Dr. Dean’s Total Body ReSet™
For Total Health

ReAline:
Building Blocks to Detox

Carolyn Dean MD ND
ReAline:
Building Blocks To Detox

Carolyn F. A. Dean MD ND

Disclaimer:
The contents of this book are included for educational purposes and to provide helpful information on the subjects discussed. This book is not intended to be used, and should not be used, to diagnose or treat any medical condition. For diagnosis or treatment of any medical condition, consult your health care provider. You are responsible for your own choices, actions, and results regarding any health concerns that may require medical supervision. The authors and publisher are not liable for any damages or negative consequences from any action, application, treatment, or preparation to any person reading or individually pursuing the information in this book.
# TABLE OF CONTENTS

- **REALINE OVERVIEW** .................................................................................................................. 3
- **TAKING OUT THE TRASH** ........................................................................................................... 4
  - Gentle Detox .................................................................................................................................. 6
- **REALINE INFLUENCES COLLAGEN** .......................................................................................... 6
  - Collagen Amino Acids .................................................................................................................... 7
  - Bone Broth for Collagen .................................................................................................................. 8
- **REALINE INGREDIENTS** ........................................................................................................... 8
- **MTHFR & METHYLATED B VITAMINS** ....................................................................................... 9
- **DETOXIFICATION** ..................................................................................................................... 13
  - Glutathione Detoxification ............................................................................................................. 14
  - Liver Detoxification ....................................................................................................................... 15
- **HARSH DETOX** .......................................................................................................................... 18
  - Heat Shock Saunas ......................................................................................................................... 18
  - Cold Shock .................................................................................................................................... 19
- **TOTAL BODY RESET** ................................................................................................................ 20
- **WHAT ABOUT THE B’S?** .......................................................................................................... 21
  - B1 – Thiamine .............................................................................................................................. 22
  - B2 – Riboflavin ............................................................................................................................. 23
  - B3 – Niacin ...................................................................................................................................... 24
  - B5 – Pantothenic Acid ..................................................................................................................... 25
  - B6 – Pyridoxine ............................................................................................................................. 26
  - B7 – Biotin ...................................................................................................................................... 26
  - B9 – Folate ..................................................................................................................................... 27
  - B12 – Cobalamin ............................................................................................................................ 27
- **TAURINE** ..................................................................................................................................... 28
- **METHIONINE** ............................................................................................................................... 32
- **WHAT REALINE USERS ARE SAYING** .................................................................................... 33
REALINE OVERVIEW

I’ll start with a basic overview of ReAline and give you a more thorough look at the ingredients later in the book. Some people may find the overview enough. One of the editors of the book even said it was a bit too technical. But I want to provide detailed information to those people who have become lay scientists of their own health.

ReAline is a multitasking dietary supplement. It’s a very gentle detoxifier and a unique B vitamin complex that is both food-based and methylated.

ReAline’s formula of B vitamins and amino acids provides the perfect building blocks to enhance and assist the body in detoxifying chemicals, heavy metals, and toxins. Instead of forcing the body with purges or IV chelation, methionine promotes the production of glutathione, the body's most important antioxidant. Having methionine on hand allows the body to make glutathione as needed.

Methionine and taurine are both sulfur amino acids lending sulfur to the liver's sulfation detox pathways. The B vitamins in ReAline work synergistically with methionine and magnesium. Four B’s are methylated, allowing the transfer of a methyl group to the liver’s methylation detoxification pathways.

One specific function of methylation is to help break down toxic homocysteine that can cause atherosclerosis. The inclusion of methylated B’s in ReAline became even more important as the MTHFR gene variations were identified. I contend that gene variations are expressed partly because we are deficient in magnesium and many other important nutrients. The rest of the B vitamins in ReAline are food-based, which makes them easily absorbed and effective.

The B’s are essential for supporting neurological health. This becomes even more obvious when we realize that B12, B6, and folate deficiencies are common in children in the autism spectrum and also in the elderly. But there is much more going on. The B vitamins are cofactors in thousands of biochemical processes. They work together, helping cells burn fats and glucose for energy, promoting cell growth and division, maintaining healthy skin and muscle tone, supporting and increasing the rate of metabolism, and enhancing immune and nervous system function, which includes easing stress and improving mood, probably triggered by an increased production of serotonin.
The ability of the B vitamins to help reduce anxiety, depression, and PMS is enhanced with the use of magnesium.

Most commercial B vitamins are synthetic and don’t bind properly to receptors on the cell surface. This means doctors are forced to recommend higher and higher doses to try to get the body to respond. However, food-based and methylated B’s are in the active form that the body requires and do not have to be taken in high amounts.

Methionine has 4 major roles in the ReAline formula. Methionine is a building block in the manufacture of all our proteins, including structural, contractile, blood, antibodies, hormones, and enzymes. It is a methyl donor, needed for the production of neurotransmitters, a sulfur donor, and a precursor in the synthesis of other amino acids. Methionine has the ability to inhibit toxic metals from crossing the blood-brain barrier. Methionine is a critical component of tissue development, growth, and tissue repair for all humans at any age.

Taurine is a precursor to GABA, a brain neurotransmitter that calms the central nervous system and can actually help reduce the seizure threshold. It also may help alleviate depression, anxiety, insomnia, and addiction. Taurine also reduces elevated levels of cortisol in the body; helps burn fat; improves insulin sensitivity; increases testosterone production; acts as an antioxidant; enhances heart and brain function; and improves sleep. It also lends sulfur molecules to the body for innumerable tasks.

Even though sulfur is the third most common mineral in the body (after calcium and phosphorous), sulfur’s importance is not commonly acknowledged. However, it is a key component in DNA and protein replication. Sulfur is important for the production of mucous and for the sulfur detoxification pathways in the liver. It also promotes the health of ligaments, cartilage, collagen, and tendons; sulfur deficiency may lead to degeneration of these tissues. Half the amount of sulfur in our body can be found in the muscles, skin, and bones.

As I already mentioned, the above may be all the information about ReAline that you require. If not, read further as I go into the topic in much more depth.

**TAKING OUT THE TRASH**
We say ReAline helps take out the trash, but it does so much more. What trash am I talking about? There are 60,000 manmade chemicals impinging upon us. Yeast, bacterial, and viral toxins affect everyone on a daily basis. Toxins are even produced by stress. These are the reasons why I think regular detoxification is necessary.

To study the extent of ongoing environment pollution, The Environmental Working Group (www.ewg.org) commissioned five laboratories in the U.S., Canada, and Europe to analyze umbilical cord blood. The blood was collected from 10 infants born in 2007 and 2008. Collectively, the laboratories identified 232 different industrial compounds and pollutants in this group of babies, finding complex mixtures of compounds in each infant.

Many people think that protection from all the toxins in the environment means living the rest of your life in a hermetically sealed suit (and it would be a short life since you couldn’t eat or drink.) Fortunately, there are ways to counteract toxins and pollutants. Your body’s natural detoxification processes exist to deal with the ones we can’t avoid.

ReAline is a very gentle detoxifier. Detoxification can place more stress on an already stressed-out body, so in the past, I’ve focused on transdermal and external detoxification such as Epsom salts baths, clay baths, coffee enemas, gentle saunas, and castor oil packs to avoid detox reactions. I have concerns about internal intestinal purges, liver detoxing, and gall bladder flushes that stir up internal toxins that just migrate to another part of the body and set up residence. Also, flushing out toxins can force minerals out of the body with greatly increased bowel movements and excessive urination. Liver detoxes can release viruses sequestered in the liver before the immune system is ready to handle them.

