

I can do everything right, watch my carbohydrate intake, eat organics, and still be sabotaged in my efforts to get healthy?

YES!

AA, which stands for Arachidonic Acid is a Fatty acid that our body makes in small amounts. We also get it from vegetable oils and animal products in our diet like fish, beef, pork, eggs, and poultry.

Arachidonic acid is essential to life but only in the small amounts our bodies make. Any amount, beyond our needs, is very destructive. The excess is converted into enzyme components that trigger inflammation, interfering with the normal functions of the body.

Some people are sensitive to this fatty acid and develop health problems early on while the remainder of us develops problems after years of exposure. After all if you keep getting too much for long enough your body is finally going to break down and react. That is the group most of us fall in to.

Arachidonic acid is something that we can store in our fat. (It is a fatty acid)
OK now let's look at what it does in our body.

These are diseases are linked to or caused by the inflammation created by arachidonic acid in your diet

Asthma
Allergies
Rheumatoid Arthritis
Atopic Dermatitis
Gout
Lupus
Inflammatory Bowel Disease
Psoriasis
Scleroderma
Arteriosclerosis
(Hardening of the arteries)

Diabetes
 Kidney Failure
 Hepatitis
 Thyroid disease
 Pancreatitis
 Osteoarthritis
 Bronchitis
 Emphysema
 Obesity
 Alzheimer's
 Cancer
 Slow healing injuries in the joints

Arachidonic acid is one of those fatty acids that are essential to life but incredibly destructive in excessive amounts. Remember our body only makes a small amount of this fatty acid so the amounts needed to cause disease comes from our diet.

Arachidonic Acid is found in:

All commercially grown grain fed meats (especially red meats) Trim the fat! This includes:

- Chickens
- Turkey
- Pork products
- Organ meats
- Farm raised fish
- Eggs (The non-organic eggs)

Margarines

Lard

Farm raised fish. Eat wild catch fish, it says on the label

Prepared foods of all types

- Salad oils

- Mayonnaise

- Read the labels for poly-unsaturated fat

Milk products from commercial dairies

Unsaturated oils (canola, corn, vegetable, flax, olive, soybean)

Let's look at this so we can gain an understanding of what has happened.

OK! When our food animals are allowed to graze, and eat what is natural to them, they grow up to be healthy.

Back in the 1940's our farmers wanted a way to bring more \$\$ for their beef at market.

The food industry said if you feed your animals corn, soybean, and grains they will fatten up.

Thus the beginnings of the feed lot system.

What is happening is the thyroid is being turned off, preventing proper cellular energy production. Energy from grain food gets stored as fat instead of being used in day-to-day activities.

Another cause for the weight gain is the activation of insulin in their bodies. Grain foods trigger a tremendous release of insulin in these animals. Insulin causes fat storage in animals, including fish, and people.

The farmers are happy with the extra weight on their livestock as they bring more \$\$ at market.

But lets look a little closer at this process. We know that if livestock are allowed to graze in the pasture they grow to be lean and healthy. Cattle that graze develop about 15% fat in their body.

Livestock that are grain fed gain around 50% fat on their bodies. The farmers did not have a clue that what they had been told, to do, would cause such an epidemic of inflammatory diseases with our people.

If we eat what we are designed to eat we will do well just as the animals that are allowed to graze.

But give us foods that we are not designed to utilize, in a constant diet, and we can develop health problems just as the livestock do when they are gaining weight. Livestock that are gaining weight are not healthy. People that are gaining weight are not healthy. The grain fed diet turns off the thyroid.

The extra insulin triggers inflammation and prevents the kidneys from removing excess fluids from the body. Anybody experience swollen ankles

These animals, birds, and fish develop a fatty acid called Arachidonic Acid or AA for short.

This AA is natural but only in small amounts. We make it, as we need it.

The problem comes from our diet. Animals that are fed a grain diet produce this AA in their bodies.

Add what we make, on our own, to the AA we get from our food and we end up with excessive amounts of AA in our bodies.

What happens when we have too much AA in our bodies?

Inflammatory diseases like diabetes, arthritis, irritable bowel, cancer, weight gain, and so many other diseases, that are listed above, become part of the chronic health problems plaguing our nation.

It isn't the saturated fats and cholesterol that cause most of the problems associated with these foods: it's their arachidonic acid content.

If you have an inflammatory disease like one of those mentioned above avoid as much visible fat as possible on commercially grown meat/fish and poultry, trim it off

George Forman-grilled meats- reduces AA by 35%

Marinating meats can help even more try this.

