they are rancid or not just smell them. You should smell a sweet nutty smell not a sharp or bitter smell.

If you prefer a roasted flavor, look for "dry roasted" as they are not cooked in oil. Read food labels to make sure no added ingredients or sugars or corn syrup are present.

Almonds have a high fat content so it is very important to store them so they do not go bad. Store in a sealed container in a cool dry place ensuring no exposure to sunlight. Store them in a refrigerator or freezer to further protect them and keep them even longer for several months.

14 Minton, B. (2013). Almonds Aid Weight loss and Lower LDL Cholesterol. Web. http://www.naturalnews.com/025427_almonds_fat_diet.html

Concerns:

Phytates are very high in almonds. Phytates have both good and bad sides. On the one hand, they bind materials and prevent absorption. However, they may be converted into beneficial compounds in the gut and have anti-cancer effects.

Proper soaking and drying and/or low temperature roasting almonds can also help to reduce phytate levels.

Walnuts

The English walnut, (or Juglans regia), the black walnut, (or Juglans nigra), and the white wal-nut, (or Juglans cinerea) are the most commonly eaten nuts. The English walnut is the most commonly eaten kind in the U.S., which has a thin shell easily broken with a nutcracker.

The English walnut and black walnuts differ in a few significant ways. The omega-3 content of English walnuts is 5 times that of black walnuts.

Most nuts are high in monounsaturated fats, while walnuts are mostly made up of polyunsatu-rated fats, especially alpha-linolenic acid and linolenic acid.

Walnuts pack a hefty antioxidant punch. They also provide a great source of manganese, copper, molybdenum, and biotin. Other minerals include calcium, chromium, iron, magnesium, phosphorus, potassium, selenium, vanadium and zinc.

Walnuts are particularly high in anti-inflammatory nutrients like tannins, phenolic acids, and flavonoids and quinones like juglone. Also very important to mention is a walnut's high content of vitamin E, a powerful antioxidant. In fact, along with pecans and chestnuts, walnuts have the greatest amounts of antioxidant content of all the tree nuts.

Studies show regular consumption of walnuts greatly decreases a person's risk for heart disease. Adding walnuts to your diet is not likely to cause weight gain. Studies show adding a small amount of walnuts (one to two ounces daily) to the diet of individuals with type 2 diabetes improved blood lipids and cholesterol while decreasing their overall risk of heart attack.

Eating walnuts regularly improves the endocrine profile of women with PCOS. Walnuts also decreased LDL cholesterol and inflammatory marker apoprotein B, increased insulin response, and sex hormone-binding globulin.

Walnuts naturally contain the hormone melatonin, which in our nervous system, is a very

active messaging molecule.

Studies also show consuming healthy amounts of good fats like walnuts improve brain function and mood as well as overall sense of wellbeing.

Walnuts also have anti-cancer properties. Studies show the ability for people to enjoy the health benefits of walnuts by eating as few as four walnuts a day.

Useful tips:

When you are choosing walnuts with the shell, it is important to make sure the shells are not broken, cracked or stained. This could signify the presence of mold, thus making it inedible.

If it is possible, smell the walnuts to make sure they are not rancid. Because they have such high amounts of polyunsaturated fat, walnuts can spoil very easy so care needs to be taken in their storage.

Shelled walnuts need to be placed in a container with a tight lid or seal and put in the fridge. They can keep for 6 months in the fridge or one year in the freezer. Unshelled walnuts need to be stored in the fridge or freezer.

Concerns:

Walnuts go rancid quickly, so purchase in small amounts, preferably in the shell. Allergies are common with nuts so be cautious and aware. Walnuts are also moderately high in phytates, so with all nuts and grains don't overdo your intake.

Pecans

As with walnuts, pecans are high in omega-6 fats, mostly linoleic acid, at the same time pecans contain around half as much omega-6 fatty acids as walnuts. Pecans are a great source of manganese, with 55 percent of the Recommended Daily Intake.

Studies show an increase in antioxidant capacity and lowered LDL oxidation with the consumption of pecans. One study looked at men and women with moderately high serum cholesterol levels and showed that a pecan rich diet improved their lipid profile. Researchers concluded, "Nuts such as pecans that are rich in monounsaturated fat may therefore be recommended as part of prescribed cholesterol-lowering diet of patients or

habitual diet of healthy individuals."[15]

When comparing the oil and polyphenols alone, studies show whole pecans are the most effective at reducing inflammation and oxidative stress.

Another study at the University of Massachusetts looked at age-related muscle nerve decline and found pecan consumption might delay this process.

Another study with rodents found mice given a diet that contained pecans grounded up saw a much greater decline of brain performance versus mice that did not receive pecans. The study shows that pecans have a high amount of antioxidant power that may help prevent cellular damage.

Useful Tips:

As with other nuts, choose pecans that feel heavy in size if not shelled. When buying pecans in the shells, they should not be broken, cracked, or stained. Again, this may be a sign of mold forming. This makes it unsafe to eat. Use the same criteria as other nuts when choosing pecans. If possible, do a smell taste to make sure they are fresh.

Pecans are high in polyunsaturated fat content, making them spoil easily. Buy small amounts and store in airtight containers in the fridge or freezer, especially unshelled pecans. As with all nuts, be aware of allergies.

Macadamia

Macadamia nuts make a great source of monounsaturated fats and are very low in polyunsaturated omega-6 fats. They are also low in phytates and not necessary to soak or sprout.

A study conducted on men with high serum cholesterol levels found regular consumption of macadamia nuts improved their lipid profiles. The same effect has been seen in women with high cholesterol as well.

Research also demonstrates that macadamia nuts also decrease oxidative stress and inflammation.

15 Swift, J. (2007). Diet Choices, Healthy Habits and Supplements. Web. http://gathman.org/diet/Diet.pdf

Useful tips:

Inspect macadamia nuts to ensure there is no sign of moisture or insect bites and they are not shriveled up. Do a smell test to make sure they are not rancid. Pesticide levels are low in macadamia nuts, even when grown conventionally, so organic is not necessary.

Brazil Nuts

The Brazil nut tree is located in the Amazon rainforest and is one of the largest. It often reaches a ripe old age of 1,000 years.

The fruit of the Brazil nut tree produces a large fruit hard enough to cause some real damage to people or vehicles if it were to fall on them. Inside each of these fruit are 24 triangular shaped, hard-shelled seeds called Brazil nuts.

Brazil nuts are made up of 38 percent monounsaturated fat, 31 percent polyunsaturated, and 23 percent saturated fat.

Benefits:

Brazil nuts are most commonly known for their high amount of selenium. The only other foods that can compare are animal kidneys and wild salmon, so selenium can be hard to come by. Selenium becomes absolutely essential for thyroid function, antioxidant capability, immune function, heart health protection, and cancer protection just to name a few. A nut or two a day will do the trick to get proper amounts of selenium.

A recent study looked at the effect of a single serving of Brazil nuts on inflammation of healthy people. Researchers found that “Brazil nuts significantly lower inflammation and showed a long term decrease in inflammation after a single intake of Brazil nuts.” That is astounding!

A single serving of Brazil nuts has also shown to improve lipid profiles of healthy individuals. LDL was significantly lowered while HDL was higher after subjects ate about 20 or 50 grams of the nuts.

Brazil nuts improve selenium levels, increasing glutathione levels and lower inflammation.

One study tested the hypothesis that daily intake of Brazil nuts would increase selenium levels, glutathione activity, lipid profile, and decreased cardiovascular risk in severely obese women. All were selenium deficient and interestingly, this was corrected after the daily consumption of Brazil nuts. Also observed was a significant increase in HDL cholesterol levels.

The study found these obese people who eat Brazil nuts daily could improve selenium levels and lipid profile, especially HDL levels, therefore reducing cardiovascular risks.

Useful Tips:

When purchasing Brazil nuts, check for no moisture or insect bites and that they are not shriveled up. Always do a smell taste to make sure they are not rancid.

Concerns:

The vast amount of selenium in Brazil nuts causes some people to worry over selenium toxicity. However, research shows that extremely high doses of selenium (selenosis) in the form of Brazil nuts appear to be safe.

Phytate levels are high in Brazil nuts, but since you only have to eat small amounts to reap the benefits, it should not concern you.

Cashews

Cashew nuts are really seeds that are stuck to the bottom of cashew apples. The apple is edible actually. The cashew shell, however, is lined with a poisonous resin called cashew balm. Cashews themselves are not poisonous because arrive in your local supermarket cleaned and ready to eat. (Raw cashews aren't actually raw.) Cashews are a great source of copper, phosphorus, magnesium, manganese, and zinc.

Compared with other nuts, cashews are passable but not as nutrient rich as say, almonds.

Useful tips:

The typical process for obtaining cashews uses very high heat machinery cooking or scorching the cashews. This high heat process damages proteins, enzymes, and oxidizes the cashews delicate essential fatty acids. Look for "truly raw cashews" that are hand cracked using a specially designed tool to remove the kernel, or choose "nearly raw" cashews that use a quick steam process to separate the shell and the nut.

Use the same techniques as with other nuts to ensure fresh cashews.

Because of their high oleic acid content, cashews tend to be more stable than most other nuts. They should still be stored in sealed containers in the fridge or freezer. Cashew butter should always be refrigerated after opening.

Concerns:

Cashew allergies are just as prevalent as peanut, and may even be more severe in children than peanut allergy so be aware of this. Cashew allergy often presents with mango allergy.

Hazelnuts

Another name is “filberts.” Hazelnuts are 76 percent monounsaturated, 13 percent polyunsaturated, 7 percent saturated fat.

Benefits:

Hazelnut skin is “one of the richest sources of polyphenolic compounds, with 3 times the total antioxidant capacity of whole walnuts, 7-8 times that of dark chocolate, 10 times that of espresso coffee, and 25 times that of blackberries.”

As with many other studies on other nuts, a hazelnut-enriched diet shows improvements in lipid profile, decreased inflammation, and decreased risk of heart disease. Researchers conclude “a high-fat and high MUFA-rich hazelnut added diet was superior to a low-fat control diet.”[16]

Tree nuts, especially almonds, walnuts, and pistachios have shown tremendous heart health protection. While few studies have focused specifically on hazelnuts, some do demonstrate improvements in inflammation and lipid profile however. They also can increase HDL, enhance vitamin E status, and reduce oxidation of LDL particles.

Useful tips:

Follow the same rules as with all other nuts when purchasing. Test for look and smell. Ensure no evidence of moisture or insect damage.

Concerns:

Be aware of any allergies and moderate phytate levels do exist.

16 Del Rio, D. J. Agric. Food Chem., (2011). Polyphenolic Composition of Hazel Nut Skins. Web. http://pubs.acs.org/doi/abs/10.1021/jf202449z

Pistachios

The pistachio is truly a highly nutritious nut containing fatty acids that are very beneficial to heart health. They also come loaded with protein, fiber, potassium, magnesium, vitamin K, vitamin E, and a vast amount of different phytochemicals.

The pistachio contains lutein and anthocyanin which gives its kernel a unique green and purple color. A true king of nuts similar to Brazil nuts, pistachios have the greatest amounts of potassium, vitamin E, vitamin K, phytosterols, and xanthophyll carotenoids.

Pistachios contain 52 percent monounsaturated, 30 percent polyunsaturated, and 13 percent saturated fats.

Pistachios are a great source of copper. 100 grams provide 65 percent of Daily Recommended Intake (DRI) of copper, a mineral necessary for brain health as well as red blood cell production.