ReAline contains a combination of B vitamins along with specific amino acids that gently support your body’s ability to detoxify.
**Gentle Detox**

There are several popular methods of detoxification that may have negative effects on your body. I’ll mention those later in the book and you’ll see why I’m in favor of gentle detox.

Detoxification is important because you will feel better and have the energy and incentive to do even more for your health, but it doesn’t have to be extreme. I give gentle detox advice in my 2-year Completement Now Online Wellness Program. Unfortunately, most people just don’t seem to have the time or the energy to read a weekly health module, let alone implement the healing strategies that I recommend. That’s why I rely on ReAline in capsule form as a safe and gentle detox. I also offer all the Total Body ReSet formulas to support ReAline and assist in detoxification because they are all safe, effective, and easy to take.

**REALINE INFLUENCES COLLAGEN**

There’s a lot of talk about collagen these days in the Paleo Diet world. Instead of using collagen supplements, I like promoting the building blocks for collagen. I support the use of ReAline because of its sulfur-based amino acids to promote collagen production. At this point, I’d like to take a short detour into the world of collagen, because I haven’t paid enough attention to it in my other writings.

Collagen is the main structural protein of connective tissue that exists in the space between cells. Since it is the main component of connective tissue, it makes up 25-35% of the total body protein and is the most abundant protein in mammals. Collagen consists of amino acids wound together in triple strands that form elongated fibrils. It is mostly found in tendons, ligaments, and skin, also known as fibrous tissues.

Minerals, mostly calcium and phosphate, make up 60 percent of bone. Magnesium provides the resilience factor along with water and a matrix of proteins. One of the major proteins in this matrix is collagen, which forms the crucial scaffolding to which minerals attach. Collagen is the most abundant protein in the body and makes up about 90 percent of this bone matrix. Collagen is made up mostly of three amino acids: glycine, proline, and hydroxylproline. These amino acids are not considered “essential”
because your body can make them from other amino acids. You can also obtain collagen in an animal protein diet along with well-absorbed minerals and food-based vitamins.

Depending upon the degree of mineralization, collagen tissues may be rigid like bone, semi-pliable like tendons, or in between like cartilage. Collagen is also abundant in intervertebral disks, corneas, dentin in teeth, and blood vessels.

Collagen is found mostly in tougher cuts of beef that contain a lot of connective tissue. Thorough cooking of these fibrous meats can produce delicious and valuable gelatin in the drippings. When you put the whole carcass of a chicken in a stew pot with 2 tablespoons of apple cider vinegar, the collagen in tendons and fibers will break down into gelatin, and minerals will be released from the bones.

There has been more attention on collagen as of late because it’s emphasized in the Paleo diet. Instead of relying on bone broth, people are being told they should buy collagen hydrolysate. This type of collagen goes through intensive processing, which may or may not be a good thing. We really don’t know yet. Until we do, I suggest you just stick with making your own gelatin in bone broth. Another benefit of gelatin is its gut healing properties.

Vitamin C has a role to play in the production of collagen. It adds hydrogen and oxygen to the amino acids that form collagen, speeding up production. A lack of Vitamin C can cause a decline in collagen production that makes the skin more susceptible to wrinkles and bruising.

**Collagen Amino Acids**

**Glycine and proline** are conditionally essential amino acids. Thus, environmental factors such as stress or sickness may mean that your body is not able to produce enough of these amino acids to meet your needs.

**Glycine** is found in bone broth, meat, poultry, eggs, dairy products, and certain beans and veggies.
**Proline** is found in various meats (beef, chicken, and pork). Vitamin C is necessary for making this protein, since it acts as a cofactor of an enzyme that converts proline into hydroxyproline, another major component of collagen.

The animal-based collagen requirement for bones was not even addressed in a 2014 review called “Can Vegans Have Healthy Bones?” The authors concluded, “Vegan diets, although high in many important nutrients, have the potential to be deficient in protein, calcium, and vitamin D. Despite these risks, some studies have demonstrated that it is possible for vegans to maintain bone density at least equal to that of omnivores.”

If you are a vegan, you may have to take the individual amino acids – glycine, proline and hydroxyproline. If you are amenable to animal products, you can drink bone broth.

**Bone Broth for Collagen**

There is an excellent article on the Weston A Price website called “Why Broth is Beautiful: Essential Roles for Proline, Glycine and Gelatin.” It gives a wonderfully detailed overview of the amino acid precursors to collagen that are found in bone broth. I make my bone broth from free range chicken bones. I also use small garden shears to break the bones for their marrow. I put at least 2 tablespoons of apple cider vinegar into the bone pot to help draw the minerals out of the bones.

Obtaining sulfur from methionine and taurine is more metabolically sound than taking sulfur supplements because the body can gauge how much it requires at any given moment.

The previous introduction may be all you require to understand the importance of ReAline. However, if you would like more detail, the following pages will answer any questions you may have about how to incorporate ReAline into your treatment protocol.

**REALINE INGREDIENTS**

Vitamin B1 (Thiamine from Saccharomyces Cells)
Methylated Vitamin B2 (Riboflavin-5-phosphate)
Vitamin B3 (Niacin from Saccharomyces Cells)
Methylated Vitamin B6 (Pyridoxine-5-phosphate)
Methylated Folate (Vitamin B9 as Quatrefolic)
Methylated Vitamin B12 (Methylcobalamin)
Biotin (from Saccharomyces cells)
Vitamin B5 (Pantothenic acid from Saccharomyces cells)
Methionine
Taurine

NOTE: Vitamin B2 (riboflavin) in ReAline can naturally turn urine yellow when your body doesn’t use it all.

NOTE: ReAline is sugar-free, dairy-free, and gluten-free.

**MTHFR & METHYLATED B VITAMINS**

When you talk about methylated B vitamins, you have to address the research on the MTHFR enzyme gene mutation and why it’s suddenly become the most talked about mutation in nutritional medicine. As some practitioners are saying, it’s more of a gene variation that has been picked up in genetic testing – not a true mutation.

MTHFR is an enzyme (produced by the MTHFR gene) that adds a methyl group to folic acid (B9) to make it usable by the body as a folate. Vitamin B12 (methylcobalamin) assists this process as a cofactor.

Folate is an essential nutrient; it is vital for the production and repair of DNA. Methionine is a sulfur amino acid that donates a methyl group to turn folic acid into folate. Methionine is also the building block for several proteins, including glutathione, the body’s most important antioxidant.

The body recycles methionine with the help of an enzyme called methionine synthase, which converts homocysteine into methionine, also utilizing the cofactor vitamin B12 (methylcobalamin).
In short, homocysteine is a product of protein metabolism and the methionine cycle helps reduce the levels of homocysteine in the body while it creates methionine and allows it to activate folate. Elevated homocysteine is linked to an increased risk of heart attack and stroke in the following way. When protein breaks down, homocysteine is one of the amino acids produced. Homocysteine oxidizes cholesterol, and oxidized cholesterol is the kind that damages blood vessels.

Methionine synthase comes to the rescue because it is the most important enzyme involved in breaking down and getting rid of homocysteine. Most relevant to our discussion is that methionine synthase is magnesium-dependent. If you are magnesium-deficient, simply eating protein will produce homocysteine, which creates oxidized cholesterol and potentially more blood vessel damage.

