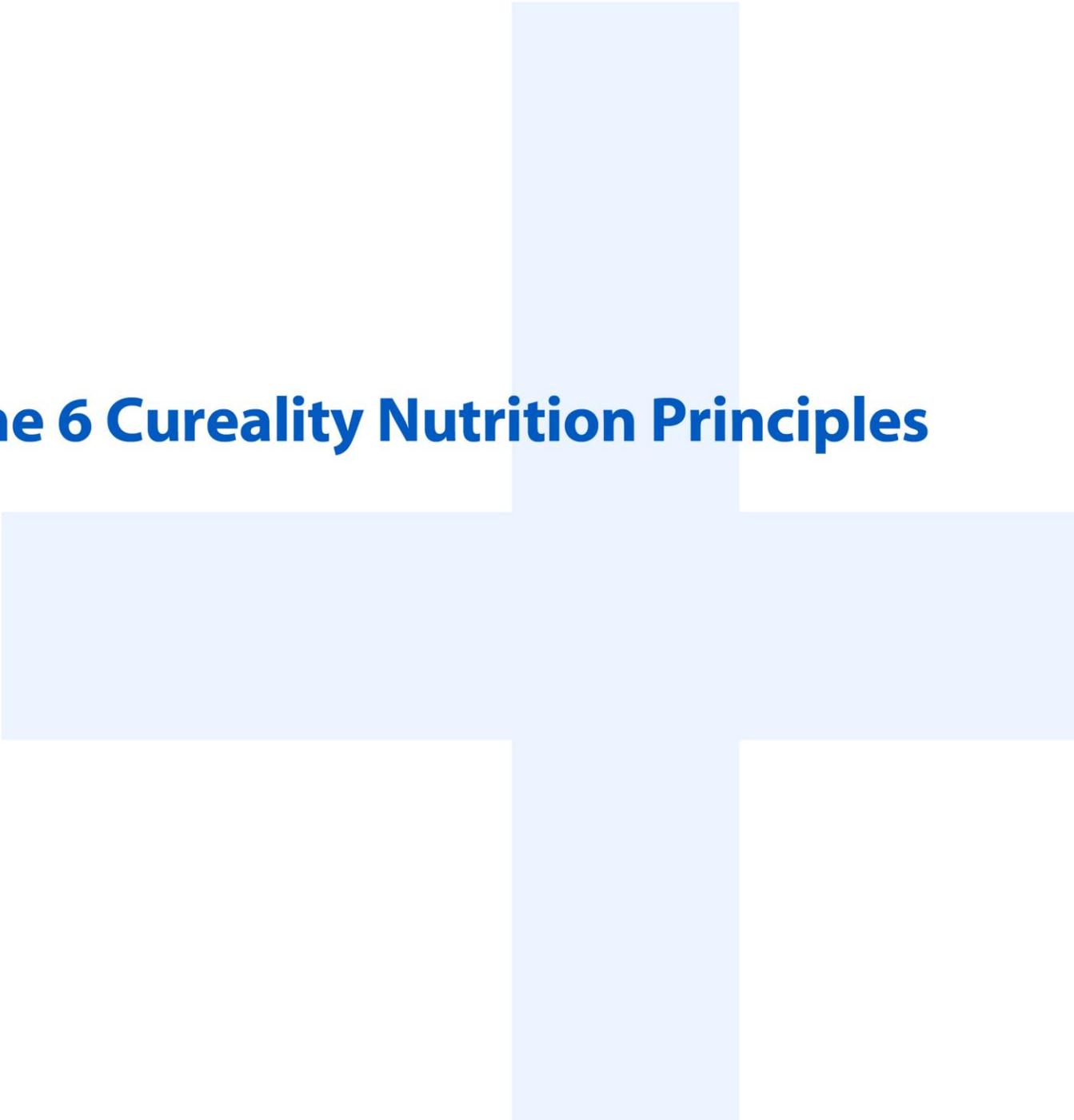


cureality
real people seeking real cures

The 6 Cureality Nutrition Principles



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People have experimented with just about every kind of diet imaginable: Low-fat, ultra low-fat, high-fat, low carbohydrate, high carbohydrate, high protein, low protein, vegetarian, Mediterranean, Oriental, rice, grapefruit, Atkin's, "Zone," Paleo and on and on . . .