Benefits:

Research shows eating pistachio nuts makes the friendly bacteria lining our digestive tract very happy. Research shows pistachios are a great source of powerful prebiotic fiber (friendly bacteria food) that benefits gut flora, even more so than almonds and almond skins.

“Gut microbiota, or the microbial environment in the gastrointestinal tract, provides important function to the human host,” said Volker Mai, PhD, lead study author and assistant professor at the University of Florida’s Institute of Food and Agricultural Sciences. “Modifying microbiota towards a ‘beneficial’ composition is a promising approach for supporting intestinal health, with potential effects on overall health, and it appears that pistachios may play a role in this modification.”[17]

Studies confirm that adding pistachios as part of a moderate-fat diet positively improves the outlook of those individuals with an increased risk of cardiovascular disease. The study also showed improvements in metabolic syndrome markers, such as decreasing small and dense LDL levels.

Emerging evidence also shows adding pistachios to meals consisting of high-glycemic foods may lower insulin spikes.

17 Kantrowitz, J. (2012). Consumption of Resistant Starch May Protect Against Bowel Cancer. Web. http://healthnewsreport.blogspot.com/2012_04_01_archive.html

Consuming pistachios in moderation may help to maintain a healthy body weight because eating them keeps you full and satisfied longer. One study compared subjects participating in a weight-loss program and found those who consumed pistachios demonstrated a lower body mass index as well as lower triglycerides versus those subjects consuming a pretzel snack.

Useful tips:

Your best bet is to go for raw, unshelled pistachios. It can be hard to find pistachios that have not been roasted and/or salted, however specialty markets and health food stores will often carry raw, unshelled pistachios.

As with all nuts, use the same criteria in determining freshness. Smell them whenever possible to make sure they are not rancid. There should be no cracks other than the natural split.

Concerns:

Be aware of any allergy present.

Peanuts

Peanuts technically are legumes, not nuts. They are related peas, lentils, chickpeas and other beans which are all foods from the legume family.

Peanuts grow above the ground as a flower at first. It becomes very heavy so it forces a bending towards the ground. The flower later burrows under the ground. This is the location where the peanut starts to mature and grow.

Peanuts are made up of 50 percent monounsaturated, 32 percent polyunsaturated, 14 percent saturated fats.

Benefits:

Peanuts can protect us from heart disease. One showed consuming peanuts and peanut butter as part of a high monounsaturated diet decreased heart disease risk by an estimated 21 percent in comparison to the typical diet in the U.S.

Another body of research done by scientists from the University of Florida published in the journal Food Chemistry displayed that peanuts contain high amounts of concentrated antioxidants called polyphenols, called p-coumaric acid. It was also noted that by roasting

peanuts this increased the peanuts' p-coumaric acid levels by as much as 22 percent.

A team of Taiwanese researchers looked at peanuts' colon cancer protection abilities and performed a 10-year study including over 12,000 men and almost 12,000 women to find out if consuming peanuts would affect someone's risk of colon cancer. It was stated that eating peanuts as little as 2 times or more every week was linked with a 58 percent decrease in colon cancer risk in women and a 27 percent decrease in the risk for men.[18]

Useful tips:

The same criteria should be used when choosing peanuts as all other nuts.

Chestnuts

Although chestnuts come from trees and are considered a nut, they differ from other nuts. Most of their calories come from carbohydrates. They have very little protein and they are more similar to a tuber than a nut. Chestnuts are low in phytates, and can be eaten raw, roasted, or steamed. When cooked, their texture because similar to a baked potato, with a delicate, sweet and nutty flavor.

Chestnuts, surprisingly, have around twice the amount of starch as potatoes. They contain 43 grams of carbohydrate for every three-ounce serving. Chestnuts have around 8 percent of different kinds of sugars including sucrose, glucose, fructose and in lesser amounts, stachylose and raffinose.

Benefits:

Chestnuts contain 21 percent of the RDI of fiber.

Chestnuts are unique in that they are the only types of nuts that have vitamin C. This is around 40 mg in 100 grams of raw nuts. This equates to about 65 percent of the Recommended Daily value. The vitamin C levels decrease by around 40 percent once you heat them.

Useful tips:

Chestnuts are cool season crops, so you can usually begin to find them in grocery stores

18 World's Healthiest Foods. (2013). Peanuts. Web. http://www.worldshealthiestfoods.net/genpage.php?tname=foodspice&dbid=101

from October through March, peaking in December.

When choosing chestnuts, go with larger, fresher nuts. Chestnuts tend to go rancid easier as they have more starch content and much less fat content than other nuts. To make sure they are as fresh as possible, cut some of the nuts open and check that there is a creamy-white kernel inside since it is difficult to check freshness just by their look. Avoid ones with green mold that is visible on its outer shell and folds.

Chestnuts should be treated more like veggies and fruits rather than nuts when it comes to storing them. Pack and store them in the fridge to make sure they stay fresh.

Concerns:

Because of the much higher carbohydrate content than most other nuts, they should be treated more like a potato than, say, an almond.

Seeds

Chia Seed

Chia seeds are very small black seeds from the “Salvia Hispanica” plant. This plant is actually related to mint. This plant is natural to South America. Chia seeds were extremely important to the Aztecs and Mayans back in ancient times. They considered them of great value because of they provided them with great energy. Interestingly, “chia” is the Mayan word for “strength”.

Chia seeds are mostly polyunsaturated fat.

Chia seeds are usually grown organically and are non-GMO.

2400 mg of omega -3 and 800 mg omega-6 per tablespoon.

They are packed with vitamins and minerals and also contain a good amount of zinc, vitamin B3, potassium, vitamin B1 and vitamin B2.

Benefits:

Chia seeds are high in plant omega-3 ALA. Most evidence shows humans are not great at converting ALA to the longer chain EPA and DHA fatty acids.

Recent studies show that supplementing with chia can increase plasma ALA and EPA levels in postmenopausal women. Other studies show eating chia seeds increases plasma ALA and EPA, but not DHA.

Chia seeds pack a great antioxidant punch. A study looked at chia for total phenolic compounds, antioxidant activity, and the amount of phenolic acids and isoflavones and found that “chia could be considered a seed with high antioxidant capacity and novel isoflavone source that can be incorporated in human diet.”[19]

The antioxidants found in chia seeds protect the sensitive fats in them from going rancid.

Mainly, the carbohydrates that are found in chia seeds are fiber. Chia seeds have 10 grams of fiber in one ounce. They are 40 percent fiber by weight. Chia seeds can absorb

19 Gunnars, K. (2014). 11 Proven Health Benefits of Chia Seeds. Web. http://authoritynutrition.com/11-proven-health-benefits-of-chia-seeds/

12 times their weight when in water because of their high fiber content. The seeds become like gel and also expand in your stomach. For this reason, chia can reduce appetite.

The fiber in chia is insoluble fiber-the kind of fiber that feeds friendly gut bacteria, which promotes gut health and gets fermented into short chain fatty acids. Feeding friendly intestinal bacteria becomes important to keep your gut bacteria well fed for good health.

Chia seeds are a great protein source and are much higher in protein content than most plants. About 14 percent protein by weight which is much higher than most plants.

Rat studies show chia seeds have triglyceride lowering abilities, increase HDL cholesterol, and reduce inflammation, prevent or decrease insulin resistance, and reduce belly fat.

Useful tips:

The best way to store chia seeds is in the fridge. However, because chia seeds are so stable, they can easily store for two to four years without refrigeration, and four or more years without refrigeration. You need only a dry, cool location to put them in. Unlike flaxseeds, chia seeds do not go rancid quickly. Grinding chia which is called chia meal will still allow for a pretty long shelf life of about 2 years. Flax meal will generally go rancid in about 90 days or less.

Concerns:

The conversion of ALA to EPA/DHA is an issue, but compared to the astronomical benefits of consuming chia, you should make chia seeds a part of your nutritional arsenal.

Hemp Seed

Hemp is gaining a lot of popularity and with good reason, as it is a true powerhouse of added nutritional benefit.

Hemp seeds come from the hemp plant, “Cannabis sativa L.” While hemp is usually confused with marijuana as it belongs to the same family. These two plants are indeed very different. What is important to note is the level of THC which makes these two plants very different. Hemp actually contains less than one percent of the psychoactive drug. Marijuana, on the other hand, contains up to 20 percent or more.

Hemp is also a unique and eco-friendly crop that rarely needs to be sprayed with toxic pesticides for bugs or herbicides for weeds. Hemp products are low in toxic residues.

Three tablespoons of raw shelled hemp seeds contain 10 g of protein, 25 percent vitamin

B1 content, 110 percent manganese, 45 percent magnesium, 45 percent phosphorus, 20 percent zinc, and 20 percent iron.

Benefits:

Hemp's nutritional benefit is mostly because of its fatty acid profile.

The oil, which makes up half of the weight of the seeds, contains 75 percent essential fats, of which about 20 percent are the omega-3, alpha-linolenic acid, about 3 percent is gamma-linolenic acid, and about 1 percent stearidonic acid.

The omega-3 fat stearidonic acid is becomes a beneficial fat because it can convert to EPA.

Hemp seeds also provide all of the essential amino acids, making hemp a complete protein. The seeds actually contain 25 – 35 percent protein, and some of the hemp protein products available today contain as much as 70 percent protein per 100 grams- making it very similar to whey protein isolate. Hemps protein is very easily digested. Hemp is also superior to soy protein isolate because of the higher content of some essential amino acids and methionine, cysteine and arginine.

Hemp seed's amino acid makeup is comparable to meat, milk, eggs and soy. Hemp's digestibility rating scores equal to or higher than certain grains, nuts and some legumes and greater than soy as well.

Hemp seeds contain around one to six percent of the unique omega-6 fat, gamma-linolenic acid (GLA) that, among other benefits, can reduce inflammation and improve vascular health.

GLA can also help with skin conditions like psoriasis and eczema. I find it beneficial in alleviating PMS symptoms. GLA also offers heart, mental, and immune system benefits. Aging and diseases like diabetes and hypertension impair GLA metabolism.

Hemp is also loaded with the very crucial antioxidant vitamin E. The vitamin E compounds contained in hemp protect the oil from oxidation and going rancid. Typical amounts are about 100 to 150 mg. One to two tablespoons of hemp oil satisfy the daily requirement of vitamin E for healthy adults.

Hemp also benefits regulation of cholesterol levels, digestion, and heart health.

Useful tips:

You'll want to keep organic hemp seeds in the fridge in a sealed, airtight container. You can buy a large amount, keep a smaller amount of the hemp seeds in the air tight container in your fridge and freeze the rest.

Flax Seed

Flaxseeds are an ideal source of omega-3 fats, dietary fiber, vitamin B1, copper, magnesium, phosphorus, and selenium. Flax seeds contain about 19 percent monounsaturated and 70 percent polyunsaturated (mostly omega-3 fats from ALA) fat.

The ALA in flaxseeds has to be converted into the "active" forms of omega-3 fats EPA and DHA so that it can be used by the body. Humans are largely inefficient at performing this conversion of ALA into the active forms, which makes animal sources like wild-caught fish superior to plant foods.

Benefits:

Providing a very high omega-3 fat content, two tablespoons of flaxseeds provides 133 percent of the Daily Value for omega-3's. The primary fatty acid in flax seeds is alpha-linolenic acid (ALA). The ALA in flaxseed is stable for around 3 hours during cooking times in the oven at temps of around 300 degrees F. This makes it available when adding flax seeds which are grounded up as in recipes for muffins and breads.