But let’s not wait for homocysteine to become elevated, let’s prevent it from forming. If you have the specific nutrient cofactors that I mentioned – magnesium and B vitamins – to digest protein optimally, you won’t build up homocysteine in the first place.

In the *Magnesium Miracle*, I say that elevated homocysteine (hyperhomocysteinemia) is high on the list of risk factors for heart disease and serves as an even stronger marker than high cholesterol for heart disease and blood clotting disorders. However, it is not on a standard blood test panel for heart disease. This is probably because there is no drug treatment to lower homocysteine, only nutrient treatments – B vitamins and magnesium.

I make the case that the more relevant marker for heart disease may be low magnesium, since the major enzyme involved in homocysteine metabolism, as I’ve already mentioned, is magnesium-dependent. When magnesium and the methylated B vitamins – vitamin B2, B6, B12, and folate – are deficient, the body is not able to properly digest dietary protein.

Magnesium and the B vitamins were readily available in the typical diet a hundred years ago. Now that they are deficient or absent, homocysteine levels are rising, resulting in heart disease. It’s not just homocysteine that is controlled by methionine; the methyl group in methionine that is transferred to make folate is necessary for DNA methylation to occur.
Perhaps not having enough absorbable magnesium and methylated B vitamins is causing this drastic shift in gene function, resulting in MTHFR mutations. Magnesium and the B vitamins are the most important cofactors and epigenetic factors in human metabolism that have the ability to turn genes off and on.

For a drug-based culture, giving this much power to nutrients may seem absurd. However, I’d like to point out that our basic body structure is not that complex. Take the fact that almost 99% of the human body is made up of a mere six elements: oxygen, carbon, hydrogen, nitrogen, calcium, and phosphorus. Only 1% is composed of potassium, sulfur, sodium, chlorine, and magnesium. The remaining fraction consists of all the other elements in the periodic table. So, yes, a handful of nutrients can be all-powerful!

I’ve said that the MTHFR variations may be triggered because of magnesium and B vitamin deficiencies, but there’s more to the story. When the powerful toxin acetaldehyde builds up in the body as a toxic byproduct of yeast metabolism, it can shut down the function of methionine synthase. Shutting down this powerful enzyme means that methionine isn’t created from homocysteine and its methyl group is not available to create folate to make and repair our DNA.

Acetaldehyde is created in measurable amounts when yeast overgrows in the intestines. I’ve talked about the damage caused by acetaldehyde for decades and listed yeast overgrowth and mineral deficiency as the main factors in chronic disease. Even though more people are catching on and acknowledging the effects of yeast overgrowth, they don’t understand how deep the problem goes.

Acetaldehyde is a toxic byproduct of not just yeast but also of alcohol, car exhaust, and cigarette smoke. I’ve written about it extensively in my eBook, *ReSet The Yeast Connection*. Following this program will reduce yeast overgrowth and the damage caused by its 178 toxins, one of which is acetaldehyde. Part of that program includes taking ReMag because magnesium empowers aldehyde dehydrogenase to help break down and eliminate acetaldehyde. Molybedenum, found in our ReMyte, is also an acetaldehyde buster.

The MTHFR variations were only recently recognized as an offshoot of the Human Genome Project, and some sources say that a whopping 30-50% of the population
may be affected. Such a high level of mutation does not occur overnight and opens a Pandora’s box of questions. That’s why I choose to side with the practitioners calling MTHFR a genetic variation. Were these variations always there? Probably.

If we examined blood from 50 years ago would the same level of variation exist? Are the variations expressing themselves because of the epigenetic function of magnesium and B vitamin deficiency, and increased levels of acetaldehyde, heavy metal, and chemical toxicity in our environment? Will we ever know the answers?

Epigenetics defines changes in gene expression that are not caused by changes or mutations in the DNA itself but by factors in the environment. Of great importance are systems that turn genes on and off: DNA methylation and histone modification. If one or more of these systems is disrupted, inappropriate expression of genes can occur.

- DNA methylation is disrupted by the gene variations of the MTHFR gene that do not produce enough methyl groups to do their job.

- Histones are a family of basic proteins that associate with DNA in the nucleus of cells. Nuclear DNA does not appear in free linear strands; it is highly condensed and wrapped around histones in order to fit inside of the nucleus and take part in the formation of chromosomes. A nucleosome is a basic unit of DNA packaging in cells consisting of a segment of DNA wound in sequence around eight histone protein cores.

Here’s where the interesting part comes in. Specific binding sites for magnesium and calcium ions exist within the nucleosome and play a critical role in nucleosome stability. Other ions, such as zinc, iron, copper, and manganese have little or no effect on the stability of histone-DNA interactions.

If, as I’ve laid out, magnesium and the B vitamins, especially methylated B’s, are so important, doesn’t it make sense to supplement with highly absorbed magnesium like ReMag and low potency methylated and food based B vitamins, and amino acids like the ones in ReAline, before consigning huge groups of people to a diagnosis of a MTHFR genetic variation? Therapies for MTHFR variation already include methylated B6, folate,
and methylcobalamin, but are usually missing magnesium and methionine. Let me
repeat! Therapies for MTHFR variation are usually missing magnesium and methionine.

**DETOXIFICATION**

I’ve mentioned detox in several places in the book already, but the following is an
overview of liver detoxification and how it works. I’m mostly quoting from a very
comprehensive article about the “Phases of Detoxification” that I used when I wrote a
detox chapter for a book on inflammation in 2003. I noted in that chapter that, “The word
detoxification is derived from the Latin word toxicum or poison; it means to deprive of
poisonous qualities.”

The Oxford English Dictionary (OED) puts detoxicate in common usage from
1867. Throughout the next few decades, according to the OED, detoxification is used to
describe the body’s ability to neutralize various drugs and chemicals such as pesticides.
But by the 1970’s, detoxification was mostly associated with drug and alcohol
rehabilitation, and that is the inference people now make when they hear the word. But
detoxification is not just an externally imposed therapeutic method offered at a local
detox clinic. Detoxification is performed every minute of every day by our organs in an
orchestration worthy of Carnegie Hall.

In medical school, we never learned about liver detoxification, probably because
there are no drugs that assist in this process. In fact, drugs will give the detox pathways
more work to do. The liver’s detoxification pathways are called Phase I and Phase II
Detoxification, but the liver is hard pressed to keep up with all the toxins and refined
foods and drugs to which it is exposed. Consequently, many natural medicine
practitioners think the liver needs our help.

Unfortunately, many of these practitioners also think EDTA chelation (IV or oral)
is the way to rid the body of heavy metals and excess calcium clogging the arteries. I’m
not in favor of that approach. When I experimented with doing my own chelation IVs
many years ago, after 2-3 sessions my knees started to ache. I felt I was stripping my
body of too much calcium and other minerals necessary for proper bone and joint health!
EDTA is a synthetic amino acid (ethylenediaminetetraacetic acid) and it is an equal opportunity chelator, which means it will chelate any metal or mineral it encounters. We would like to think that it’s only going to remove toxic metals and excess calcium, but it’s just a drug, it can’t decide what’s good or bad. It’s like doctors trying to convince you that antibiotics just kill the bad bacteria when they kill everything in sight. Remember – drugs are stupid.