Marinate meat- trim the fat, place in plastic bag with a mixture of Red Wine and 1 cup Grape seed oil or Sesame oil for 24 hours if possible. Take meat out and drain off the marinade and grill. The wine is a solvent that will leach out the saturated fat and the stored AA with it and replace it with the Monounsaturated Grape seed oil. This also helps reduce the amounts of AA in the meat. This works with pork, chicken and beef.

Make omelets with free-range organic eggs.

Coconut oil can help neutralize the inflammatory effects of AA in the red meats.

Avoid polyunsaturated oils and margarines- use coconut oil or grape seed oil for frying, they are heat stable and produce no trans fatty acids. That is right BUTTER and Coconut oil are much better under these circumstances, because it is a natural saturated fat- no trans fatty acids to gum up your eicosanoid factory. Trans Fatty acids prevent the formation of *GOOD Eicosanoids*.

To avoid undermining your body's production of Good Eicosanoids, you need to stop using oils that contain Alpha Linolenic Acids. Limit your intake of Canola, soybean oil, vegetable oil, corn oil, and other liquid oils commonly used for frying.

Switch to Grape seed oil or Sesame oil and coconut oil.

Keep Protein Levels up- this helps the enzyme activity needed for Linolenic acid intake that assures normal levels of eicosanoid production. Remember we need arachidonic acid in small amounts to build cell membranes.

Aging-Stress-Disease-Trans Fatty Acids-Alpha Linolenic Acid- and High Carbohydrate diets, Slow down the Enzyme Activity needed for Linolenic Acid Intake

Avoid Trans Fatty Acids, Poly-unsaturated Oils and partially Hydrogenated oils in foods

Avoid Alpha Linolenic Acid- (ALA) all oils are not created equal

These Omega 3 Oils contain ALA

Canola oil contains	10%
Flaxseed oil	57%
Black currant oil	14%
Soybean oil	7%

Avoid High Carbohydrate- Low Protein Diets.

Avoid starchy carbohydrates and then eat a high natural protein diet will help to control insulin and glucagon levels. This prevents the insulin reaction and that causes the body to make Bad Eicosanoids. (Eye cuse a noids)

Bad eicosanoids also come from the omega 6 poly-unsaturated oils. They increase inflammation and pain in the body. They also increase tryglicerides and allergic reactions. They interfere with the regulation of cell division and replication that could help prevent cancers.

This is very important to those who are diabetic or pre-diabetic. A fasting blood glucose level should be between 70 and 80. Any number higher than that means that insulin is building up in the blood and right along with it the inflammatory bad eicosanoids.

Just as grains trigger excessive insulin the omega 6 poly-unsaturated oils can cause cellular membrane damage. This prevents insulin from finding their receptor site on the cell. This brings insulin resistance and eventually diabetes. Of course long before enough damage is done to create diabetes the body is experiencing many different inflammatory diseases.

According to the Doctors Eades, the meat and fat from range-fed, grass-fed, or wild animals is not the potential threat to sensitive individuals that commercial feedlot meats are.

By extension, I would also say that eggs and meat from free-range poultry would also be acceptable for the diet.

The doctors recommend removing all commercial red meat, fish, poultry, animal fats, and eggs from the diet.

I'll carry it one step further: Since the grains in the feed of the animals with high levels of AA appear to be the culprits, I would recommend avoiding all grain foods and seed oils with the exception of grape seed oil, sesame, or coconut oil.

A three-or-four-week hiatus from grain fed, commercial red meat, fish, poultry, animal fats, vegetable oils, and eggs might help you to find the source of your inability to get your insulin under control.

If you notice your blood pressure, blood glucose and other symptoms improving, over the 3-week period, you can be fairly sure that the AA in the meats, eggs, and oils you had been consuming were a major part of the problem.

This modification is still going to leave you fish (may I recommend deep-water ocean varieties like salmon, cod, and mackerel?), shellfish, grass-fed beef and free-range pork, lamb, rabbit, and wild game, such as venison, elk, free-range bison, antelope, etc. Vegetables on the list are all available to you. You won't starve during this time, and may even discover likings for some things that have never been on your menu before.

This information comes from the book "*Protein Power*" by Eades

www.Mercola.com

Fats That Heal, Fats That Kill by: Udo Erasmus M.D.

Inflammation Nation by: Dr. Chilton

Compiled with my thoughts:
Dr. Jerry WineBrenner, N.D., D.N.H.
drjerry@jwinebrenner.com



If you live in any of the states around the great lakes you are in the “Goiter Belt” of the world. That means we are seriously deficient in iodine. You also live in an area that is one of the most vitamin D deficient. Because of these two deficiencies we have the highest rates of inflammatory diseases and cancer.