In one recent study, researchers looked at 251,049 human subjects. The studies included over 15,000 heart attacks and other serious cardiovascular events. The study concluded that consuming ALA omega-3 fats resulted in a 14 percent reduction of heart attacks and other cardiovascular events.

Flaxseeds are considered to be the most commonly eaten form of lignans in human diets. Lignans provide fiber benefits and antioxidant protection from their polyphenol content. Flaxseeds contain many more lignans compared to sunflower seeds, about 340 times as much. Much more than cashew nuts and peanuts as well. About 475 times and 3,200 times more respectively.

Flaxseeds also provide mucilage or gum content. "Mucilage" describes a water-soluble, gel-like fiber that can supply special support to your GI tract. For instance, gums can help prevent rapid emptying of the stomach food particles into the small intestine, which improves the absorption of various nutrients in the small intestine.

The main omega-3 fat in flaxseeds, ALA, can benefit heart health. ALA protects against inflammation and protect our blood vessels from damage. Studies show eating flaxseeds, whether whole or ground, or added into baked goods, significantly increases blood ALA levels. Consuming flaxseeds also increases EPA and DPA blood levels. These increases also provide anti-inflammatory benefits.

Studies also confirm anti-inflammatory benefits of baked goods enriched with flaxseeds, showing a decrease of up to 15 percent in C-reactive protein levels (a common cardiovascular inflammatory marker).

Studies also show flaxseeds improve our cholesterol panel by decreasing the ratio of LDL- to HDL cholesterol. Just two tablespoons of flaxseed (ground up) provides around 4 grams of fiber.

Flaxseeds rank at the top of the list among superfoods or antioxidant-rich foods. They rank nine among 100 commonly eaten foods comparing polyphenol content. In fact, flaxseeds contain higher amounts of polyphenols than fruits like blueberries or veggies like olives.

Flaxseeds, long known for their cardiovascular health benefits, are now being recognized for their ability to decrease insulin resistance.

In adults, two tablespoons a day of flaxseeds can decrease significantly the amounts of free radicals in the blood.

Another recent study displayed a 20 percent decrease in metabolic syndrome after 12 weeks on a diet consisting of one ounce of flaxseed (ground up) each day in baked bread. Flaxseeds im-proved blood pressure, lowered blood sugar, and decreased waist circumference.

Cancer protection from flaxseeds is strongest among cases of breast, prostate, and colon cancer. Breast and prostate cancer are listed as “hormone-related” cancers. This is most likely associated with flaxseeds’ high lignin content.

Our friendly gut bugs actually play a huge role to convert some of the helpful lignans in order to protect us from hormone-dependent tumors. The lignans in flaxseed also increase detoxification in our body, prevent toxic buildup that might otherwise support cancer growth.

Breast Cancer

Studies show flaxseed and its lignans have powerful anti-estrogen effects on estrogen sensitive breast cancer and may benefit breast cancer prevention protocols in the future.

One study involving patients who ate a muffin containing 25-grams of flaxseed over a 32-day period found a reduction in markers which grow tumors and an increase in programmed cell death. Researchers concluded dietary flaxseed has the potential to reduce tumor growth in breast cancer patients.

Another important study found tremendous results for flaxseeds’ ability to protect against

and slow down the spread of breast cancer. Animals involved in the study showed a diet of just 2.5 percent to 10 percent flaxseed or flaxseed oil reduces tumor growth.

Especially in post-menopausal women, flaxseed intake can reduce the breast cancer risk. The lignans in flaxseeds reduce the risk of breast cancer death by 33 percent to 70 percent.

Studies show taking 25 grams of flaxseeds a day over a 32-day period reduces growth of tumors in patients with breast cancer. In premenopausal women, taking 50mg of lignans reduces breast cancer risk.

Several study findings have concluded that consuming flaxseeds is safe and may be protective against prostate cancer.

Useful tips:

Many people add ground flax in baked goods like muffins, breads, cookies, and more. If you're concerned the high oven temperatures will destroy the beneficial omega-3 fats in flaxseed, recent studies confirm high heat temps do not negatively affect the benefits found in flaxseeds. The beneficial ALA remained stable and intact.

You may purchase flaxseeds whole or pre-ground. Grinding can usually increase the digestibility of the flaxseeds. Pre-ground flax spoils easier and faster compared to whole flaxseeds. Ground flaxseeds typically last for six to 16 weeks in the fridge. Whole flaxseeds, last for six to 12 months stored in a container. In the fridge, they may last one to two years.

Regardless whether you buy them whole or ground, store them in the fridge. If you store them in glass, consider using a darker glass. This will reduce their exposure of the ground flaxseeds to light.

Concerns:

Some small studies show using two tablespoons and above in children and teens diagnosed with high cholesterol did result in increases of triglycerides.

Sesame Seed

Sesame seeds have a nutty taste and are very small oval-shaped seeds.

Their high content of sesame oil is why they are highly valued. This makes them very resistant to becoming rancid. In both tahini and halvah, sesame seeds are the main ingredients.

Sesame seeds were among the very first crops used for oil and one of the first condiments. Ancient Egyptians used sesame seeds in baking. They provide a great source of copper, manganese, calcium, magnesium, iron, phosphorus, vitamin B1, zinc, molybdenum, selenium, and a wonderful source of fiber.

Sesame contains one of the highest oil contents of any seed. Having a very high amount of antioxidants makes sesame oil one of the most stable of the vegetable oils. This also allows for a much longer shelf life.

Sesame seeds contain around 47 percent oleic acid and around 39 percent linolenic acid.

Benefits:

Two very unique substances are found in sesame seeds: sesamin and sesamolin - both of which are lignans that help to lower cholesterol in human beings, prevent high blood pressure and increase vitamin E levels in animals. Sesamin also protects our liver from free radical damage.

Studies show sesame seeds contain the highest content of phytosterols among the most commonly eaten nuts and seeds eaten as snack foods in the U.S. Sunflower seeds and pistachios were found to be the richest in phytosterols, followed by pumpkin seeds.

Useful tips:

When choosing sesame seeds make sure there is no moisture damage. High oil content makes them a vulnerable to rancidity. Check the smell to ensure freshness.

Tahini (sesame seed paste) tastes very similar to peanut butter and can be added to smoothies or used in place of butter or nut butters.

Pumpkin Seed

Pumpkin seeds are also known as pepitas. They are dark green, flat, and enclosed in a yellow-white shell. Some are produced without shells.

Besides being a good protein source, pumpkin seeds are a great source of phosphorus, magnesium, manganese, and copper as well as zinc and iron.

Benefits:

About ¼ cup of pumpkin seeds provide 185 mg of magnesium, almost 50 percent of the Recommended Daily Intake.

They also provide a wonderful source of magnesium, a crucial undervalued mineral that can relieve stress along with a host of other benefits. Pumpkin seeds are a great source of the mineral zinc and vitamin E.

Pumpkin seeds are packed with all types of antioxidant phytonutrients, including phenolic acids, lignans, and phytosterols.

Studies show promise with pumpkin seeds, both ground and oil form, though only animal studies exist at this point. These studies demonstrate that pumpkin seeds can improve insulin function and decrease kidney damage related to diabetes, mostly due to the decrease in oxidative damage.

Scientists have long known about pumpkin seed benefits as anti-fungal and anti-viral.

Useful tips:

To maximize zinc intake, choose unshelled pumpkin seed. As with choosing different nuts, you want to ensure freshness of your pumpkin seeds by inspecting them for moisture damage or insect bites and make sure they are not shriveled up. Whenever possible smell the pumpkin seeds to make sure they do not smell rancid or musty.

Pumpkin seeds should be stored in a tightly sealed container in the fridge. Consume them within one to two months for peak freshness.

If you roast pumpkin seeds at home, do so no longer than 15 or 20 minutes. Studies find a maximum of 20 minutes in the oven prevents damage in the fats of the pumpkin seeds.

Sunflower Seed

The sunflower seed is the fruit of the flower. The flower makes gray-green or black seeds enclosed in a tear-dropped shaped gray or sometimes black shells often with black and white stripes.

Made up of mostly polyunsaturated fat with monounsaturated and a small amount of saturated fat, sunflower seeds also provide a great source of vitamin E, copper, and vitamin B1. They also provide a great source of manganese, selenium, phosphorus, magnesium, vitamin B6, folate and niacin.

Sunflower seeds deliver nearly 50 percent of the body's requirement for vitamin E.

Sunflower seeds have a great amount of oil content, so they are often used to produce polyunsaturated oils like sunflower oil.

Sunflower seeds are a very popular snack food consumed in the U.S. Pistachios and sunflower seeds are said to be the highest in phytosterols. Next highest is pumpkin seeds. Phytosterols, which are found in plants, have a very similar structure to that of cholesterol. Eating a good amount of sunflower seeds can optimize cholesterol levels, improve immune function, and decrease your risk of certain cancers.

Useful tips:

If you are buying unshelled sunflower seeds, make sure the shells are not cracked or dirty looking. Look for firmness as opposed to being limp in texture. If they are yellow in color avoid them. These are most likely rancid. As always, if possible do a smell taste to ensure they have not gone bad.

It is best to store your sunflower seeds in a tightly-sealed container in the fridge as they have a very high fat content easily go rancid. You can also store them in the freezer and not have to worry about the texture or flavor changing on you.

Concerns:

Because sunflower seeds having a high polyunsaturated fat content, they are more delicate and tend to go rancid, so take care storing them for a longer shelf life and freshness.

Nut and Seed Butters

As in the case of nuts and seeds, nut butters should always be chosen in their raw form (unroasted and unsalted) without any added sweeteners and oils. Read food labels carefully, because most commercial nut butters contain added sweeteners and oils.

Roasting, a common practice among big food companies that produce nut butters, damages the delicate fats contained in nuts and seeds. As with most produce, you'll want to choose organic to avoid unnecessary exposure to toxins. Alternately, make your own nut butters from raw, whole nuts and seeds.

Saturated Plant Fats

Coconut Butter

Coconut butter is made up of the coconut flesh, with all the delicious fat and solids included. The oil and flesh mix together and spreads very easily. Coconut butter is made from the pureed coconut meat, which provides a thick, creamy, smooth texture. It is about 60 percent oil with a high fiber content.

Useful tips:

Coconut butter, just like coconut oil, is very stable. The high saturated fat content of coconut oil can be credited for this. It will last quite a long time in your cupboard. Avoid using coconut oil for high-heat cooking, since the coconut bits will burn.

You can scoop coconut butter straight from the jar, eat, and enjoy.

Melt it and pour over a sweet potato or winter squash. Try making a sweet potato sandwich using coconut butter and almond butter for a naturally sweet and fatty treat.

Use it in a curry dish for an extra flavor boost or add to your smoothies to for extra amounts of healthy fats.

Coconut Oil

Coconut oil comes from the dry flesh of the coconut. Around 86 percent is saturated fat, with a small amount of MUFA and PUFA.

Around 45 percent of the fat is lauric acid, a rare medium-chain fat that converts in the body to monolaurin. Monolaurin is an immune-strengthening compound found in breast milk that also proves beneficial for brain development, promoting healthy bones. Current studies consider monolaurin's anti-fungal, anti-bacterial and anti-viral properties.

Benefits:

The fat content of coconut oil is made up of medium-chain triglycerides (MCTs), which the body preferably burns rather than stores as fat. MCTs are a very unique kind of saturated

fat high in antioxidants. Their anti-microbial, anti-fungal, anti-bacterial, and anti-viral properties provide superior immune benefits.