Chelation practitioners do realize this problem and usually give a mineral IV solution after a chelation treatment, but how do they know how much is required? And, if they don’t use ReMag and ReMyte, the minerals are not going to be fully absorbed.

Instead of waiting for calcium to clog arteries and heavy metals and chemicals to build up in the cells, I recommend supporting the body’s own amazing detoxification processes.

**Glutathione Detoxification**

Glutathione is an intracellular antioxidant, and it’s where your detox journey begins. As I noted earlier, methionine in ReAline is a precursor to glutathione. When chemicals bind with glutathione these substances can be eliminated through the lungs, intestines and kidneys, as well as the liver. Of course, you want to limit your exposure to high levels of toxins and heavy metals so you don’t deplete glutathione.

It’s good to know that fat soluble toxins are a target of glutathione. They include solvents, herbicides, fungicides, hydrocarbons, and lipid peroxides. Then come heavy metals (mercury, cadmium, lead) and nicotine and toxins from tobacco smoke. Alcohol is also on glutathione’s hit list.

Supporting glutathione detoxification are: cruciferous vegetables, vitamin C (in ReStructure), whey protein (in ReStructure), and methionine (in ReAline).
Liver Detoxification

In Phase I Detoxification the liver biologically transforms chemicals to make them water soluble using a wide array of enzymes, most of which are magnesium-dependent. As the above article states, “At least 50 enzymes in 10 families governed by 35 different genes allow Phase I to take place. The major enzymes required during Phase I are known as the cytochrome P-450 monooxygenase system and the mixed-function amine oxidase system.”

Magnesium is a cofactor in the function of the P450 detoxification systems in the liver. In fact, “The action of detoxification enzymes depends on the presence of various minerals. For example, alcohol dehydrogenase, an enzyme that converts alcohols (such as ethanol) to aldehydes in an oxidation reaction, depends on an adequate supply of zinc to function properly. In the next metabolic step, the enzyme aldehyde oxidase changes the aldehyde into an acid that can be excreted in the urine. Aldehyde oxidase depends on an adequate supply of molybdenum and iron. Other minerals that are required by enzymes include manganese, magnesium, sulfur, selenium, and copper.” All these minerals except iron are found in ReMyte and ReAline. I avoid iron in my formulas because of the iron overload that is common in the population. Instead, the Completement Formulas promote the production of ceruloplasmin, which properly binds iron in the body, keeping it from being toxic.

The results of Phase I Detoxification can produce chemicals that are even more toxic than the original, but these are rapidly cleared by Phase II Detoxification if the following reactions occur promptly with the assistance of minerals and vitamins.

- **Methylation**: We’ve already talked about the importance of methylation with the addition of methyl groups donated by the amino acid methionine and the 4 methylated B vitamins in ReAline. Methylation detoxifies many chemical compounds and helps metabolize nutrients and the neurotransmitters epinephrine, norepinephrine, and serotonin. Methylation reactions are B6-dependent.

What chemicals rely on methylation for detoxification?
- Hormones: estrogen, melatonin.
- Neurotransmitters: Epinephrine and norepinephrine, dopamine, histamine, serotonin.
- Conversion of pyridine (a coal tar derivative related to benzene), sulphites (sulfur dioxide preservative), and hypochlorites (chlorine and oxygen) into compounds excreted through the lungs.

What assists the methylation process? It bears repeating that methionine (in ReAline), the B-Vitamins (B12, B6 and folate) (in Realine), magnesium (ReMag), and zinc (in ReMyte) all support methylation.

- **Sulfation (sulfur conjugation):** Includes several processes that add inorganic sulfate to hydroxyl groups (OH) for detoxification. The two amino acids (methionine and taurine) in ReAline are sulfur-based.

  The chemicals that come under the influence of sulfation are acetaminophen, food additives like aspartame, hormones (thyroid, cortisol), neurotransmitters, intestinal bacteria toxins, environmental toxins and xenoestrogens.

  Supportive nutrients for sulfation include eggs, sulfur rich vegetables, (especially broccoli family and onion family) the already-mentioned methionine and taurine (in ReAline), B vitamins: B1, B2 and B12 (in ReAline), magnesium (in ReMag), and zinc (in ReMyte).

- **Acetylation:** Involves attaching acetyl co-A molecules to toxins to help usher them out of the body so they can’t do harm. Apparently people who are chemically sensitive are usually slow acetylators, allowing drugs and chemicals to stay in the body longer, causing harm. If anyone suffers poor acetylation, the life span of drugs and other toxic chemicals is prolonged in the body, enhancing their toxicity

  The acetylation process is necessary to eliminate excess histamine, neurotransmitters like serotonin, salicylic acid, sulfa drugs, PABA, environmental
toxins, tobacco smoke, exhaust fumes, chemicals containing sulphur amides (which includes many drugs), and hydrazines (in jet fuel and cancer drugs).

Nutrients that enhance acetylation include: pantothenic acid (in ReAline), vitamin C (in ReStructure) and the amino acid thiamine (in ReStructure). Deficiencies of vitamins B1, B2, B5 (both in ReAline), or vitamin C inhibit acetylation.

- **Acylation**: A form of detoxification where toxins are attached to an amino acid such as taurine (in ReAline). Other amino acids that can be involved in this process are glycine, glutamine, and to a lesser extent, arginine and ornithine. These can all be found in ReStructure. The amino acid conjugation involves acyl Co-A (coenzyme A and carboxylic acid). Magnesium is required in the synthesis of acyl-coenzyme A. The chemicals that are targeted by acylation include benzoate, salicylates (aspirin), and toluene (industrial solvent).

  Assisting acylation are protein-rich foods (in ReStructure), and the amino acids: glycine, taurine, glutamine, arginine, and ornithine (taurine in ReAline; amino acids in ReStructure).

  I’ve always maintained that patients with hepatitis require a high protein diet to recover. It appears that acylation is the reason why. A low protein diet can inhibit acylation. When acylation is disturbed, it decreases bile production, which results in the poor assimilation of fats and fat-soluble vitamins. Patients with hepatitis, chronic arthritis, low thyroid, excessive chemical exposure, or toxemia in pregnancy often have problems with acylation.

- **Glucuronidation**: This process attaches glucuronic acid to a drug or toxin to try and make it more water soluble. Drugs, chemical pollution, bilirubin, androgens, estrogens, mineralocorticoids, glucocorticoids, fatty acid derivatives, retinoids, and bile acids are all subject to this process.
In summary, the detox article that I’m quoting states that, “…the efficiency of Phase I and Phase II is adversely affected by deficiencies of vitamins, minerals, amino acids, and fatty acids. Inadequate protein intake specifically reduces Phase I clearance, and insufficient calories decreases overall detoxification function.” That’s why I recommend the Total Body ReSet bundle, which covers all the nutrients required for efficient detoxification.

HARSH DETOX

Heat Shock Saunas

The current fad, mostly in the younger generation, is to force the body to detox. This doesn’t serve the people who are already weak and stressed. When it comes to sauna therapy, the best saunas are ones where your head is outside the sauna so you don’t breathe in the volatile toxins you are eliminating. Also, when you exit the sauna, have a good scrub in the shower as soon as your 5-10 minutes are up. This short sweating time is sufficient to remove surface toxins instead of the hour-long marathon saunas that deplete minerals.