If you are suffering with any disease you need to follow this plan
If your fasting blood glucose is over 70 you need to follow this plan
If your fasting blood glucose is over 100 you really need to follow this plan
If you have been diagnosed with any serious disease follow this plan

1st stop the damaging process. That means stop the foods with too much AA.

Antioxidants will help stop the damaging processes in the body. I highly recommend them for inflammatory health problems. However it is vital to stop what is causing the damage if you ever want to actually heal from any disease.

2nd stop the foods that raise sugar/insulin levels

Elevated sugar and the associated insulin levels are the result of cellular free radical damage. The cells do not recognize the insulin and therefore do not allow the entrance of glucose to the cells. Polyunsaturated oils in the diet trigger this damage. When cells are inflamed, from oil damage, sugar levels go up and insulin levels go higher as the body attempts to get the cells to respond. This condition starts with only slightly elevated blood sugar levels. During this time the body is being damaged in other ways. The same damage to the cells is also happening to other parts of the body. Elevated insulin levels trigger more inflammation and kidney function loss. Edema starts to show up under the eyes, legs, ankles, and hands. Weight may begin to layer around the middle. Weight loss may become difficult. Weight gain becomes easier. Food sensitivities are noticed. And the list grows as the blood sugar levels rise. By the time sugar levels are sufficient to call you a diabetic your body has taken on a new set of health

complaints like high cholesterol, high blood pressure, bowel problems, and much more depending on your family history.

Another note here:

When thinking of triglycerides one must remember where they come from. High glycemic foods are converted to triglycerides if not used up for energy. Hi glycemic foods are those that raise blood sugar rapidly after eating them. I have discovered that even low glycemic starchy foods will be converted to triglycerides if they are not used as energy.

Another note here. We need to address the “why” behind our eating these sugary/starchy foods. We all crave them and for the most part have little control over our use of them.

Recently I read in a book by Adelle Davis. She said that our body would make us crave sugary starchy foods when we don’t get enough of the essential fatty acid “Linoleic acid”. This is a fatty acid that our body cannot make as it is used by the body to form other fatty acids and produce energy. Well it turns out, according to her, that when we become deficient in this fatty acid we crave sugars and starches.

Basically our body is attempting to convert excess high glycemic foods to the missing fatty acid. Of course it cannot make that fatty acid no matter how much sugary foods you eat.

How do you stop the cravings for these foods? Get enough Linoleic acid in your diet. The best sources are grape seed oil and safflower oil. Since safflower oil is refined oil that only leaves grape seed oil.

Some foods have small amounts of this essential fatty acid as well.

By supplementing your diet with 2 or more tablespoons a day of this oil your body will soon stop craving sweets so cholesterol and triglycerides will come down to a healthy range around 140mg.

3rd stop the grains that trigger high insulin

Wheat is one of the most damaging grains for most of us. It triggers swelling in the digestive tract. It can stop the peristaltic movement of the bowel. It interrupts protein digestion for many of us. Other grains bring other health issues as well. Grains in the diet should be very limited. 80% of our population cannot utilize grains properly and suffer many bowel upsets because of them. Insulin levels are increased as grains cause excessive insulin releases to carry their sugars/starches into the fat cells for storage. Grains are used by the farming industry to fatten the cows, chickens, pigs, and now fish. Grains turn off the thyroid and raise insulin levels. Both of these actions are indicators of bad health. Weight gain is always a sign of slow thyroid and elevated insulin levels for humans and our food animals. Damage at the cellular level, from polyunsaturated grain oils, prevents thyroid hormone from working. Weight gain is the result. Diabetes can also be the result. If the DNA is damaged, at the cellular level then cancer is another result.

4th be sure to get a complete vitamin and mineral supplement

Getting an all natural food supplement is important. Vitamins and minerals should be made from organic sources. Minerals should be taken separate from vitamins. Vitamins are taken with meals. Minerals are taken on an empty stomach.

Liquid vitamins do bring some advantage to those who do not do well taking pills or capsules. Liquids should also be from organics sources.

We live in an area of the world that is known as the “Goiter Belt.” Iodine deficiency is more prevalent here than any other part of the world.

This area is also considered one of the most deficient in vitamin D.

Cancer rates, of the glandular systems, are higher in our area of the world than any other area. There is a direct link between these deficiencies, cystic fibroid diseases and cancer.

Vitamin D is vital to proper immunity in the bowel. It is also important for proper kidney function. The kidneys cannot convert calcium's to a usable form when vitamin D is low.