MCTs are the easiest fats the body can burn for fuel, making it a very efficient fat source ideal for weight loss.

Unfortunately, this exceptional oil often falls under the "bad" saturated fat category. Emerging research shows fats – particularly healthy fats from whole foods – are not the enemy in heart disease.

Older studies that claimed coconut oil was harmful often focused on hydrogenated coconut oil rather than healthy organic, unrefined, cold-pressed virgin coconut oil.

We now know hydrogenation (artificially adding a hydrogen molecule to oil to make it shelf stable) becomes the problem, not the coconut oil itself.

The same thing proves true with hydrogenated soy, corn, and canola loaded with dangerous, toxic trans fats and processed with highly toxic hexane solvents, often added to processed foods. Over-consuming processed foods triggers inflammation and becomes the true cause of heart disease and most of our modern chronic diseases. Healthy dietary fat was never the problem and undeservedly got a bad rep.

Anti-Fungal Properties of Coconut Oil

Coconut has impressive benefits for Candida, the fungus most common to yeast overgrowth and infections. Researchers compared coconut with fluconazole, a common anti-fungal drug. Along with other fungi, they isolated candida albicans, the most common type of fungus that causes yeast infections, thrush, vaginitis and diaper rash. Subjects were tested to see how coconut oil (extra virgin) and the anti-fungal drug caused susceptibilities. Researchers found those being tested needed less of the coconut oil to ward off the fungus. In other words, the coconut oil was much more effective at killing the fungus versus the anti-fungal drug.

Anti-Bacterial Properties of Coconut Oil

Another study found virgin coconut oil highly effective at treating skin infections. The study involved participants with dermatitis, which is susceptible to a pretty vicious bacteria called *Staphylococcus aureus*.

Half the group applied coconut oil (extra virgin) twice a day over the course of four weeks to the affected areas and the other group used virgin olive oil in the same manner. At the start of the study 20 of the 26 subjects had positive levels of Staphylococcus aureus. Once the study concluded, there was only one person among the coconut oil users who tested positive for the bacteria versus six in the olive oil group.

The researchers also concluded that virgin coconut oil could potentially treat bacteria, fungi, and viruses.

Many advocates of coconut oil mention heart health benefits, fat-burning capabilities, and anti-bacterial properties. A particular study of 2,500 people from the Polynesian islands showed high coconut oil intake showed no adverse effects on cholesterol levels. Researchers reported these people consumed a very high intake of coconut at nearly every meal. Their overall health proved excellent and heart disease was almost non-existent.

High saturated fat intake from coconut oil did not result in high cholesterol levels. Heart disease, colon cancer, and other bowel diseases likewise were almost non-existent. Researchers concluded absolutely no evidence existed that high intake of saturated fat from coconut oil had negative effects.

Coconut Oil for Weight loss

Medium chain triglycerides (MCTs) provide most of coconut oil's fat-loss benefits because the body uses them for energy in the liver rather than circulate them in the bloodstream and store them as fat. MCTs are very effective at speeding up your metabolism, burning more calories, and provide you more energy. Your body demands more energy to burn these MCTs, revving up your metabolism in the bargain.

Interestingly, farmers during the 1940s gave coconut oil to fatten up their livestock faster, yet the livestock became leaner and more active.

One double blind placebo-controlled study looked at 40 women between 20 and 40 with belly fat and a waist circumference greater than 88 cm. They received either soybean oil or coconut oil over 12 weeks. Both groups ate a low-calorie diet and walked for 50 minutes a day.

At the study's conclusion, the women who consumed coconut oil actually lost more weight than women who consumed soybean oil. Coconut oil users also had greater levels of HDL and lower LDL than the soybean oil group. Both groups had decreased their Body Mass Index (BMI). Women who used coconut oil lost weight, decreased their waist line measurement, and improved their cholesterol ratios.

Useful tips:

Look for organic, virgin, cold-pressed, unrefined coconut oil that is never deodorized or bleached. Coconut oil is great for baking and medium high heat cooking as it is very stable and can tolerate heat up to 350 degrees F. For those who dislike that coconut taste, look for a refined "ideal for cooking" coconut oil, which has a more neutral flavor than the

unrefined version. Ensure the brand does not use hexane or other harmful chemical in the refining process.

You can use expeller-pressed refined coconut oil for baking up to 400 degrees F, making this ideal for cooking high heat stir-frying.

Ways to use coconut oil:

Cook with it, add it to meals when cooking meat, sauces and veggies, add it to smoothies, stir into hot beverages like tea or coffee, add to soups, mix in with nut butter, or just eat it right out the jar by the spoon full.

Palm Oil

Palm oil is a vegetable oil pulled from the oil palm tree's fruit. Most of the world's palm oil comes from Malaysia and Indonesia, 85 percent as a matter of fact.

It is very common to see Palm oil as a main ingredient in margarine, baked goods like cereals, instant noodles, breads, lipsticks, biscuits, detergents, ice creams and chocolate. Palm oil has a light buttery flavor to it.

Refined palm oil is made up of about half saturated fat, which makes it stable for cooking and storage and mostly solid at room temperature.

Palm kernel oil comes from the same fruit and tree but is derived from the seed of the plant or the kernel. Palm kernel oil is highly saturated at around 80 percent.

Virgin unrefined red palm oil is reddish in color naturally and comes loaded with vitamins and antioxidants. The highly processed, refined palm oil loses its red color as well as its taste and health benefits.

The vitamin E and carotenoids (much more than tomatoes and carrots) might help prevent LDL oxidation. Red palm oil is also rich in the powerful cellular antioxidant CoQ10.

Red palm oil contains both forms of vitamin E, tocotrienols and tocopherols. Most foods contain only tocopherols, which are less effective than the tocotrienols copious in red palm oil.

The use of red palm oil will likely double as populations continue to grow worldwide. Also because in places like India and China where they are seeing growth in their economies and using red palm oil is becoming more popular.

Palm Oil's Impact:

Clearing large areas of land for palm oil plantations and a vast deforestation in countries like India and Malaysia has become more prevalent. This has disrupted the ecosystem terribly, bringing many animal species extremely close to becoming extinct, such as rhinos, elephants, tigers, and orangutans.

In some instances, it has forced people off their land, destroyed their livelihood and decreased clean waters and fertile soil. All around the globe, rainforest destruction has contributed to climate change, as trees are cut down and burned and methane and other greenhouse gases are released into the atmosphere.

Over 85 percent of the palm oil in processed foods in the U.S. comes from plantations in Malaysia and Indonesia where these very practices are common. Current reports about palm oil plantations regarding human rights violations are all too common along with deforestation and climate change effects. Annual carbon emissions coming from the conflict red palm oil plantations in Indonesia alone is far worse than all of the modes of transportation in the U.S. combined.

Don't confuse fresh palm fruit oil with "palm kernel oil," found in nearly half of all the packaged products in supermarkets in the U.S.

Palm oil is known by a great number of different names such as palmitate, glyceryl stearate, and palm kernel oil. Most of the U.S. palm oil which is contained in a great deal of the food supply is "Conflict Palm Oil," which does involve deforestation, disruption of ecosystems, and human rights violations.

Red palm oil or palm fruit is extremely nutritious. This superfood should not be confused with "palm kernel oil" or crude oil which is seriously processed and used as ingredients in processed, packaged goods in many American standard diets.

Large food producers anticipate the FDA will eventually eliminate trans fats from the food supply but will need to find a replacement. Conflict palm oil tops their list. In 2006, the FDA required food labels list the amount of trans fats present in the food. Trans fats usage declined greatly, yet conflict palm oil has exploded to well beyond 500 percent in the span of less than 10 years.

Useful tips:

Only buy products with sustainable palm oil. Look for the Certified Sustainable Palm Oil (CSPO) label. These products can be recognized as sustainable as they carry the RSPO trademark. Buying products with this RSPO trademark ensures the palm oil in the product comes from sustainable sources that care about both social and environment concerns.

In 2013, about 15 percent of the palm oil supply came from sustainable sources, an increase of 10 percent since 2011. Nutiva is one such company that practices sustainability in Ecuador concerning its red palm oil and does not allow processes like deforestation and habitat destruction. You can buy vegan shortening from Spectrum or Nutiva that blends sustainable coconut oil and red palm oil for baking.

Oils

Practical tips for all oils

Always choose organic, unrefined, cold-pressed, or expeller pressed oils. Be sure to contact the company directly to ensure the product is truly cold-pressed. Organic production prohibits GMOs and the use of hexanes for extraction in oils, so you can avoid these going organic. Refined oils generally have a more neutral flavor than unrefined varieties. Be certain the manufacturer is not using hexanes or other toxic solvents in the refining process.

Store oils in dark, not clear bottles, in a cool, dark place away from light and heat such as cabinets or the fridge in airtight containers. Don't store oils on kitchen counters or next to the stove. Always close the lid tightly and put away after done with oils, since oxygen contributes to rancidity. Oils go bad over a span of months or years depending on type, so choose a smaller container if you don't use the oil often.

Different Oil's Smoke Points

Walnut oil, Unrefined: 320

Grapeseed oil: 420

Olive oil, extra virgin: 375

Macadamia oil: 413

Almond oil: 420

Canola Oil, expeller pressed: 464

Coconut oil unrefined: 350

Sunflower oil, unrefined: 225

Hazelnut oil: 430

Avocado oil: 520

Peanut oil, unrefined: 320

Extra Virgin Olive Oil:

The process for making olive oil is done by crushing the olives and then pressing them. Olive oil can be found in various grades, which tell you on what level it has been processed.

Extra virgin olive oil is created by the very first pressing of olives and this has by far the most delicate flavor and you will enjoy the greatest health benefits overall.

About 75 percent of the fat content of olive oil comes from oleic acid. This is an omega 9 fat, a monounsaturated fatty acid. Olive oil provides a great amount of vitamin E and vast quantities of beta-carotenes, not to mention squalene, which is an antioxidant that provides skin health benefits.

Fat breakdown: Olive oil contains 73 percent MUFA, around 21 percent Omega-6 PUFA, 1 percent Omega-3 PUFA and 14 percent SFA.

Benefits:

Olive oil is a potent anti-inflammatory due to its high amounts of polyphenols. The nine different categories of polyphenols and anti-inflammatory agents have been well researched, and studies find olive oil's anti-inflammatory properties very effective.

In cardiovascular patients, the polyphenols in olive oil can lower C-reactive protein (CRP) levels, which is a popular method used for determining inflammation in blood measurements.

You can enjoy the anti-inflammatory benefits of olive oil without needing to consume large amounts. As little as one or two tablespoons of extra virgin olive oil daily can provide impressive health benefits.

Olive oil's high antioxidant content benefits heart health. Olive oil protects the cardiovascular system by decreasing the oxygen damage to fat in our blood. Many fats in our blood like LDL need consistent protection against oxidation. Oxidized LDL molecules oxidize greatly increase your risk for heart disease, including atherosclerosis.

The polyphenols in olive oil also protect against oxidation in our cells, especially the ones that are in the lining of our blood vessels.

While platelets in our blood vessels clumping together can benefit an open wound, we don't want this to become a chronic condition. Several polyphenols in olive oil reduce this clumping when it should not occur in our blood vessels.

Oleic acid aids balancing cholesterol lipids LDL and HDL. Switching from a diet low in monounsaturated fats to a diet high in monounsaturated fats like olive oil can significantly decrease total blood cholesterol and increase HDL.