Long, hot saunas are advocated by athletes for performance enhancement. Saunas to the point of exhaustion induce heat shock and create heat shock proteins in the body. They also increase the levels of norepinephrine, prolactin, and growth hormone. But if you aren’t taking well-absorbed minerals and nutrients to replace this extra production of hormones, you will end up in an even more depleted state.

To me, this type of extreme behavior is not much different from taking anabolic steroid hormones to increase bulk and enhance performance. Unfortunately, the information about heat shock saunas is on the Internet without any guidance or cautionary warnings for the general public.

I especially worry about people with chronic fatigue and fibromyalgia, or what I call Total Body Meltdown, who are already exhausted and can’t afford to play Russian roulette with their hormones but they are desperate for a quick fix. With chronic health conditions you need to encourage a slow and steady increase in the building blocks for hormone production, not great erratic surges caused by heat shock or cold shock.
Cold Shock

Immersing yourself in an ice bath – usually after being in a sauna, hot tub, or Jacuzzi – is a standard Swedish hydrotherapy technique. Some individuals have taken this therapy to the extreme, setting records for immersion in ice water. Wim Hof "The Iceman" is identified as an extreme athlete known for his ability to withstand extreme cold for very long periods of time. His Guinness World Record for Ice Endurance was for 1 hour and 53 minutes. Again, it’s unfortunate that people will latch onto Hof as a health guru and think they can benefit from ice immersion and do themselves potential harm. Hof has tens of thousands of followers and leads workshops where he encourages people to follow in his footsteps. He proclaims that, "What I am capable of, anyone can do.”

I believe this is a dangerous statement and is not true for the general public. It sets up unrealistic expectations for people who are dealing with nutrient deficiencies and toxicity that will never be addressed by an ice bath. In his workshops I mostly see young men who perhaps are looking for an adventure. It reminds me of the extreme coming of age rituals in native cultures.

Recently at a local spa I experimented with this technique. I went in and out of the Jacuzzi and cold plunge several times only to develop a cold sore on my lip the next day! The cold shock reactivated the herpes virus in my nerve root ganglion to come to the surface. That’s why I don’t recommend shock therapy to anyone with chronic fatigue and fibromyalgia, who potentially have layers of infections that the body is trying to sequester, until you are strong enough to eliminate them. You do that by supporting the structure and function of the body with my Completement Formulas.

Along with IV chelation, there are various liver, bowel, and kidney detoxes that I cannot give a blanket recommendation. When working with AIDS, chronic fatigue syndrome, and fibromyalgia patients in New York in the 1990’s, we found that the liver can “harbor” viruses in order to keep them from launching out into the body – so if you detox your liver too aggressively, you may stir up those viruses.

I’m also not in favor or harsh olive oil/lemon juice purges of the gall bladder, which can send gall stones into the narrow bile duct and cause blockage.
Harsh bowel cleanses makes me worry about people who already have issues with IBS (irritable bowel syndrome). And, if the kidneys could be kept clear of calcium deposits by taking enough magnesium, hydrating properly, and feeding the right minerals, we wouldn’t need to have a kidney detox.

Even sauna therapy, which can be very helpful to detoxify chemicals can leave you mineral-deficient if you don’t replace with well-absorbed minerals like ReMag and ReMyte.

TOTAL BODY RESET

This is a lot of information to process, but I want to impress upon you how our genius body is taking care of us and doesn’t need to depend on chelation therapy or heavy detoxification methods that theoretically are supposed to just remove the bad guys. Now that you know more than most doctors about detoxification, what can you do to safely enhance your own biochemistry? Of course, my answer is The Total Body ReSet formulas – with the cornerstone being ReAline – let me repeat why.

1. ReAline has the taurine necessary for amino acid conjugation. The sulfur molecules in taurine and methionine provide sulfur. The 4 methylated B vitamins provide the methyl groups necessary for methylation. Methionine is the precursor to glutathione.

2. ReMag assists Phase I and Phase II Detoxification in almost every step. ReAline works synergistically with ReMag (magnesium) and ReMyte (multiple minerals). These minerals are picometer in size and they are 100% absorbed at the cellular level. When they inhabit the cell they will kick out heavy metals and chemicals that don’t belong there. ReAline helps detox the heavy metals and chemicals that are being dumped from cells, eliminating the detox reactions that could be taking place.

3. ReMyte minerals: molybdenum, manganese, selenium, and copper (and probably several others) assist Phase I.
4. RnA Drops to help make perfect cells and get that labyrinth of your mind out of the picture so you stop worrying that the sky is falling.

5. My recommendations beyond the Completement Formulas for sea-salted water, Vitamin C, Blue Ice Royal (Vit D, A, K2), and Prescript Assist are on my Supplement Blog.

Taking this small handful of nutrients on a daily basis will naturally assist your body’s own detoxification processes. This is a much more viable option than forcing detoxification with IV chelating chemicals or IV glutathione or oral EDTA with dozens of synthetic vitamins and poorly absorbed minerals. These are also the nutrients you will take when you are doing Intermittent Fasting to help lose weight and to detoxify. For more on Intermittent Fasting and the Ketogenic Diet, read my booklet *ReSet Your Ideal Weight*.

**WHAT ABOUT THE B’S?**

There are eight water-soluble B vitamins, and even though they tend to be bundled together in the same foods, they have many different roles and don’t resemble one another chemically.

The B’s were first studied together in whole foods – grains, liver, and brewer’s yeast. But scientists wanted to study them individually and were happy when they were able to make individual synthetic B’s from coal tar. The studies consisted of feeding animals a diet lacking in one of the B’s and then seeing what transpired. Later on, the same experiments were carried out in humans whose food intake was controlled by giving it intravenously. That way, individual nutrients could be withheld, and the results observed.

I tried to discover why the B vitamins all became subsets of vitamin B instead of vitamins G to M, and I came across Merck & Co.’s very interesting history of the B vitamins. Because a drug company was involved with the discovery of the B vitamins,
they immediately set to work making these chemicals synthetically. There was no talk of extracting B’s from natural sources.

There were two criteria for vitamins: they must be essential for life, and they must be manufactured by the body. The B’s don’t go from 1 to 8, but skip over 4, 8, 10, 11, which were former candidates that did not fit the B vitamin criteria.

Foods that are high in B vitamins include: liver, legumes, dried beans, and fresh orange juice. Also, fortified bread, cereals, and rice are loaded with folate. Lastly, Natural sources of vitamin B12 are found in fish, red meat, eggs, poultry, milk, milk products, and cheese.

Most researchers say that there are few, if any, B vitamin deficiencies in the U.S. population, but how are we to truly know that since routine testing for vitamins is not done? I don’t recommend taking high doses of any one vitamin – just take ReAline since the B’s are methylated and natural.

A book could be written on each B vitamin, but I’ll just give a brief overview of the aspects that interest me and may interest you. Even though the deficiency symptoms seem specific for each vitamin, I don’t believe there is a point in taking one B vitamin to the exclusion of others. That’s why I’ve put all the B vitamins together in ReAline so they can work synergistically and effectively.

**B1 - Thiamine**

A coenzyme required for the breakdown of sugars (carbs) and amino acids (protein), thiamine plays a central role in the release of energy from carbohydrates. It is involved in RNA and DNA production, as well as nerve function. Its active form is a coenzyme called thiamine pyrophosphate (TPP), which takes part in the conversion of pyruvate to acetyl coenzyme A (CoA) in metabolism.