Is there one diet that's right and all the rest are wrong?

Probably not. In fact, every diet has taught us something new. The American obsession with diet has amounted to a nationwide experiment in the value - or danger - of various nutritional manipulations. To add to the confusion, because people vary genetically, they respond to the same diet in different ways. A diet, for instance, that drops one person's LDL cholesterol 30 mg/dl could cause someone else to increase LDL 30 mg/dl.

Diet Principle #1: Correct metabolic responses with elimination of wheat, grains, starchy legumes, and sugars; limit dairy

Eliminate:

- All wheat products.
- All other grains such as oats, corn, rice.
- Starchy legumes such as potatoes and kidney beans.
- Fruit drinks, fruit juices, and soft drinks.
- Candies and other sugary snacks.

Limited dairy: No more than 1-2 servings per day milk, cottage cheese, yogurt; 2-4 oz. cheese; preferably organic

Over the last several years, there has been an explosion in "metabolic syndrome." You can recognize people with the metabolic syndrome by its characteristic features: protuberant abdomen, higher blood sugar, low HDL cholesterol, high triglycerides, high blood pressure, an excess of small LDL particles and abnormal measures of hidden inflammatory patterns, e.g., C-reactive protein. People with metabolic syndrome are much more like to develop diabetes, coronary heart disease, many forms of cancer, and dementia.

The Adult Treatment Panel-3 (ATP-3), the national guidelines for cholesterol management, arbitrarily define metabolic syndrome as having any three of the following: HDL 40 mg/dl or less in men, 50 mg/dl or less in women; triglycerides 150 mg/dl or more; BP 130/85 or greater; waist size 35 inches or more in women, 40 inches or greater in males; fasting blood glucose 110 mg/dl or greater. However, this definition tends to identify only the most *advanced* cases.

Excessive insulin release, followed by resistance to insulin's action, underlie the nutritional responses that trigger these phenomena. The most sensitive measure of the process underlying

the metabolic syndrome is small LDL particles (particularly if measured by the NMR method from Liposcience).

More than any other measure, small LDL particles fluctuate with the ebb and flow of insulin sensitivity and carbohydrate intake.

Small LDL has therefore leapt to number one spot on the list of most common abnormalities identified through lipoprotein testing. It also occupies number one spot as most frequent cause of coronary atherosclerotic plaque and coronary disease. Over 90% of participants in the Cureality program begin with a substantial quantity of small LDL.

Small LDL and the features of the metabolic syndrome and excessive weight are corrected by *eliminating the foods that created them in the first place*. Full reversal is often possible with normalization of blood sugar and insulin, rise in HDL, drop in triglycerides, elimination of small LDL particles, drop in blood pressure, and loss of several inches off the waist. A limiting factor that may be encountered occasionally, however, is lost pancreatic beta cell function, i.e., loss of the cells in the pancreas responsible for insulin production, lost due to years of carbohydrate overconsumption. This can be reflected by a number of phenomena, most notably a high fasting blood sugar despite following this dietary approach. (This may be the occasional instance in which medication may be helpful.)

Even if you do not meet the formal criteria of the metabolic syndrome, nearly all adults express some degree of insulin resistance at the start of their program, given modern lifestyles, and following this nutritional approach still yields extravagant metabolic benefits.

Put a stop to insulin

One of the primary reasons this nutritional approach works so well is that it puts a stop to provoking excessive levels of insulin. Any food that triggers rapid release of blood sugar also triggers release of insulin that causes fat storage/weight gain, as well as other metabolic distortions. These foods include (in this order):

- Wheat products: white, whole wheat, whole grain breads, bagels, muffins, pastas, cakes, cookies, pancakes, waffles, pretzels, crackers, breakfast cereals; most processed foods such as Twizzlers, canned soups, frozen dinners, seasoning mixes, salad dressings, dried soups.
- Corn, cornmeal, and cornstarch: tacos, tortillas, corn chips, cornbreads, sauces, gravies, breakfast cereals.
- Gluten-free foods: Despite having no wheat, foods made of dried cornstarch, potato starch, rice starch, and tapioca starch, the four starches usually used to replace wheat gluten, are *worse* than wheat in triggering high blood sugar and small LDL particles.
- Other grains: Oats, barley, millet, rice, buckwheat, sorghum, amaranth, spelt, kamut.
- Fruit juices, soft drinks: No, fruit juices are *not* good for you. (While they contain some healthy components, the sugar load is simply too great.)