The polyphenols and oleic acid can also lower blood pressure. Olive oil has also been known to balance a higher omega-6 to omega-3 ratio by lowering the body's omega-6 pro-inflammatory pathways.

Research also shows olive oil benefits digestive health. Researchers particularly focused on diet and digestive tract cancers. Much research has proven that less incidences of GI tract cancers, mainly upper digestive tract cancers and stomach and small intestine cancers occurred among people that consume olive oil on a regular basis. Specific studies looked at the Mediterranean diet.

Animal studies also show protection against colon cancer due to olive oil's high amount of polyphenols, antioxidants, and anti-inflammatory properties. Secoiridoids, which are a type of polyphenol are still of main focus among digestive tract cancer prevention researchers.

Other recent research on olive oil and its protective properties of the digestive tract finds polyphenols help balance healthy bacteria while slowing growth of bad bacteria, especially bacteria that causes digestive tract infections. Certain polyphenols in olive oil are capable of stopping the growth of the *Helicobacter pylori bacteria*, which can contribute to ulcers and other unwanted digestive problems.

Olive oil also benefits brain health. One French study with older adults found olive oil improved visual memory and verbal fluency. Other research involving lab animals with brain damage because of a poor oxygen supply found that consuming olive oil helped with a great number of brain issues, including water imbalance, poor nervous system function, and the problem of allowing molecules cross the blood-brain-barrier too easily.

Research finds taking as little as one to two tablespoons a day of olive oil can decrease the risk of certain cancers, including breast, respiratory tract, upper digestive tract, and colorectal cancers.

Olive oil also improves cellular function, decreasing risk of cancer development and altering genes by enhancing their antioxidant defense system. Olive oil protects our DNA due to the antioxidants levels present. DNA protection from unwanted oxidation equates to better cell performance, which protects cells from mutating into cancerous cells.

Olive oil can be sensitive to light and heat and may become rancid when exposed. Choose olive oils in dark colored bottles as the packaging will aid to protect the oil from going rancid. You also want to be certain that the olive oil is stored in a cool area and that it does not come into direct contact with light and heat.

Always opt for extra-virgin olive oil. Quality becomes crucial here. Olive oil is one of the few kinds of oils that is still consumed pretty much un-processed by Americans. (Many of the oils purchased are refined.) When olives are pressed this is an effective way to preserve the many nutrients, including the polyphenols, that are well-known for their ability to

protect olive oil from high heat. Ideally, look for unfiltered extra-virgin olive oil. The elements that create a cloudiness are also effective as antioxidants and also buffer acids, therefore allowing for protection against oxidative damage.

Recent studies compare extra virgin olive oil's anti-inflammatory power from pressing the first olives in production versus the anti-inflammatory power of later pressings. Researchers found extra virgin olive oil lowered inflammation, whereas non-extra virgin oils could not.

"Pure olive oil" can be a confusing, somewhat misleading phrase. Oftentimes it signifies a mix of unrefined and refined virgin olive oils.

You might also find "cold pressed," which means manufacturers used very little heat mechanically processing olives to get the oil. Cold pressed extra virgin olive oil provides the strongest possible nutrient value because of the small use of heating coupled with the oil's first pressing high phytonutrient content.

Most American-derived olives often contain soybean, rapeseed, and other oils. One particular study demonstrated that a good amount-69 percent of the olive oil that is imported and labeled "extra virgin" failed to meet standards in an expert smell and taste test which is the standard for this type of labeling.

Be very savvy when buying olive oils. This listing from Tom Mueller, olive oil expert is very useful: List of extra-virgin olive oils you can buy locally in supermarkets (including quality olive oil from large food chains like Costco, Trader Joes and Whole Foods). Also be sure to look at Tom Mueller's book "Extra Virginity: The Sublime and Scandalous World of Olive Oil."[20]

How to store your olive oil:

Heat and other factors can cause oxidation and other problems. Put your olive oil in a dark, cool place sealed up tight. Keep out of direct sunlight or heat source like near the stove. Avoid olive oils in clear containers.

Olive oil should be used within one to two months to ensure maximum health benefits. Research shows quality and health benefits decline after two months, even when properly stored.

Research from Spain printed in the *Journal of Agriculture and Food Chemistry* demonstrated that carotenoids, chlorophyll, and antioxidant polyphenols levels decreased

20 Abida, A. (2015). Is it Safe to Cook with Olive Oil? Web. http://www.mysticmedicine.com/diet-lifestyle/is-it-safe-to-cook-with-olive-oil

drastically after extra virgin olive oil had been stored for 12 months under the very best possible conditions. Chlorophyll levels decreased by 30 percent, beta-carotene levels dropped 40 percent, and vitamin E levels dropped 100 percent. Phenols, responsible for olive oil's rich flavor, also dropped significantly after being stored properly for 12 months.

Research from the *New Scientist* magazine confirms light kills the vast amounts of antioxidants found in olive oil. In the University of Bari in Italy, researchers compared oils kept in direct contact with the light or dark spaces for 12 months. The oils put away in clear bottles under supermarket lights lost at least 30 percent of their carotenoids and vitamin E levels. After only two months exposed to light, free radical damage became so bad the olive oil could no longer be put in the category of extra virgin olive oil.

Grape Seed Oil

Grape seed oil is derived from grape seeds, formed as a by-product of the wine producing process.

Grape seed oil contains 16 percent monounsaturated fat, 70 percent polyunsaturated fat, and nine percent saturated fat.

Grape seed oil is around 70 percent polyunsaturated fat (mainly omega-6 fat), making it very unstable when using as an oil for cooking with a very high oxidation potential.

Concerns:

Most of the nutrients and antioxidants from grape seeds are not present in the oil. Grape seed oil has been found to contain harmful levels of carcinogenic materials. It contains about 19 percent of the RDA for vitamin E.

Avocado Oil

Avocado oil is very similar to olive oil in regards to its' fatty content with an even higher smoke point, making it ideal for cooking.

Avocado oil is 70 percent monounsaturated fat, 12 percent omega-6 PUFA, one percent omega-3 PUFA, and 12 percent saturated fat.

Refined avocado oil is even more stable than unrefined avocado oil due to its chlorophyll content. The chlorophyll in unrefined avocado oil provides its green color and reacts with

light to form oxidative material. Refined avocado oil, a pale yellow color, contains almost no chlorophyll.

Benefits:

One rodent study looked at the cardiovascular risk and found avocado oil reduced inflammatory markers as well as LDL levels significantly without affecting HDL levels. Researchers concluded avocado oil can reduce inflammation and metabolic syndrome.

In another recent study, low doses and high doses of avocado oil increased both lutein and carotene absorption rates contained in a salad by roughly 15 times versus a salad without the avocado oil. Whole avocados provide those same benefits.

Useful tips:

Organic, expeller pressed refined avocado oil becomes ideal for cooking because of its high smoke point and high stability.

Concerns:

Make sure to choose organic, expeller-pressed refined avocado oil to avoid oxidative damage.

Almond Oil

Almond oil consists of 70 percent monounsaturated fat, 17 percent polyunsaturated, and eight percent saturated fat.

Almond oil is a great source of vitamin E. One tablespoon provides 23 percent of the recommended daily intake of vitamin E.

Benefits:

In the University of California Davis, a study found whole almonds and almond oil both contributed to reducing both total cholesterol and LDL cholesterol levels in healthy women and healthy men. Researchers concluded its favorable effects were due to its oil components.

Useful tips:

When choosing almond oil for cooking, look for labels that say things like “food grade” or “for culinary use.”

Organic, refined almond oil can be used for low heat cooking but the best use of this oil is to buy cold-pressed almond oil for cold applications like salad dressings, dips, or drizzled over cooked veggies.

Hazelnut Oil

Hazelnut cooking oil has a similar makeup as extra virgin olive oil as it contains a high amount of oleic acid.

Hazelnut oil contains 78 percent monounsaturated fat, 10 percent polyunsaturated and seven percent saturated fat.

Useful tips:

Hazelnut oil is suitable for low heat cooking with a smoke point of 200 degrees F.

Organic, refined hazelnut oil can be used for low heat cooking, but ideally choose cold-pressed hazelnut oil for cold applications like salad dressings, dips, or drizzled over cooked veggies.

Walnut Oil

Walnut oil contains about 23 percent monounsaturated fat, 53 percent omega-6 PUFA, 10 percent omega-3 PUFA and nine percent saturated fat.

Useful tips:

Because of the high polyunsaturated fat content, walnut oil is very perishable so become especially mindful when you store it, preferably in a cool, dark spot. Do not use walnut oil cooking.

Flax Seed Oil

Flax seed oil contains 18 percent monounsaturated fat, 24 percent omega-6 PUFA and 47 percent omega-3 PUFA (from ALA), and nine percent saturated fat.

Flax seed oil is high in ALA. Studies show the amount of ALA that actually gets converted to EPA and DHA becomes around nine percent or less. Some studies find consuming high amounts of ALA does boost blood levels of EPA but not DHA.

One examined ALA supplementation and found "with no other changes in diet, improvement of blood DHA status can be achieved with dietary supplements of preformed DHA, but not with supplementation of ALA, EPA, or other precursors." Remember DHA is one of the most vital fats for brain health. EPA and DHA both keep cell structure healthy and fluid, a primary reason that fish oil (with high amounts of EPA and DHA) becomes heart-protective.

Keep in mind too vegetable oils further prevent ALA from converting into EPA and DHA. Saturated fat doesn't produce this unwanted effect. A study done on the conversion of ALA concluded that "a background diet high in saturated fat, conversion of ALA is approximately six percent for EPA and 3.8 percent for DHA, but with a diet rich in omega-6, conversion is reduced by 40 to 50 percent."[21]

You will find three basic kinds of flaxseed oil: pure oil pressed out of the seeds and that contains no flaxseed components like lignans, pure oil enriched with low amounts of lignans, and pure oil enriched with moderate to high amounts of lignans.

Useful tips:

Do not use flax oil for cooking. It made up of almost all PUFAs, which are more easily to go rancid when exposed to heat. Flax oil should never become the primary form of omega-3s in your diet.

Concerns:

Flax seed oil is highly susceptible to rancidity and can easily be damaged by heat and light. Become very selective when purchasing flax seed oil and store correctly.

By choosing to buy cold-pressed flaxseed oil, you can usually ensure you are consuming quality oil extracted from the flaxseeds at temperatures no greater than 120 degrees F.

21 Gardener, R. (2010). DHA on the Rise. Web. http://www.nutritionaloutlook.com/articles/dha-rise

Flaxseed oil should come in an opaque bottle to protect against light damage. Some flax oils will come with vitamin E added and may not require refrigeration. If not preserved with natural antioxidants, flax oil should be refrigerated while shipping and during home storage, even before you open it. Always refrigerate once you have opened it.

Macadamia Oil

Macadamia oil creates a butter flavor and provides a rather mild taste to foods. It provides a mild taste and often becomes used in recipes like mayonnaise made at home. It is very stable when stored and resistant to oxidation caused by heat.

Fat breakdown: 71 percent monounsaturated fat, 10 percent polyunsaturated fat, 12 percent saturated fat.

Benefits:

One particular study found that macadamia oil out-performed walnut, rice bran, almond, sesame, avocado, hazelnut, and grapeseed oils in a test for oxidation potential.