Thiamine deficiency causes beriberi, which was identified in 1889 by a Dutch doctor in the Dutch East Indies. He discovered the first B vitamin, thiamine, and reported that thiamine deficiency was the cause of beriberi. Deficiency can be caused by a diet of mostly white rice, alcoholism, dialysis, chronic diarrhea, and taking high doses of diuretics.
Symptoms of beriberi represent an extreme deficiency of vitamin B1. There are two main types: wet beriberi and dry beriberi. Wet beriberi results in a fast heart rate, shortness of breath, and leg swelling. Dry beriberi results in numbness of the hands and feet, confusion, trouble moving the legs, and pain. A form with loss of appetite and constipation may also occur. Wernicke's encephalopathy is a diagnostic name given to thiamine deficiency. It consists of impaired sensory perception, weakness and pain in the limbs, periods of irregular heartbeat, and edema. Heart failure and death may occur in advanced cases. Chronic thiamin deficiency can also cause Korsakoff's syndrome, an irreversible dementia characterized by amnesia and compensatory confabulation (fabricated memories).

Testing the blood for vitamin B1 presents the same difficulties as testing for magnesium because it doesn’t build up in the blood by moves directly into cells. This means a serum thiamine test is unsuitable. When B1 is inside a cell, it undergoes a biochemical process known as phosphorylation to become an active vitamin. The process of phosphorylation requires magnesium. Failure of phosphorylation will result in a normal blood level but there will be no active vitamin and no vitamin activity. Note that failure can occur because there isn’t enough magnesium to do its job!

The test that is used for B1 measures its vital activity, called erythrocyte (RBC) transketolase. Transketolase requires two cofactors, thiamine and magnesium, and the laboratory test is designed to show their deficiency or abnormal chemistry by detecting the activity of the enzyme. Because thiamine is vital to cellular energy production, its deficiency affects first the tissues that are the most active oxygen-using tissues: the brain, nervous system, and heart. That sounds like the same symptoms as magnesium deficiency! Why hasn’t an alternative test for magnesium been accepted? There is one, the ionized magnesium test, but it’s only used by researchers.

**B2 – Riboflavin**

This vitamin is a vital component of two coenzymes called FAD (flavin adenine dinucleotide) and FMN (flavin mononucleotid), which are critical for the metabolism of carbohydrates, fats, and proteins into energy. Riboflavin is involved in
release of energy in the electron transport chain, the Krebs cycle, as well as the catabolism of fatty acids (beta oxidation). Deficiency symptoms can include chelosis (cracks in the lips), angular cheilitis (cracks in the corner of the mouth), pharyngitis (sore, red, swollen throat), glossitis (inflammation of the tongue), and seborrheic dermatitis. There can be oily, scaly skin rashes on the scrotum, vulva, upper lip, or the nasolabial folds. The eyes can become itchy, watery, bloodshot, and sensitive to light.

Mild deficiencies can occur in more than 50% of the population in Third World countries and in refugee situations. Deficiency is said to be uncommon in the US and in other countries that have wheat flour, bread, pasta, corn meal, or rice enrichment regulations. However, many people are avoiding grains and may have lost this source of riboflavin. The NHANES study of 2011–2012 estimated that 8% of women and 3% of men consumed less than the RDA. The recommendation is for anyone choosing a gluten-free or low gluten diet to take a supplement containing the B vitamins. ReAline is the best choice. Note that almost 80% of the US population fails to obtain the RDA of magnesium.

Riboflavin deficiency can cause a form of anemia that is distinct from folate or B12 anemia. Although the mechanism is not clear, research in animals suggests that riboflavin deficiency may impair iron absorption, increase intestinal loss of iron, and/or impair iron utilization for the synthesis of hemoglobin. Deficiency of riboflavin during pregnancy can result in birth defects including congenital heart defects and limb deformities.

**B3 – Niacin**

This vitamin is the precursor to enzymes needed in many metabolic processes which also require magnesium, zinc, and manganese. These minerals are found in ReMag and ReMyte. Niacin is composed of two structures: nicotinic acid and nicotinamide. Both play an important role in energy transfer reactions in the metabolism of glucose, fat, and alcohol. Both niacin and riboflavin play a role in the Krebs Cycle.

Niacin deficiency, along with a deficiency of tryptophan (the precursor to niacin) causes pellagra. Mild symptoms include indigestion, fatigue, canker sores, vomiting, and
depression. More severe symptoms include aggression, dermatitis, insomnia, weakness, mental confusion, and diarrhea.

High dose niacin is being used to treat high cholesterol requiring medicinal doses of niacin and not a supplemental dose such as we have in ReAline. Much of the research on niacin has been diverted to this treatment.

Direct testing for niacin is done on blood serum and does not require an enzyme test to measure its activity.

**B5 – Pantothenic acid**

This B vitamin is a precursor to Coenzyme A (CoA) and therefore plays a crucial role in the metabolism of many compounds. CoA is involved in the oxidation of fatty acids and carbohydrates and the synthesis of amino acids, fatty acids, ketone bodies, cholesterol, phospholipids, steroid hormones, neurotransmitters (such as acetylcholine), and antibodies. CoA facilitates the initiation of the Krebs cycle, which I talk about nonstop because magnesium is required in 6 of the 8 steps of the Krebs cycle.

Coenzyme-A, as well as thiamine, riboflavin, niacin, and magnesium are all required. You can find these B vitamins in ReAline and magnesium in ReMag.

It’s important to note that directly or indirectly, CoA is involved in the breakdown of the carbon skeleton of most amino acids. Alanine, cystine, cysteine, glycine, serine, threonine, and hydroxyproline are metabolized to pyruvate and then enter the Krebs cycle with the help of CoA. CoA is directly involved with the breakdown of the amino acids leucine, lysine, and tryptophan. All these amino acids are found in ReStructure.

Deficiency symptoms of pantothenic include fatigue, muscle cramps, plantar fasciitis, irritability, and hypoglycemia. Severe deficiency can result in acne and paresthesia.

Pantothenic acid does not even have an RDA because of the rarity of the deficiency state. The Adequate Intake (AI) is measured at 5 mg/day. Very high doses of pantothenic acid have been used in the past to treat adrenal stress, arthritis, and various symptoms of chronic disease. However, I think high doses push the Krebs cycle and can also cause an imbalance in the other B vitamins. In order to make the Krebs cycle work
efficiently, ReMag is the most important nutrient cofactor, followed by ReAline and ReMyte.

Food sources of pantothenic acid include avocados, broccoli, cauliflower, chicken liver, corn, mushrooms, salmon, sunflower seeds, sundried tomatoes, and yogurt.

B6 – Pyridoxine

B6 is a complex having 6 different components. The active methylated form, pyridoxal 5'- phosphate (PLP) serves as a cofactor in many enzyme reactions mainly in amino acid metabolism, including the biosynthesis of neurotransmitters.

Vitamin B6 was discovered in 1934. Samuel Lepkovsky isolated vitamin B6 from rice bran in 1938.

Vitamin B6 deficiency symptoms affect the blood, skin, and nerves with seborrhoeic dermatitis-like eruptions, pink eye, atrophic glossitis (sore tongue) with ulceration, angular chelitis, conjunctivitis, intertrigo (skin fold rashes), neurological symptoms such as somnolence, confusion, neuropathy (due to impaired sphingosine synthesis), epilepsy, and sideroblastic anemia (due to impaired hemoglobin synthesis).