The brain needs calcium to function. Bones will be robbed of their calcium when vitamin D is low. Taking calcium supplements will do no good if you do not receive sufficient vitamin D in your supplemental regiment. Cellular growth modulation is one function of this vitamin. Without it cell growth is not kept on schedule. Rapid cell growth may happen when vitamin D is insufficient to regulate the proper growth cycle. Many tissues of the body including prostate, colon, ovaries, and breast are able to activate vitamin D just as the kidneys do. This localized activation helps regulate the uncontrolled cellular growth that can form cancer. 8,000 IU of vitamin D is the minimal amount needed by those of us this far north of the equator. Under normal circumstances the ultraviolet rays hitting our skin and underlaying fat make vitamin D. But this far north of the equator the UV light of the sun isn't strong enough to make the vitamin D we need. Supplementing becomes necessary, especially in the winter months. (I only recommend one type of Vitamin D and that is Carlson Brand at 2,000 IU dose)



5th restore iodine levels

Iodine is one of those minerals that assist all hormones. Iodine is stored in the thyroid as you know but did you know that it also gets concentrated in all of the other glandular systems as well? When iodine is low the body suffers. ADHD, mental retardation, depression, cellular energy production, breast cancer, cystic fibroid conditions, and many other forms of cancer including prostate cancer in men. Iodine isn't just a thyroid mineral. Get 12 mg a day or more. To do a home patch test take iodine tincture, from the drug store, and paint a patch/spot on the inside of your arm and allow it to dry. Keep watch of it and note how many hours it takes to

disappear. If it is gone in less than 24 hours, you're deficient in iodine. If it is gone in less than 12 hours you are very deficient in iodine. When the patch disappears in less than 6 hours, you have a serious iodine deficiency. Some will see the iodine patch disappear in less than 4 hours. These people are in real trouble. Iodine comes by prescription at higher dosages and by supplement form at lower dosages. It is not uncommon to see recommendations for taking iodine at 120 mgs a day.

Iodine triggers apoptosis (Cell death) in active cancer cells.

People receiving iodine experience:

- Sense of Well-Being
- Lifting of Brain Fog
- Increased Energy
- Feel Warmer in Cold Environments
- Need Less Sleep
- Regular Bowel Movements
- Improved Skin Complexion
- Strengthens Immune System
- Prevents Cancer
- Blocks absorption from Radioactive Fallout

6th Stop the inflammatory polyunsaturated grain oils.

Many say that these polyunsaturated grain oils are essential to the body. They are but only in the amounts you get when you eat the vegetables used to make the oils. Get your oils from the plant, not the concentrated oils. The oils are so concentrated that they bring excessive amounts of damaging enzymes to the body.

Corn oil, canola oil, vegetable oil, flax seed oil, fish oil, olive oil, are oils that bring vast amounts of Cox II enzymes into the body when they are heated from cooking. They oxidize very rapidly when heated. Some of these oils do not have to be heated in cooking temperatures to do oxidative damage to us. They oxidize at room temperature. That is why manufacturers recommend you refrigerate the oils after opening them. Our body is hot enough to oxidize any polyunsaturated grain oil to trigger free radical damage once we ingest it.

When we ingest these polyunsaturated grain oils they are wrapped with protein and enter the body through the intestinal wall into the lymphatic system as the LDL, low-density lipoprotein, which we hear so much about as being the bad cholesterol. We get the bulk of this LDL from these oils in our diets. (If your LDL levels are said to be elevated it is most likely these oils causing it.)

While in the lymphatic system (water system) these oils bathe all of our cells with this oxidative mix of damaged oils. This oxidative damage affects the cell membranes with inflammation. The inflammation prevents the immune system from protecting those cells.

It also prevents insulin from delivering glucose to the cells for energy production.

Thyroid hormone T₄ is not converted to the needed T₃ hormone also used in energy production. When these oils do enough damage at the cellular level the DNA of the cell is damaged and that triggers excessive rapid growth of that cell. That is cancer.

To prevent or reverse this damage you need to eat oils that do not oxidize when heated or while in the body. Coconut oil, grape seed oil, and palm kernel oil are great for day to day baking and frying needs. They are heat stable and do not oxidize at our body temperature.

These heat stable oils are also great anti-oxidant oils that help prevent the free radical damage at the cellular level.

7th Eat only free range meats and eggs

Free-range meats and eggs are healthy. It is when our farm animals are grain fed, in the feedlot system, that they experience the damage to their bodies that fattens them up. This fattening process is a sure sign of thyroid and insulin sensitivity damage. If we eat these products we will experience the same damage to our bodies.