Macadamia oil stood up to temperatures as high as 250 degrees F with very little oxidizing present beating out all of the seed and nut oils. It also performed best at shlef life capabilities, as it was the only oil that went beyond the manufacturer's given "best before" date.

Macadamia oil owes all of its high performance ratings to very low levels of omega-6 fats (making it the lowest out of all cooking oils, second to coconut oil), high monounsaturated fat content, and a good amount of saturated fat. The most unstable is Linolenic acid which is an Omega-6 fat, so nearly none of this makes macadamia oil better than most oils. Macadamia oil contains impressive amounts of antioxidants.

Another study found macadamia nut oil is rich in squalene, an antioxidant that is in skin of humans that protects it from sun damage. Your body uses squalene to synthesize vitamin D and cholesterol and in macadamia nuts it helps damage due to oxidation.

Macadamia oil also contains an omega 7 monounsaturated fat called palmitoleic acid. This is present in human adipose tissue, where it is synthesized from saturated palmitic acid. Palmitoleic acid is the main fat found in human sebum. Human sebum performs as a natural moisturizer made by the human body, which provides positive effects on blood fats and as a moisturizer.

Useful tips:

Macadamia oil is a very stable oil works best for low heat cooking. It has a smoke point of anywhere between 410-453 degrees F.

Hemp Oil

Hemp oil contains high concentrations of phytoesterols, very beneficial for health like chlorophyll, which we know is anti-cancer; carotenes, necessary for healthy vision and growth; and lecithin, for cell membrane structure and brain function.

Benefits:

The same benefits as hemp seeds.

Useful tips:

Do not cook with hemp oil, which is delicate, should be stored in the fridge, and used within three months.

Sesame Oil

Sesame oil is a vegetable oil that is edible and is made from sesame seeds which has been used for centuries in Asian cooking. It has also been used as a medicine, especially in India. With a subtle flavor it can be used as a cooking oil and condiment.

Sesame oil has become very popular as an ingredient found in many massage and skin oils and is sometimes included in many products for the hair, perfumes, topical oils, soaps, cosmetics, and sunscreens.

Vitamin E levels are found in extra-virgin sesame oil. It also contains vitamin K, vitamin B6, zinc, magnesium, calcium, copper and iron.

Benefits:

Although sesame oil contains high amounts of unsaturated fats and even a small amount of free fatty acids in its unrefined flavored form, it shows much greater stability compared with other dietary vegetable oils. Its lignans and vitamin E content provide this stability.

One study reported in 2006 in the *Journal of Medicinal Foods* reported that sesame oil is the only edible oil to lower blood pressure and blood sugar in hypertensive diabetics.

Another study recorded in the same year in the Yale *Journal of Biological Medicine* demonstrated that sesame seed oil showed benefits for patients with high blood pressure on either beta-blockers or diuretics. Substituting all oils with just sesame oil normalize systolic and dystolic blood pressure, decreased free radical damage, and increased antioxidant status.

In Indian medicine, sesame seed oil benefits oral health in traditional Indian medicine. "Oil pulling" is when a person swishes sesame seed oil in their mouth for longer periods of time to prevent cavities, bad breath, bleeding gums, dry mouth and throat, makes teeth stronger as well as gums, and strengthens the jaw. Research shows this compares favorably to chemical, alcohol-based mouthwashes to improve plaque-induced gingivitis, with the ability to reduce the growth of Strep linked to oral plaque.

A study recorded in the *Indian Journal of Medical Research* in 2000 reported benefits among infants that were massaged with sesame seed oil as improved sleep and growth patterns compared with control oils like mineral oil.

In an animal study focused on multiple sclerosis, sesame seed oil protected mice from developing the disease by decreasing nervous system-related inflammation. Sesame oil can also benefit against Huntington's disease, another nervous system related disease.

Sesame seed oil also provides cardiovascular protection due to its lignan sesamol, which contains over a dozen medicinal properties that help protect the cardiovascular system.

Sesamol can also protect against radiation-triggered DNA damage. Its antioxidant properties protect mice by preventing intestinal and spleen damage. Compared to melatonin, it proved 20 times more effective at reducing free radicals.

Sesame contains sesamin, which is a fat-soluble lignin that has proven to be very effective at protecting against many different types of cancers including leukemia, colon cancer, and lung cancer.

Sesame seed oil can also improve oxidative stress, inflammation, and depression.

Useful tips:

Choose cold-pressed unrefined sesame seed oil for low-temperature cooking, sauces, salad dressings, or dips. An organic, refined, or expeller pressed sesame seed oil works for medium heat cooking. Never fry with sesame seed oil.

While stable, refrigerate sesame seed oil when storing. Limit light exposure and high heat temperatures to ensure its antioxidant properties remain intact. Store in amber-colored bottles.

The three common types of sesame oil are:

Plain Sesame Oil: The seeds are heated to a temperature of 250 to 300 degrees F for a few minutes and then crushed in a press to extract the oil. This oil has a smoke point of 410 degrees F, so you can cook with it for any purpose. The sesame meal left behind after the oil is removed is also an important product, which is edible but usually fed to animals.

Cold-Pressed Sesame Oil: This does not heat the seeds but instead crushes them at room temperature in an impeller. It has an even lighter flavor than conventional sesame oil, but its smoke point is lower. Less-refined cold-pressed sesame oil smokes at 350 degrees F, so never fry with it.

Toasted Sesame Oil: Toasted sesame oil looks different from the other types with a deep, dark red-brown color that resembles coffee or soy sauce. The seeds here are browned at a temperature of 360 degrees F for up to a half an hour. The finished product does resist oxidation and rancidity better than regular sesame oil, making it shelf-stable for long storage time. While too strong-flavored for cooking, it adds a pleasant, nutty sesame flavor to foods when drizzled on at the end of cooking.

Polyunsaturated Vegetable Oils

Safflower, soybean, sunflower, corn, and cottonseed oils all contain 50 percent omega-6 fats all except for soybean oil, which has very small levels of omega-3 fats. Safflower oil has almost 80 percent omega-6s. Researchers are now just starting to uncover the dangers of excess omega-6 oils in the standard American diet, regardless if they are rancid or not. Strictly limit them and never use for cooking, frying or baking.

One study recorded in the *British Medical Journal* evaluated the effectiveness of replacing saturated fat in the diet with the omega-6 linolenic acid to prevent heart disease. Researchers concluded “In this cohort, substituting dietary linolenic acid in place of saturated fats increased the rates of death from all causes, coronary heart disease, and cardiovascular disease. An updated meta-analysis of linolenic acid intervention trials showed no evidence of cardiovascular benefit.”[22]

22 Ramsden, C. (2014). Will it help or Hurt Change, Changing Perceptions? Web. http://www.paleohacks.com/and/excellent-new-work-with-chris-ramsden-will-it-help-or-hurt-change-in-changing-perceptions-27815

Animal studies associate vegetable oils with other serious diseases. In one study, increased omega-6 in breast milk was linked to asthma and eczema in young children.

Studies both in animals and humans link omega-6 fats with cancer and severe depression.

While seed and vegetable oils can decrease LDL cholesterol, that does not translate to reduced risk of heart disease. In fact, many controlled studies find an increase in heart disease risk among humans who use these inflammatory oils that increase risk of many diseases.

The History of Vegetable Oil Consumption and Production:

Vegetable oil did not exist until the early 1900s, when the majority of people got their fats from meat, tallow, lard, butter, and cream, which are from animal sources. While overall fat consumption roughly remains the same the type has changed drastically. Currently, people consume around 70 pounds of vegetable oil annually.

Vegetable oil use increased significantly during the 1950s, when a government campaign convinced people to eat vegetable oils and margarine to avoid "artery clogging saturated fats." Politics, not-so-hidden agendas, and faulty biochemistry understanding certainly played a part in this campaign.

The campaign worked, and canola soybean oils increased while butter and lard declined. Since the 1950s, these vegetable oils have been increasingly used for frying, in processed foods, and in cooking, creating the perfect storm for poor health. Brilliant marketing fallaciously suggests these oils are healthy for you because they are made up of monounsaturated fats and some omega-3 fats.

Vegetable oils are made up of mostly highly oxidative, pro-inflammatory polyunsaturated fats, which are liquid at room temperature and are very unstable. Among their vast havoc, they increase free radical formation and subsequently cancer and other disease risk.

The main ways Americans get omega-6 fats are by consumption of:

- Canola oil
- Corn oil
- Soybean oil
- Margarine
- Hydrogenated or partially hydrogenated fats
- Shortening

Hydrogenation makes these unstable more stable. Destruction of the double bonds with hydrogen enables the fat to have a longer shelf life, creating trans fats in the process. Most

vegetable oils also come from GMO crops.

The American Academy of Environmental Medicine states that "Several animal studies indicate serious health risks associated with GM food," this includes immune system issues, infertility, faster aging, insulin resistance, and issues with major organs and the GI tract. Doctors were advised by the AAEM to advise their patients to avoid genetically modified foods.

The only human study done so far on GM crops – in this case, soy – found it transfers into bacteria living inside our intestines. Long after we have consumed a GM crop, its proteins are at work inside us.

A study published by the Austrian government in November 2008 demonstrated that mice being fed GM corn were more likely to have fewer babies and they were smaller.

Baylor College of Medicine researchers discovered accidentally, that rats raised on GMO corncob bedding "neither breed nor exhibit reproductive behavior." Testing of the corn material found that there were two elements that halted the sexual cycle in females "at concentrations approximately two-hundred fold lower than classical phytoestrogens." It also halted male sexual behavior and the growth of breast and prostate cancer cells.[23]

How Are Unrefined Oils Made?

Unrefined oil is defined as oil that is pushed out of the skin, flesh or seed. So for instance, olive oil is pulverized and then put through a machine to produce oil. If you see "unfiltered" on a bottle, this suggests possible small solid particles in the oil.

Unrefined oils may be heat exposed even when they are labeled as "cold-pressed". During the expeller process, very high pressures can cause temperatures to reach 50 degrees Celsius. Fortunately, these temperatures do not cause any damage. The tastes and smells of unrefined oils are kept intact. They also keep their vitamin and mineral as well as their antioxidant levels intact. They should taste and smell pleasant, not rancid.

How Are Refined Oils Made?

Refined oils possibly are put through an extraction process similar to that of unrefined oils. However, it is quite common toxic solvents such as hexane are used to ensure maximum oil extraction. Refined oil also is put through steps that affect the quality and health features of the oil including degumming, refining, bleaching, winterization and deodorization. The

23 Leading Edge Health. (2014) Are GMO's Dangerous? Web. http://leadingedgehealth.org/2014/11/21/are-gmos-dangerous/?

most dangerous are bleaching and deodorizing. While these processes remove impurities, some of these elements like metals can cause oxidative damage.

The bleaching process involves the mixing of a bleaching agent, usually powdered. This sticks to pigments, metals and other elements that cause oxidation. This powdered agent is later taken out of the oil using a filter.

The more toxic of these two steps is the deodorization process. This last step is needed as the oil smells due to all the processing steps. During deodorization, the oil is high heated and the remaining parts other than the fat including antioxidants are distilled off. The refining process strips the oils of most natural nutrients, leaving it bleached, deodorized, and damaged due to high heat exposure. The result is a higher smoke point, neutral color and taste as well as a bland flavor.

Safflower Oil

Safflower seed oil is colorless. It also has no flavor and is very similar to sunflower oil in its nutritional value.

Its composition is about 14 percent MUFA, 75 percent PUFA, and six percent SFA.