Biochemical investigation has shown that vitamin B6 does so much more. Vitamin B6 deficiency can impair the important transformation of methionine to cysteine – the precursors to glutathione. It has an important role in gluconeogenesis (generating glucose from non-carbon sources), which means that vitamin B6 deficiency results in impaired glucose tolerance.

Blood Testing: There is a simple blood test for pyridoxal 5'- phosphate (PLP), the biologically active form of vitamin B6.

B7 – Biotin

This vitamin plays a key role in the metabolism of lipids, proteins, and carbohydrates. It is a critical co-enzyme involved in the synthesis of fatty acids, gluconeogenesis, the metabolism of several amino acids (especially leucine), and cholesterol.

Biotin deficiency does not typically cause symptoms in adults, but may lead to impaired growth and neurological disorders in infants. Multiple carboxylase deficiency,
an inborn error of metabolism, can lead to biotin deficiency even when dietary biotin intake is normal. Studying inborn errors of metabolism helped researchers learn about how vitamins function.

**B9 – Folate**

I talked about folate earlier when discussing the MTHFR genetic mutations. Folate has a methyl group and is a precursor necessary to make, repair, and methylate DNA. It is especially important in pregnancy and infancy to aid rapid cell division and growth. Folate acts as a co-enzyme in the form of tetrahydrofolate (THF), which is involved in the transfer of single-carbon units in the metabolism of nucleic acids and amino acids. THF is needed for normal cell division. Folate also aids in the production of red blood cells.

Folate deficiency results in a macrocytic anemia and elevated levels of homocysteine. Deficiency in pregnant women can lead to birth defects.

**B12 – Cobalamin**

This is a vitamin coenzyme, which is a nonprotein compound that is necessary for the functioning of an enzyme. B12 is involved in the metabolism of every cell of the human body, especially affecting DNA synthesis and regulation, but also fatty acid metabolism and amino acid metabolism. Vitamin B12 is involved in the cellular metabolism of carbohydrates, proteins, and lipids. It is essential in the production of blood cells in bone marrow, and for nerve sheaths and proteins. Methylcobalamine is the form of B12 in ReAline.

B12 deficiency results in a macrocytic anemia, elevated methylmalonic acid and homocysteine, peripheral neuropathy, and memory loss and other cognitive deficits. It is most likely to occur among elderly people, as absorption through the gut declines with age; the autoimmune disease pernicious anemia is another common cause. It can also cause symptoms of mania and psychosis. In rare extreme cases, it can result in paralysis.

If you eat meat, fish or dairy foods, you should be able to get enough vitamin B12 from your diet. But as vitamin B12 isn't found naturally in foods such as fruit, vegetables
and grains, vegans may be deficient, and are advised to supplement their diet with nutritional yeast which is high in the B vitamins.

**TAURINE**

Taurine is one of the most abundant amino acids in the body. It is found in the central nervous system, skeletal muscle, and is very concentrated in the brain and heart. It is synthesized from the amino acids methionine and cysteine in conjunction with vitamin B6. All three are sulfur amino acids.

Taurine modulates and can even inhibit neurotransmitters in the brain. It is a critical neuroinhibitory neurotransmitter involved in calming the nervous system. In this regard, there have been reports on the benefits of taurine supplementation for epileptics. It has also been found to control motor tics, such as uncontrollable facial twitches. Taurine’s effectiveness in epilepsy has been limited by its poor ability to cross the blood-brain barrier.

Taurine can even protect us from fluorine toxicity according to current animal research. However, taurine concentration in the brain declines with age. Thus, taurine’s ability to protect against environmental toxins, reduce brain inflammation, and stimulate neuron formation also declines with age and should be supplemented.

In Japan, taurine therapy is used in the treatment of ischemic heart disease. Low taurine and magnesium levels have been found in patients after heart attacks. Like magnesium, taurine affects cell membrane electrical excitability by normalizing potassium flow in and out of heart muscle cells. Both supplements decrease the tendency to develop potentially lethal abnormal heart arrhythmias after heart attacks. People with congestive heart failure have also responded to taurine supplementation with improved cardiac and respiratory function. Magnesium does the same.

Another role played by taurine is maintaining the correct composition of bile and maintaining the solubility of cholesterol. It has been found to have an effect on blood sugar levels similar to that of insulin. Taurine helps to stabilize cell membranes and seems to have some antioxidant and detoxifying activity. It helps the movement of
potassium, sodium, calcium, and magnesium in and out of cells, which helps generate nerve impulses.

Taurine is necessary for the chemical reactions that produce normal vision, and deficiencies are associated with retinal degeneration. Besides protecting the retina, taurine may help prevent and possibly reverse age-related cataracts. Low levels of taurine and other sulfur containing amino acids are associated with high blood pressure, and taurine supplements have been shown to lower blood pressure in some studies.

Other possible uses for taurine supplementation include eye disease, cirrhosis, depression, and male infertility due to low sperm motility and hypertension. Possible symptoms of toxicity include diarrhea and peptic ulcers.

Animal protein is a good source of taurine, as it is not found in vegetable protein. Vegetarians with an unbalanced protein intake, and therefore deficient in methionine or cysteine, may have difficulty manufacturing taurine. Dietary intake is thought to be more important in women as the female hormone estradiol depresses the formation of taurine in the liver.

Well known researcher Stephanie Seneff PhD spoke about “Taurine: A Mysterious Molecule with Intriguing Possibilities” in a 2012 talk she gave at the Weston A. Price Foundation. You can see this slide presentation online, but I will summarize some of the important information here. I know I’m repeating what I already wrote, but I want to drive home the importance of taurine, and Dr. Seneff makes taurine seem very alive.

Taurine is a sulfur-based amino acid. It shows benefits for skin, heart, pancreas, brain, blood, and mitochondria. Taurine is found in high concentration in the heart, brain, and liver, and it’s the most common free amino acid in the body, but it’s not used to make protein and it hardly ever participates in any reaction. What’s its story?

Taurine maintains osmotic balance in cells, which means the minerals and water inside cells create a pressure that balances outside pressure allowing cells to keep their shape.

It has a role in:

- Bile acid formation to help digest fats
- Mitochondrial function maintaining membrane potential
- Suppresses superoxide synthesis (oxidation damage)

Clinically, taurine helps:
- Maintain healthy skin
- Protect against diabetes and heart disease
- Protect against heart arrhythmias
- Low levels of taurine are associated with many cancers

You can find taurine mostly in non-vegan foods: eggs, meat, fish, other seafood, and dairy

Dr. Seneff hypothesizes that taurine is a storage site for sulfate that can be called upon during adverse conditions in the body. Taurine is stored mostly in the heart and brain with its available load of sulfur. As I have done with magnesium, Dr. Seneff says she has traced most modern diseases to a deficiency in the supply of sulfate!

Where does sulfur shine? In two areas that are causes of concern for allopathic medicine, cholesterol elevation and diabetes. Dr. Seneff says that sulfation of cholesterol is essential for cholesterol transport and prevention of atherosclerosis. Also, sulfation is essential for managing blood sugar and lack of it can lead to diabetes. However, the evidence of cholesterol being the cause of heart disease is waning. As you can see, the taurine in ReAline does serve many functions, and ReMag does help the structure and function of the body to prevent high cholesterol and diabetes.