8th Eat only wild fish

Farm raised fish come from large pools of water much like a swimming pool. These fish are fed grains and other components that trigger excessive fat build up. The fish oil from these fish is not the healthy oil we expect from eating fish. These fish have developed large quantities of arachidonic acid. (AA) This AA brings inflammation to the human body when eaten. Eat only wild fish. It says on the label if the fish is farm raised or wild. Wild fish are healthy. Farm raised are not.

9th Use coconut oil, grape seed oil or butter for cooking

These oils are heat stable and will not trigger inflammation. In fact the coconut and grape seed will help eliminate it, as they are great antioxidant oils.

10th Restore Bowel Function

If your bowels do not move after every meal you are already heading into trouble. Good bowel function allows food to move through the system at the normal speed. Anything that slows the bowel or speeds it up will disrupt the proper function of the bowel and that is to breakdown the meals we eat, retrieve the nutrients from that food and expel the left-over's and remove the toxins that have been returned to the bowel for elimination.

Chronic bowel problems are a serious problem in the SAD, Standard American Diet. Many suffer from constipation while others rush to the bathroom to deal with loose bowels.

Many take laxatives and stool softeners to provide assistance in their bowel habits. To make things worse we are educated by the food advertising industry about such health problems. Believe it or not your medical doctor receives most of their continued education from the same advertising industry to guides us, the consumer. It is no wonder that chronic health problems of the bowel exist. We keep eating the same foods that cause the problem and believe that they are part of the solution.

Healthy bowel function comes from healthy eating. Now there is an oxymoron if I ever heard one. What is "Healthy Eating?"

That depends on whom you ask. The "Heart Smart" oils are great if you get them in the dosages received when you eat an ear of corn or vegetables from the garden but if you use the

oils from the bottle you are getting a powerful concentrated version of what nature never intended you to have.

Meat that is derived from cattle that are allowed to graze in the fields will grow to be healthy. Modern feedlot systems, used to grow our food animals, take animals and feed them in a most un-natural way. The animals get big and fat and that brings more \$\$ for the grower. But what is happening that makes the animals big and fat?

Modern grain feeds are designed to turn off the thyroid and trigger excessive insulin levels in our food supply animals. Grains are not a normal part of beef diet. Chickens and fish do not normally eat grains either.

We aren't designed to eat grains either so when we eat the diet recommended by the FDA food pyramid we develop the same health problems our food animals develop. We have a slow thyroid and excessive levels of insulin and arachidonic acid. All of which trigger swelling, inflammation and pain along with the associated diseases.

I spoke with a farmer earlier this month and he told me that the high price of fuel and even higher prices for cattle feed has caused him to start pasturing his cattle. After I explained the damage the feed causes to the animals and then to us after eating the food he was visibly upset at what he has been doing for 50 years raising cattle. He understood that the very health problems he was now experiencing were a direct result of the feeding practices he used on his farm. He was upset that the training he received was very misleading. I told him that even the doctors have received the same information and have been teaching as well. The food industry has really put one over on us. He said that many of his friends have made the change to pasture their animals again. He said "well they won't get so fat and will probably be healthier for us then." I agreed with him and thanked him for understanding.

Now some notes on blood sugar:

The best fasting blood sugar is 70. This indicates proper sugar handling, low insulin levels, low AA levels and overall good health.

Iodine patch should remain on the arm for about 24 hours when iodine has been restored to proper levels.

Healing in the body will happen if you follow this plan. Cheating delays healing and brings a return of disease.

Exercise

Exercise is OK if it is walking outside. Exercise is used to build endurance. Exercise should not be used to lose weight or be thought of as a way to get healthy. Exercise puts added stress on the body. If you are overweight or diabetic exercise can lead to more health problems.

Let your exercise be relaxing until health has been restored and then build endurance. Don't ask an unhealthy body to try to deliver a new level of demand during exercise. Get sugars down to proper levels during fasting and then increase exercise demands.

Losing Weight

Calories, calories, calories! We have heard so much about calories that it is tiring. I've even said it isn't about the calories. Calories restrictions are about getting healthy. When we

overload the body with calories we cannot process the food properly there is simply too much food at one time for our digestive system to utilize all of it in a timely manor.

If you are like me and gain weight just by looking at the menu this information is for you.

Aging and what it is all about

From the moment you were born many of the cells in your body had already been replaced with new cells. Red blood cells have a life cycle of 120 days. Other cells in the body have similar life cycles. Essentially each cell lives and dies on a regular schedule. So by the time you are born many of the cells have already been through more than one life cycle.

So what does this mean?

Each time cells end a lifecycle and are replaced by the new cell the new cell is just slightly less efficient than the cell it replaces. One example is that each cell has several thousand mitochondria, little furnaces, producing energy. As new cells are made to replace the old cell the new cell may have a few less of these energy-producing mitochondria.