Safflower oil is about 75 percent omega-6 PUFAs with no omega-3's to balance them out.

Two kinds of safflower oil make different kinds of oil. One is very high in polyunsaturated fat (linolenic acid), the other is high in monounsaturated fat (oleic acid.

Sunflower and safflower oils are very high in oleic acid and are similar to olive oil. These oils are made from hybrid plants. They contain very little amounts of polyunsaturated fats and high amounts of oleic acid, making them more stable than traditional types. Finding truly cold-pressed versions of these oils can be difficult.

Benefits:

One very popular study involving safflower oil and weight loss compared the effects of taking conjugated linolenic acid (CLA) and safflower oil over two 16-week periods. At the end, the researchers found subjects taking safflower oil showed a significant loss of belly fat compared with those using CLA.

The problem was the small number of people used (55) and the number that dropped out (20). All those involved were postmenopausal women with type 2 diabetes, leaving mysteries about what would happen in men or younger women. More studies with larger numbers of participants should further elucidate those concerns.

Concerns:

Because it is very high in PUFAs with little to no omega-3s, avoid safflower seed oil for sautéing, baking, roasting, and even salad making. Unfortunately, safflower seed oil is ubiquitous including at restaurants. Do not store this oil in your house.

Sunflower Oil

Sunflower oil is compressed from sunflower seeds and commonly becomes used in frying, fast food prep, and packaged and processed foods. Sunflower oil is heavily present in the standard American diet.

Its composition is roughly 19 percent MUFA, 63 percent PUFA, and 10 percent SFA.

Sunflower seed oil is extremely high in omega-6s (in some cases it is as high as 70 percent) with little to no omega-3s to balance them out.

There are many varieties of sunflower oils, including, high oleic, high linolenic, and mid oleic. Mid oleic sunflower oil is commonly at least 69 percent oleic acid. High oleic sunflower oil has about 82 percent oleic acid.

Monounsaturated levels of 80 percent and above are contained in high oleic sunflower oils.

High oleic sunflower oils and safflower oils comprised of hybrid plants are similar to olive oil, with small amounts of polyunsaturated fats, and high amounts of oleic acid making them more stable than traditional kinds. Finding truly cold-pressed versions of these oils can be difficult.

Concerns:

Sunflower oil is very high in PUFAs with little to no omega-3s, so avoid sautéing, baking, roasting, and even salad making.

Corn Oil

Corn oil and sometimes referred to as maize oil is pulled from the corn's germ, and is mainly used in cooking. Corn oil is frequently the main ingredient in highly processed foods and margarine.

About 90 percent of corn grown comes from genetically modified seeds.

Its composition is about 24 percent MUFA, 59 percent PUFA, and 13 percent SFA.

Concerns:

One study showed the toxicity of three GMO corn types from the chemical giant company Monsanto, finding "for the first time in the world" that GMO "are neither sufficiently healthy nor proper to be commercialized… Each time for all three GMOs, the kidneys and liver, which are the main organs that react to a chemical food poisoning, had problems."[24]

Like other vegetable oils, corn oil is extremely refined, using high levels of hexane extracted from GMO corn, and contains a ridiculous amount of omega-6 polyunsaturated fats highly unstable when exposed to heat and prone to oxidation.

Mazola corn oil has a new marketing campaign proclaiming that corn oil lowers cholesterol more effectively than olive oil because it has "4 x more cholesterol-blocking plant sterols than olive oil". The problem is Mazola's main company, ACH Food, partly funded the study they are basing this claim on.

Like other varieties, Mazola's cooking oils contain GMOs including corn, soybean and canola and exposed to hexane extraction.

From the time period of 2012 to 2014, corn oil was used as biodiesel fuel. This production of biodiesel fuel from non-food grade corn oil grew dramatically. The oil also has other industrial uses.

There is a dramatic imbalance of omega-6 to omega-3 ratio of 49:1 in corn oil, extremely far from the desired 1:1 ratio.

24 Natural News.com (2013). GMO's: Are They Safe? Web. http://www.herbogeminis.com/IMG/pdf/gmo_dangers.pdf

Soybean Oil

Soybean oil comes from soy beans and tends to have a dark yellow color or a light green hue. All standard vegetable oils are usually made from soybean oil.

Soybean oil contains 23 percent MUFA, 51 percent omega-6 PUFA, six percent omega-3 PUFA, and 14 percent SFA.

Soybean is made up of around 19 percent oil. In order to obtain soybean oil from the seed, the soybeans are broken, fixing moisture levels, rolled, and treated with hexane for extraction. After this, the oil becomes refined, blended, and often hydrogenated for longer shelf life.

Soybean oil is sold as vegetable and oil and is highly processed. The left over soybean meal is fed to animals as well as making up the main source of biodiesel fuel in the U.S., making up over 80 percent of production.

In the U.S. today, people consume as much as 28 billion pounds or more of edible oils on an annual basis. Of this figure, soybean oil accounts for 65 percent.

Soybean oil is very high in omega-6 fats, increasing risk for inflammation, heart disease, cancer, and autoimmune disease.

About 94 percent of the soybeans produced in the United States are genetically modified. A recent survey revealed that the majority of Americans use “Wesson Vegetable oil”. Currently this brand is made from GMO soybeans. This was made from cottonseed oil previously.

GMO soybeans are associated with significant health risks. The probability of infertility grows more and more with every generation that passes.

About half of all soybeans in use in this country is hydrogenated because soybean oil is way too unstable for food manufacturing. Partially hydrogenated soybean oil means trans-fats are formed during the process. Among its problems, partially hydrogenated soybean oil contributes to:

- *Systemic Inflammation:* increase in numerous inflammatory markers
- *Cancer:* Women and men not using NSAIDS had a 50 percent greater risk of developing colon cancer when they consumed high levels of trans fats
- *Diabetes:* Trans fats interfere with insulin receptors in your cells
- *Heart disease:* Many studies link trans fats intake with an increased risk of heart

disease. Trans fats have been considered an independent risk for sudden heart failure

- *Chronic health problems* like autoimmune disorders, obesity, asthma, and bone degeneration
- *Decreased immune system function*
- *Reproductive issues* which cause interference of sex hormones and enzymes
- *An increase in total cholesterol* and triglycerides and decreased HDL levels
- *Interference with how the body is able to use omega-3 fatty acids*

Even if you buy organic soybean oil, you face significant health issues including:

Goitrogens: Elements that can hinder or inhibit thyroid hormones and hinder iodine metabolism

Isoflavones (daidzein and genistein): Types of phytoestrogens which are feminizing agents and cause issues with the endocrine system, may cause breast cancer and cause infertility

Phytic acid: Often referred to as anti-nutrients. These stick to metals and inhibit the absorption of specific minerals like calcium, zinc, iron and magnesium. Soybeans contain extremely high phytate levels, more than any legume or grain. Its' phytates are extremely resistant to standard phytate-reduction methods like slow cooking. Only miso or tempeh which involves a long fermentation period will greatly reduce soybeans' phytate content.

Anti-nutrients: Saponins, oxalates, and soyatoxin which are all natural toxins. Some of them block protein digestive enzymes.

Hemagglutinin: This can cause red blood cells to stick together with cells unable to absorb and carry oxygen to tissues properly.[25]

Simply put: ALWAYS avoid soybean oil and dramatically restrict your intake of all vegetable oils.

Cottonseed Oil

Cottonseed oil is one of the most common vegetable oils used in the U.S. Referred to as "America's original vegetable oil," it has been a part of the American diet since the 1800s.

Its approximate composition is about 18 percent monounsaturated, 52 percent

25 Mercola.com. (2013). Soy Bean Oil: Lurking Danger in Processed Foods. Web. http://articles.mercola.com/herbal-oils/soy-bean-oil.aspx

polyunsaturated, and 26 percent saturated fat. When fully hydrogenated, its profile is 1.5 percent monounsaturated, 0.5 percent polyunsaturated, and 94 percent saturated fat.

Concerns:

The cottonseed form is a common ingredient in many processed foods and animal feeds. Cotton is not a food; however, cottonseed oil is made for human consumption. Unfortunately, the cotton crop comes loaded with toxins like chemicals and pesticides as it is categorized as a textile crop and not food.

Because of the heavy toxicity it contains due to pesticide spraying, cotton is viewed as the dirtiest crop on the planet. Aldicarb is the most toxic to humans and animals and is the second highest sold insecticide in the U.S. It's still heavily used in over 20 countries besides the U.S. There were around 16 states that reported having levels of this poison in their ground water.

Growers of cotton use 16 percent of all of the pesticides used worldwide. The World Health Organization (WHO) classified eight of the 10 pesticides most commonly used in the U.S. as moderately to highly hazardous.

Around 65 percent of the cotton made today will end up in our food supply, through food oils directly or through milk and meats of animals indirectly that feed on cottonseed meal and cotton gin by-products.

Among the top crops, about 83 percent of cotton is GM, compared to soy, canola, and corn (89 percent, 75 percent, and 61 percent, respectively). GMO cotton production ranks ninth in global crop production.

Modern processing of cottonseed oil involves many processes, including alkali refining, bleaching, winterization, hydrogenation, and deodorization. Cottonseed oil is often used as an insecticide.

Peanut Oil

Peanut oil, also known as arachis oil, is derived from peanuts and considered a vegetable oil. The oil is available in roasted, cold-pressed, refined and unrefined.

Peanut oil contains 46 percent monounsaturated fat, 32 percent polyunsaturated fat (almost all being omega-6 fats), and 17 percent saturated fat.

Benefits:

A study done in India recorded in 2006 in the *Yale Journal of Biology and Medicine* showed feeding rats with diabetes peanut oil decreased the rats' overall cholesterol, LDL, and triglycerides while raising HDL cholesterol. Most other studies did not display the increase of HDL but found decreases in total cholesterol, LDL, and triglycerides.

Peanut oil can reduce hardening of the arteries in monkeys. Increasing peanut oil intake can potentially decrease in total cholesterol, LDL, and an increase in HDL levels.

Another study involving hamsters fed various peanut-derived products showed a significant decrease in total cholesterol and prevented hardening of the arteries.

Concerns:

The high percentage of omega-6 fats create the potential for danger due to chronic inflammation. Severely limit or eliminate peanut oil.

Useful tips:

If you opt for it, choose organic peanut oil, as peanuts are a heavily pesticide-sprayed crop.

Canola Oil

Canola oil is derived from rape plants. The rapeseed is crushed to make vegetable oil.

Rapeseed oil is monounsaturated oil, used quite a bit globally, mainly in China, India and Japan. Unfortunately, there is around two-thirds monounsaturated fats in rapeseed oil which are erucic acid, toxic to humans in high amounts and linked to Keshan's disease.

It contains about 61 percent MUFA, 21 percent omega-6 PUFA, 11 percent omega-3, and seven percent SFA.

In Canada, in the 1970s, the variation of rapeseed was made by breeders. This created a monounsaturated oil high in oleic acid and low in erucic acid called Low Erucic Acid rapeseed (LEAR).

This LEAR oil needed to bear a different name if breeders were going to be successful at marketing it as a healthier alternative to polyunsaturated oils. "Rape" and "LEAR" would not prove to be marketable. The industry agreed that the name "Canola" would suffice. This was derived from "Canada oil, low acid" as the majority of new rapeseed was being

grown in Canada. The name “Canola” also came about as the phrases “can do” and “payola” were considered to be positive ways to market the oil. New name or not, canola oil contains small amounts of erucic acid.[26]

Concerns:

Making Canola oil involves heating the rapeseed with a solvent made of petroleum to bring the oil out of it. Next are steps of another heating process and acid addition to remove the solids that occur during first processing.