Dr. Seneff makes a case for taurine helping to prevent sudden cardiac death. As with magnesium, taurine is normally found in highest concentration in the heart. Taurine has shown antiarrhythmic effects in cats, dogs, and guinea pigs. It prevents the loss of potassium by the heart muscle and reverses the adverse effects of adrenalin. I think magnesium has a bigger advantage in preventing cardiac death.

Dr. Seneff speculates that taurine is a source of sulfate for making cholesterol sulfate, which is necessary for making and stabilizing red blood cells. Cholesterol sulfate is also an independent molecule that distributes cholesterol and sulfur throughout the body.
Studies find that people with high dietary intake of taurine have reduced risk of coronary heart disease and insulin resistance – as do people with a high intake of magnesium. Taurine deficiency and magnesium deficiency can both lead to obesity, a risk factor for heart disease.

Taurine reduces serum homocysteine levels, as does magnesium. Taurine is neuroprotective, as is magnesium. Taurine prevents excitotoxicity induced by glutamate in neurons, and so does magnesium.

Dr. Seneff talks about the mitochondrial electron gradient that is regulated by calcium and activated by glutamate and protected by taurine. I’m sure a similar mechanism exists in mitochondria as in neurons. Here is what I quoted in The Magnesium Miracle: “Magnesium hangs out in the synapse between two neurons along with calcium and glutamate...calcium and glutamate are excitatory, and in excess, toxic. They activate the NMDA receptor. Magnesium can sit on the NMDA receptor without activating it, like a guard at the gate. Therefore, if we are deficient in magnesium, there's no guard. Calcium and glutamate can activate the receptor like there is no tomorrow. In the long term, this damages the neurons, eventually leading to cell death. In the brain, that is not an easy situation to reverse or remedy.”

Apparently taurine may protect platelets from forming excessive blood clots. Magnesium has been studied in migraines and inhibits excess platelet aggregation, preventing the formation of tiny clots that can block blood vessels and cause pain.

Taurine deficiency is associated with mitochondrial disease; however, I think magnesium is also important in mitochondrial function because 6 of the 8 steps in the production of ATP in the mitochondria require magnesium. Seneff says that mitochondrial stage I impairment is associated with many neurological and muscular disorders, which also makes me think of magnesium deficiency, because magnesium is the prime mover of nerves and muscles. For all these reasons, I have taurine in ReAline and promote the use of ReMag to help people becomes saturated with magnesium.
METHIONINE

I am most interested in methionine for its ability to make glutathione, but it does so much more. I’ve already noted earlier that homocysteine is made from methionine and then recycled back into methionine. It can also be converted into cysteine (another precursor to glutathione) with the aid of folate, vitamin B6, and vitamin B12. Without these B vitamins, homocysteine builds up and is a factor in heart disease.

Methionine is an intermediate in the biosynthesis of two other amino acids and several phospholipids: carnitine, taurine, lecithin, phosphatidylcholine, and other phospholipids.

ReAline contains those B vitamins in methylated form as well as methionine. Not only does ReAline help metabolize homocysteine so that it does not build up in the body, it also acts as a gentle detoxifier.

Methionine is an essential amino acid, which means it cannot be manufactured in the body from other components. It needs to be a part of our diet. It helps with the breakdown of fats and also prevents a buildup of fat in the liver and arteries. It detoxifies heavy metal toxins such as lead, cadmium, and mercury by binding them and aiding in their excretion from the body. It helps diminish muscle weakness, prevents brittle hair, and protects against radiation.

Methionine is a sulfur amino acid and by utilizing its supply of sulfur, it improves the tone and texture of the skin, strengthens nails, and conditions the hair. The mineral sulfur also protects the cells from airborne pollutants, such as smog, slows down the aging process in the cells, and is involved with the production of protein.

Methionine has a special relationship with selenium and zinc. It is required for the absorption, transportation, and bioavailability of these minerals in the body.

Methionine can help fatigue and may be useful in some cases of allergy because it reduces histamine release. Like magnesium, methionine is a histamine inhibitor! It has also been used in the treatment of rheumatic fever and toxemia resulting from pregnancy. Toxemia of pregnancy is another magnesium deficiency condition.

Recent studies show methionine deficiencies may be associated with the development of age related cataracts, and supplements may delay their development. In Parkinson's disease patients who take L-Dopa, it was found that additional supplements
with methionine may further decrease the tremors and rigidity that interfere with daily activities.

The uniqueness of methionine lies in genetics. It is one of only two amino acids encoded by a single codon (AUG) in the standard genetic code (tryptophan, encoded by UGG, is the other). The codon AUG is also the most common "Start" message for a ribosome that signals the initiation of protein translation from mRNA. In the synergy of the Completement Formulas, ReStructure provides the amino acids, and methionine turns on the protein-making process.

The best food sources for methionine are beef, chicken, fish, pork, eggs, cottage cheese, liver, sardines, yogurt, pumpkin seeds, sesame seeds, Brazil nuts, beans, lentils, onions, raw beets, soybeans, and garlic. Vegetables have smaller amounts, with peppers, spinach and beet root being the best sources.

WHAT REALINE USERS ARE SAYING
We say that ReAline is an essential supplement because it supplies the methylated and food-based B’s and gives you two sulfur based amino acids, one of which is a vital precursor to glutathione. You may not even notice a big shift when you take ReAline; however, some people really do notice their ReAline.

One woman said she felt toxic and I told her to take an extra capsule of ReAline, which helped immediately.

On my radio show, a listener commented that ReAline helps to metabolize alcohol. After 4 drinks her breathalyzer alcohol levels were much less than they should have been and her head was clear.

A Naturopath gave a patient her B vitamin and told her to stop ReAline, but it didn't work nearly as well as ReAline.

Another customer said that when he ran out of ReAline, he really felt the difference.

A customer felt that taking ReAline has finally cleared out any residue of the anabolic steroids that he took as a professional athlete and allowed him to make the best use of the building blocks of ReMag, ReMyte, and the RnA Drops.
Some customers say ReAline is their favorite supplement, but most use ReAline along with the other Completement Formulas and don’t necessarily separate out its effects. We do know that with ReAline you are getting all the hundreds of benefits from a well absorbed, natural, methylated B complex, and two of the most important amino acids for detoxification and for the heart.
MEET THE DOCTOR OF THE FUTURE

Dr. Dean is a medical doctor, naturopath, herbalist, acupuncturist, researcher, and formulator. She’s authored 110 Kindle books and 35 print books, including The Magnesium Miracle, IBS for Dummies, Hormone Balance, and Death by Modern Medicine. Dr. Dean is on the Medical Advisory Board of the non-profit Nutritional Magnesium Association.

Dr. Dean won The Arrhythmia Alliance Outstanding Medical Contribution to Cardiac Rhythm Management Services Award 2012 presented at The Heart Rhythm Congress organized by the Heart Rhythm Society (HRS), Sept 23-26, 2012. In September 2014, she received an Excellence in Integrative Medicine Award at the Sacred Fire of Liberty Awards in Washington.

At www.DrCarolynDean.com, you are invited to receive a free subscription of Dr. Dean's Doctor of the Future Newsletter and join her online wellness program Completement Now! On that website you will see links to her weekly radio show and product website www.RnAReSet.com.

Disclosure: Dr. Dean has an economic interest in the innovative products RnA Drops, ReNew, ReAline, ReStructure, ReMag, ReMyte, ReCalcia, and Pico-Silver Solution. They can be found at www.RnAReSet.com.