As your cells go through thousands of life cycles and you reach an age over 50 years or more. Each cell at this age is less efficient than the cells you were born with. They produce less energy and less of everything else needed to keep your body healthy.

At age 50 plus stomach acid is produced at about 15% of the levels of when you were 20 years old. Now the job of stomach acid is to ionize minerals, break down proteins, sterilize food and liquefy food. Having only 15% of the amounts needed to do the job means that you are not getting everything you need. Much of the work isn't being done and bad digestion and all of its symptoms are going to tell you so.

Hormones are going to go through the same changes. Lepton is a hormone that tells the brain when you have enough fat storage. If you are low in this hormone the brain doesn't get the signal. Your brain doesn't know you are overweight. Because the brain never gets the message it continues to send the message to eat. We got to have more food!

Many other examples can be offered but you get the point. Inefficient cells are part of the aging process. Eventually we reach the point where we do not function sufficiently enough to stay alive. Kind of harsh to think about but that is what happens.

This aging process can be made worse speeding up the process and bring on disease and chronic symptoms as well. Not a life of comfort for the "Golden Years." We as a people believe that we should have comfort and good health with retirement. The sad truth is that most Americans do not retire in good health. Age and disease make retirement a time of dread.

OH wait a minute here doc your pushing forward to fast! You said we could slow this whole thing down! So how do we do that?

Thermogenesis

Depending on whether they are initiated through locomotion and intentional movement of the muscles, thermogenic methods can be classified as one of the following:

Exercise-associated thermogenesis (EAT)

Non-exercise-associated thermogenesis, (NEAT)

Shivering

One method to raise temperature is through shivering. The heat results from friction between muscle elements (the same as during exertion), but no mechanical work is produced because opposing (antagonistic) muscle pairs are activated at the same time. Note: (Babies cannot shiver. You need to keep them warm with blankets and clothing.)

Non-shivering thermogenesis usually occurs in brown adipose tissue (brown fat) that is present in infants, humans, and hibernating mammals. It is a process whereby substances such as free fatty acids (derived from triacylglycerols) remove purine (ADP, GDP and others) inhibition of thermogenin (uncoupling protein-1) which causes an influx of H⁺ into the matrix of the mitochondria and bypasses the ATP synthase channel. This uncouples oxidative phosphorylation and the energy from the proton motive force is dissipated as heat rather than producing ATP from ADP.

The low demands of thermogenesis mean that they draw, for the most part, on lipolysis as the method of energy production.

Brown adipose tissue (BAT) or brown fat is one of the two types of adipose tissue in humans and hibernating mammals. Its primary function is to generate body heat. (Thermogenesis) In contrast to white adipocytes (fat cells), which contain a single lipid droplet, brown adipocytes contain numerous smaller droplets and a much higher number of mitochondria. Thermogenesis is relegated to brown fat where it provides a mechanism for the enormous heat generating capacity of the tissue.

The mitochondria in a eukaryotic cell utilize fuels to produce energy (in the form of ATP). This process involves storing energy as a proton gradient, also known as the proton motive force (PMF), across the mitochondrial inner membrane. This energy is used to synthesise ATP when the protons flow across the membrane (down their concentration gradient) through the ATP synthase enzyme; this is known as chemiosmosis.

In endothermic animals, body heat is maintained by signaling the mitochondria to allow protons to run back along the gradient without producing ATP. This can occur since an alternative return route for the protons exists through an uncoupling protein in the inner membrane. This protein, known as uncoupling protein 1 (thermogenin), facilitates the return of the protons after they have been actively pumped out of the mitochondria by the electron transport chain. This alternative route for protons uncouples oxidative phosphorylation and the energy in the PMF is released as heat.

To some degree, all cells of endotherms give off heat, especially when body temperature is below a regulatory threshold. However, brown adipose tissue is highly specialized for this non-shivering thermogenesis. Firstly, each cell has a higher number of mitochondria compared to more typical cells. Secondly, these mitochondria have a higher than normal concentration of thermogenin in the inner membrane.

I wonder if iodine loss is directly related to the loss of heat in the body and inability of the body to burn off calories from the food we eat. Young people do give off tremendous amounts of heat were we older people tend to struggle to stay warm. I know that LCT's come from the bad oils we eat and MCT's come from the coconut oil we eat. Ketones are produces when fat is being

burned to produce energy. Will inducing thermogenesis produce ketones? I did a ketone stix and discovered that ketones were present in the urine after a large mg dose of iodine.