Next, Canola oil has to be mixed with even more toxins to improve the color and separate the various elements of the oil. Lastly, being that the toxic processing creates a foul smell, the oil has to be treated chemically to deodorize it. This video shows just how much processing it takes to produce canola oil.[27]

Canola oil is actually the first seed oil that was made through “genetic manipulation”. It is also important to note that canola oil is a common oil used in genetic altering projects where genetic ingredients from other species is injected into its seeds to bring out some of the plants traits.

This sounds like a horrible science project idea, not a nutritious oil that should be consumed, right? Currently, all of the canola crop found in North America are genetically modified.

Researchers in Canada, in 1997 reported that piglets fed with canola oil-containing milk displayed vitamin E deficiency signs, regardless of the fact that the milk had a very large quantity of vitamin E. The piglets that were fed with milk that contained soybean oil with the same exact amount of vitamin E added in it didn’t display requirements for more vitamin E.

In this same paper, researchers found that when piglets were fed canola oil they suffered from a decrease in platelet size and overall platelet count. The piglets that were fed canola and rapeseed oil also experienced longer bleeding times.

Researchers corrected this issue by adding saturated fats like cocoa butter and coconut oil.

Studies show rats bred to have hypertension and stroke had shorter lifespans when fed canola oil as the only sole source of fat. Another study later attributed this to the oil’s

26 Groulx, J. (2012). Canola Oil: The Biggest Con to Canadian Consumers!! Web. http://www.holisticlifestyle.ca/index.php/holistic-blog/item/129-canola-oil-the-biggest-con-to-canadian-consumers

27 Wellness Mama.com. (2013). Why you should never eat Vegetable oil or Margarine. Web. http://wellnessmama.com/2193/never-eat-vegetable-oil/

sterols, which “make the cell membrane more rigid” and shorten the animals’ lifespans.

Research shows most of the omega-3 fat content in canola oil are turned into dangerous trans fats while being deodorized.

Canola oil inhibits healthy growth, which is the reason why the FDA doesn’t allow using canola oil in baby formulas.

“Like all modern vegetable oils, canola oil goes through the process of caustic refining, bleaching and degumming-all of which involve high temperatures or chemicals of questionable safety,” says The Weston A. price Foundation. “And because canola oil is high in omega-3 fatty acids, which easily become rancid and foul-smelling when subjected to oxygen and high temperatures, it must be deodorized. The standard deodorization process removes a large portion of the omega-3 fatty acids by turning them into trans fatty acids…research at the University of Florida at Gainesville, found that trans levels as high as 4.6 percent in commercial liquid oil…they are not listed on the label.”[28]

Bottom line: Avoid this oil like the plague.

Margarine

When vegetable oil becomes either margarine or shortening, it goes through another process which is known as hydrogenation to make it solid at room temperatures. This is different from saturated fats like coconut oil and butter. Vegetable oils are not solid naturally, so they must become hydrogenated, forming trans fats.

28 Foodbabe.com. (2014). Processed to Death. Web. http://foodbabe.com/2015/02/04/cooking-oils/

Whole Foods

Olives

About 95 percent of olives calories is made up of fat, mostly as the monounsaturated oleic acid. Olives also provide a minimal amount of the essential fat linolenic acid and an extremely small amount of alpha-linolenic acid, both omega-3 fats.

Benefits:

Olives provide a great source of copper, iron, fiber, and vitamin E. Olives benefit the heart, musculoskeletal system, nervous system, respiratory system, immune system, digestive system and inflammatory system due to their high amounts of antioxidants and anti-inflammatory nutrients.

Among the key phytonutrients in olives include simple phenols (tyrosol and ydroxytyrosol), terpenes like oleuropein, flavones, and flavenols like quercetin.

The high amounts of monounsaturated fat in olives provide cardiovascular protection. Researchers find increasing monounsaturated fats improves total cholesterol, LDL, and HDL.

Recent research finds that olives and olive oil because of their monounsaturated fat content help alleviate high blood pressure. The oleic acid found in olives can decrease inflammation.

Olives are a wonderful source of vitamin E, a powerful and arguably the most important antioxidant, as well as selenium and zinc. Their phytonutrient content makes olives an antioxidant rich super-food.

The most studied antioxidant is oleuropein, found only in olives a multi-functioning antioxidant. Oleuropein can help decrease oxidation of LDL cholesterol, decrease free radicals, and protect cells.

One recent study showed the ability of olives to increase glutathione, which is thought to be one of the body's most important antioxidants. Consuming olive pulp used in the process of making olive oil greatly increased glutathione levels and improve antioxidant levels.

Extracts from whole olives act as anti-histamines at the cellular level to provide anti-

inflammatory benefits.

Olive polyphenols greatly reduce levels of oxidized LDL levels and decrease levels of oxidative damage in cells.

Most of the research on olives in relation to cancer has looked at two kinds: stomach and breast cancer.

In regards to breast cancer, the focus has been on the triterpene phytonutrient content of olives, including oleanolic, erythrodiol and uvaol acids. These phytonutrients found in olives can potentially disrupt breast cancer cell life cycles.

Disruption of cell cycles has also displayed itself in stomach cancer, although researchers remain unsure about the exact olive phytonutrients that benefit here.

Concerns:

The research done on the acrylamide content of olives has been proven to be inconsistent and this has created some controversy about the so-called health risk of olives. According to data compiled by the FDA, we have seen over a dozen types of olives that contain no level of acrylamides. At the same time, the FDA found acrylamide levels at 1,925 ppb in some olives canned as black pitted olives.

Most likely this occurs to the specific handling, processing, darkening, and especially heating methods used in canned olives. One 2008 study from Spain also found that the different methods of darkening olives can influence acrylamide formation, but only concerning the olive variety.

Avocados

Avocados contain an impressive array of phytonutrients including phytosterols, carotenoids, flavonoids, and beneficial fats.

Alpha-linolenic acid (an omega-3 fat) and oleic acid are important fats found in avocados. They are an excellent source of potassium, vitamin K, dietary fiber, pantothenic acid, folate, vitamin B6, copper, vitamin C, and vitamin E.

About 85 percent of the calories in avocado are made up of fat, but this fat content in avocado is very unique and provides very impressive health benefits proven by clinical research. This very unique nature of avocado fat is threefold.

First, phytosterols make up a vast part of avocado fats. These phytosterols are the main components that contribute to their anti-inflammatory properties.

Second are the polyhydroxylated fatty alcohols (PFAs) found in avocados, commonly found in many ocean plants but very rarely seen in plants on land, which makes the tree containing avocados and the avocados themselves unusual.

Third is avocados' uniquely high amount of oleic acid. Just like olives, more than half of the overall fat content found in avocados is oleic acid. This helps to improve the absorption rate of carotenoids which happen to be fat-soluble nutrients. As a monounsaturated fat, avocado can lower risk of heart disease.

Benefits:

Avocado's anti-inflammatory nutrients include phytosterols, carotenoid antioxidants, flavonoids, vitamin E and C and minerals such as selenium, zinc, and manganese as well as omega-3 fatty acids.

Avocados also provide carotenoids including beta-carotene, zeaxanthin, alpha-carotene, and lutein that provide powerful antioxidant protection.

Adding avocado to your salad will you help you better absorb those fat-soluble nutrients. In fact, recent research shows adding one cup of avocado to your salad increases carotenoid absorption 200 to 400 percent.

Avocado improves inflammatory stress levels and oxidative stress levels in healthy cells.

Avocado works to shift cancer cells over to programmed cell death (apoptosis), decreasing cancer cell numbers and also increases oxidative stress in cancer cells for this purpose. Avocado actually selectively forces cancer cells to destroy themselves by increasing oxidative stress, causing them to die off, while at the same time promoting increased antioxidant and anti-inflammatory nutrients in healthy cells.

Dark Chocolate/Cocoa Butter

Chocolate which is derived from the cabosside of the cacao plant grows in tropical regions. Chocolate can be traced back to the ancient Mayans. A common favorite chocolate drink among the Mayans was termed "drink of the Gods" which was made by mixing pepper with cinnamon and had a very strong and bitter taste.

Cocoa butter is a yellowish, pale colored vegetable fat that is edible and is taken from the cocoa bean. To obtain cocoa butter, cocoa beans are roasted and fermented, next they

are extracted from their hulls. Roughly 54 to 58 percent of what's left over is cocoa butter. It is common practice to deodorize cocoa butter as to remove its undesirable and strong taste.

Cacao butter is one of the main ingredients in chocolate.

Cacao butter has a high amount of saturated fats which are from stearic acid and palmitic acids, making it very stable fat.

Cacao contains a high amount of flavonoids and magnesium. Other important parts of chocolate are cocoa butter, caffeine, and phenyl ethylamine, which account for its pleasant effects on the brain.

Benefits:

We have 70 human intervention studies on cocoa-containing products and cocoa in general over the span of 12 years, many showing benefits on blood pressure, cholesterol, cardiovascular health, and the inner lining of the blood vessels.

In America, chocolate is the third highest among daily antioxidant sources consumed.

In an animal study regarding cardiovascular health, "Cocoa powder at a human dose equivalent of two dark chocolate bars per day significantly inhibited atherosclerosis (hardening of the arteries), lowered cholesterol, LDL and triglycerides, raised HDL and protected LDL from oxidation. Chocolate has thus been shown to have potential beneficial effects with respect to heart disease."

Chocolate also provides anti-inflammatory benefits as well as being brain and heart protective. It can improve bioavailability of nitric oxide, improving blood pressure, platelet function, and blood flow, decreasing risk for heart attack.

Chocolate contains a high amount of polyphenol, nutrients that prevent the growth of tumors and cancer cells by preventing LDL cholesterol from oxidation and decreasing inflammation.

The flavanols in cacao can increase nitric oxide and promote anti-inflammatory properties as well as blood platelet activity.

About one-third of the fat in chocolate is stearic acid, proven to improve cholesterol numbers.

Cocoa and chocolate provide a decent amount of trace minerals. Recent research indicates the main flavonoids found in cocoa provide antioxidants and other protection.

Cocoa can also lower cholesterol, triglycerides, LDL cholesterol, and inflammatory markers significantly. One study showed how cocoa improved the lipid profile and decreased inflammation for type 2 diabetes.

Another study researched the polyphenol-rich chocolate effects in subjects dealing with chronic fatigue syndrome. Polyphenols helped balance out the immune system contributing to positive effects.

Cocoa butter can be used to treat skin conditions like dermatitis and eczema. Cocoa butter, when it is used topically, creates a protective layer which protects sensitive skin from the environment, retaining much-needed moisture.

High amounts of polyphenols also help to prevent production of IgE, known to aggravate symptoms of both dermatitis and eczema as the immune response becomes too much. Healthy, clear skin starts not with expensive lotions and topical products but from healing foods.

Useful tips:

Buy organic dark chocolate with at least 75 percent cacao content and low sugar content. Eat judiciously.

Conclusion:

In this book, I hope I've debunked a great deal of misinformation about dietary fat. Rather than simply a primer about fats, I hope this research guides your decision to make the healthiest choices for optimal health. The right fats can heal; the wrong fats can create massive havoc.

Food is not simply mere calories; it is vital information. It communicates to your DNA and instructs it what to do. The most effective tool where you possess the most power to manipulate your health, environment, and your whole world begins with your fork.