Brown fat also contains more capillaries than white fat, since it has a greater need for oxygen than most tissues. In lipolysis this brown fat is broken down to create energy to maintain the body temperature. Iodine is required in this process. Many who do not maintain a body temperature of 98.6 find it hard to keep warm. They often get chilled during the slightest change in room temperature or if there is a draft. Some just find themselves cold all of the time. Building a layer of fat is one way the body insulates itself from the cold. If the body had sufficient iodine it would be able to regulate body temperature and trigger the burning of fat to lower the insulation needs. Iodine triggers lipolysis or fat burning. Iodine also triggers glycolysis or sugar burning in the cells of the body. This ability is lost more and more as we age. As glycolysis becomes less efficient the body will store more energy as fat. If we restore iodine levels it is believed that glycolysis can be restored to the levels of our younger years. We burn off the calories we consume now and lipolysis is triggered to burn off the stored fat from years past. How much iodine is needed to accomplish this. That is different for each person.

Artificial thermogenesis

Thermogenesis can also be achieved by artificial means. It is becoming common for people to use thermogenic substances to help control fluctuation in weight. The process works by increasing the body's metabolism, thereby increasing its core temperature. Thermogenics are commonly made up of ephedra, bitter orange, capsicum, ginger and caffeine.

Is melatonin the closest thing to a cure-all?

Why am I recommending melatonin?

Because the research into this hormone -- which helps regulate sleep of more importantly is one of our most potent antioxidants -- is simply astonishing.

Legitimate, peer-reviewed research has been published demonstrating the potent healing effects of melatonin in an amazing range of conditions -- from high blood pressure to autoimmune diseases.

What is it?

Melatonin is a hormone found in all living creatures. It is produced in the pineal gland in the brain. Your body makes it from the amino acid tryptophan, which is also used as a building block for serotonin, the feel-good neurotransmitter in your brain.

Melatonin is released during the night -- it is stimulated by darkness and suppressed by light. It's levels peak in the middle of the night. For this reason it has been called "hormone of darkness".

And therein lies the problem. How many of us live by the actual rise and fall of sunlight -- rising that the first crack of dawn, and lying down to sleep when darkness falls? I can't think of one person I know who does that. Instead we draw the shades of night so we can sleep to an appointed hour, and we use artificial light at night. Until recent history, those of us who lived in

temperate climates were exposed to up to 18 hours of darkness in the winter. Today, artificial lighting reduces this to eight hours or less per day all year round. And so we inhibit our melatonin production, and in doing so, we deprive ourselves of one of our most powerful antioxidants, one that plays a particularly important role in protecting our DNA. Reduced melatonin production has been proposed as a likely factor in the significantly higher cancer rates in many workers, and the effect of modern lighting on melatonin has been proposed as a factor in the larger overall incidence of some cancers in the developed world.

Melatonin is a powerful antioxidant that can easily cross cell membranes and the blood brain barrier. It has been studied for the treatment of cancers, cardiovascular diseases, depression, seasonal affective disorder, and sexual dysfunction.

Melatonin is so important it is not only synthesized by your pineal gland but also in many other organs and tissues of the body, particularly the bone marrow, thymus and lymphocytes. Melatonin has been shown to be involved in the regulation of both cellular and humeral immunity. Melatonin not only stimulates the production of natural killer cells, monocytes and local sites, but also alters the balance of T cells and increases the production of important infection fighting molecules called cytokines.

Where can I find it? Your body synthesizes melatonin, but you can also find it in small amounts in foods like tart cherries, walnuts, oats, sweet corn, rice, ginger, tomatoes, banana and barley. Still, these amounts are small. Since melatonin is practically non-toxic and exhibits almost no short-term side effects, we can take melatonin supplements.

Here are some of the remarkable study results among a range of individuals taking melatonin:

In a Tel Aviv University study of 38 patients, melatonin supplements reduced blood pressure of patients with nighttime hypertension.

A double-blind study at the University of Hawaii found that 1 mg of melatonin nightly improved cognitive function in the elderly.

Melatonin was found to be a safe and effective treatment for sarcoidosis, a serious autoimmune disorder that is often treated with steroids. The study, conducted at the University of Florence gave relatively high doses of melatonin to patients with chronic sarcoidosis for two years. Their lung infection improved, their skin cleared up, and a number of patients completely normalized by the end of the study. Remarkably even at high doses of 20 mg a day no side effects were experienced. Now, this does not mean you should go out and take high doses of melatonin. You should always work under the direction of your doctor.

Melatonin was used to stimulate antioxidant defenses and burn victims. The study, published in critical care magazine, used melatonin to help limit the multiple organ failure that often occurs with severely burned injuries.

A study in the Indian Journal of medical science reported that melatonin offered a substantial reduction in the risk of death in cancer patients. Another study in the Journal of pineal research analyzed the results of 10 different randomized controlled trials of melatonin cancer between 1992 and 2003. Over 640 patients were studied. Melatonin reduced the risk of death at one year, and this held true no matter what the kind of cancer.

A new 2008 study from Malaysia notes that melatonin, which is responsive to light and therefore the seasons, may be implicated in seasonal flare-ups of allergies and infections. The regulatory function of melatonin on immune mechanisms is seasonally dependent. This fact may in part account for the cyclic pattern of symptom expression shown by certain infectious diseases, which become more pronounced at particular times of the year. Moreover, melatonin induced seasonal changes in immune function have also been implicated in the pathogenesis of seasonal affective disorder and rheumatoid arthritis. The clinical significance of seasonally changing communal modulating role of melatonin is discussed in this review.

Another fascinating new 2008 study from Emory University suggests that melatonin can help quiet inflammatory bowel disease. Ulcerative colitis is an inflammatory bowel disease that affects up to 1 million people in the US. Current treatments, such as steroids and immune suppressants, have serious side effects. Melatonin is an important regulator of both inflammation and motility in the gastrointestinal tract, and data from this in vitro studies, animal experiments, and humans suggests that supplemental melatonin may help quiet colitis.

In sum, melatonin is a master regulator of everything from sleep to immune function to inflammation. And that makes sense. We evolved to sleep at sundown and wake up at sunrise. Since we live now with simulated light as much as 18 to 20 hours a day, we have subverted our natural rhythms and hormones. Supplementing with melatonin is something I consider for many patients with a variety of medical conditions.

This is from Dr. Chris Calapai is board certified in family medicine, anti-aging medicine and chelation therapy.

The amino acid tryptophan is used by the body to produce melatonin. Melatonin is then converted to serotonin, to make us “feel good.”

Tryptophan is found in many foods like: Dairy products such as cottage cheese, cheese and milk, Soy products such as soy milk, tofu and soybean nuts, Seafood, Meats, Poultry, Whole grains, Beans, Rice, Hummus, Lentils, Hazelnuts, Peanuts, Eggs, Sesame seeds and sunflower seeds.

Question: Does eating high tryptophan foods trigger high melatonin and then more insulin resistance?

My notes on melatonin: I used 5 mg of this hormone and discovered that it increased my insulin resistance. I normally take 14 units 2 times a day of insulin when needed but after starting melatonin I had to increase my insulin to 30 units 2 times a day and still could not get glucose

levels down to normal. I have read that melatonin can increase insulin resistance. Not good for diabetics and those with insulin resistance already starting.

What triggers the increased resistance to insulin?

When I dropped melatonin to 1 mg a day my sugar numbers dropped. Not sure how much insulin I will need if any.

Now does melatonin cause this insulin resistance problem?

From Wikipedia online

In higher animals and humans, melatonin is produced by [pinealocytes](#) in the [pineal gland](#) (located in the [brain](#)) and also by the [retina](#), [lens](#), [GI tract](#) and other tissues.

Melatonin is naturally synthesized from the [amino acid tryptophan](#) (via synthesis of [serotonin](#)). Serotonin is then converted to melatonin by the [enzymes N-acetyltransferase](#) and [5-hydroxyindole-O-methyltransferase](#).

Melatonin may also be produced by a variety of peripheral cells such as [bone marrow cells](#),^{[11][12]} lymphocytes and [epithelial cells](#). Usually, the melatonin concentration in these cells is much higher than that found in the blood but it does not seem to be regulated by the photoperiod. Melatonin is also synthesized by various [plants](#), such as [rice](#), and ingested melatonin has been shown to be capable of reaching and binding to melatonin [binding sites](#) in the brains of [mammals](#).^{[13][14]}

Melatonin produced in the [pineal gland](#), which is outside of the [blood-brain barrier](#), acts as an [endocrine](#) hormone since it is released into the [blood](#). By contrast, melatonin produced by the retina and the gastrointestinal (GI) tract acts as a [paracrine](#) hormone.

During the night, melatonin regulates leptin, lowering the levels; see [Leptin](#).

From Mayo Clinic

Elevated blood sugar levels (hyperglycemia) have been reported in patients with type 1 diabetes (insulin-dependent diabetes), and low doses of melatonin have reduced glucose tolerance and insulin sensitivity. Caution is advised in patients with diabetes or hypoglycemia, and in those taking drugs, herbs, or supplements that affect blood sugar. Serum glucose levels may need to be monitored by a healthcare provider, and medication adjustments may be necessary.