- Snack foods: potato chips, rice cakes, popcorn, candies, pies.
- Starchy legumes: Especially white and red potatoes; beans - red, black, pinto, kidney, etc.

These foods, especially wheat and gluten-free processed foods, should be eliminated entirely. Note that wheat and, to a lesser degree, cornstarch, are added to nearly all processed foods.

Foods made with wheat and other grains increase blood sugar *faster* and to a *higher* level than even table sugar, a Milky Way bar, or Snickers bar (i.e., they have higher glycemic indexes).

Cornstarch is often used to thicken sauces and gravies. Cornmeal, such as that in tacos, tortillas, and chips, can be nearly as bad as cornstarch.

Rice and potatoes are less offensive, mostly because they do not occupy the same dominant role in diet that wheat and cornstarch-based foods play. However, if permitted to occupy a frequent role with larger portion sizes (e.g. greater than ¼-cup per serving), then it will exert small LDL- and blood sugar-provoking effects.

If wheat, grain, cornstarch, snacks, and fruit drinks are the most potent triggers of insulin, small LDL, and the entire constellation of abnormalities of the metabolic syndrome, then we can reverse this entire situation by . . . *eliminating them*. Because wheat products, in particular, have become so dominant in the average American diet, just eliminating wheat fixes about 90% of the problem.

Eliminating the causes of the problem leads to an extraordinary panel of benefits:

- Weight loss - Rapid, often profound, weight loss ensues. 20-30 pounds lost - effortlessly - within the first 3 months is a typical response. Most of the lost weight will be from *visceral* fat, fat within the abdominal cavity that is responsible for insulin resistance (expressed on the surface as “love handles”).
- Reduction in small LDL particles - Because small LDL particles are such a sensitive index of carbohydrate intake and weight, they respond promptly and dramatically.
- Increase in HDL cholesterol = a process that improves over months to years.
- Reduction in triglycerides - Reduction of up to several hundred .mg/dl are common within several months.
- Enhanced sensitivity to insulin
- Reduction in blood sugar and HbA1c
- Reduction in blood pressure - An effect that requires 3-6 months.
- Reduction in inflammatory measures such as C-reactive protein.

Subjective improvements also occur: increased mental clarity, increased energy, improved sleep, more stable moods, relief from acid reflux and bowel urgency of irritable bowel syndrome, relief from joint pain in the hands and fingers. Many people with autoimmune and inflammatory conditions experience partial relief or outright cure of rheumatoid arthritis, lupus, and other conditions. Mental and emotional benefits can develop, including relief from depression, anxiety, difficulty with learning, and freedom from food obsessions. These unexpected effects derive specifically from the elimination of wheat due to loss of the gliadin protein.

Curiously, a common criticism of this approach is the statement: “But we *need* wheat (or grains) in our diet!” Entirely untrue. Wheat and grains are not necessary components of the diet for long, healthy life. Less than 1% of the time humans have spent on earth have involved consumption of wheat and other grains, the other 99% spent consuming the non-grain foods available to hunter-gatherer cultures. Beyond the fact that a host of abnormal metabolic patterns shift towards normal with elimination, wheat and grains provide no beneficial component of diet that cannot be obtained through other foods, provided calories are replaced by real foods like vegetables, raw nuts, and meats, and *not* junk foods. The quantity of fiber, for instance, lost with elimination of wheat can be readily matched or exceeded by eating raw nuts, vegetables, and fruit. B vitamins like thiamine, folic acid, and riboflavin are easily replaced by those from nuts, meats, and vegetables. The overreliance on grains, as well as the repeated urgings to make them the dominant part of diet, is a modern fiction largely propagated by the economic interests of agribusiness.

Wheat addiction, wheat withdrawal

There is an important group of people, about 40% of the population, who experience wheat *addiction* and *withdrawal*.

People afflicted with this odd condition crave wheat products and eat pretzels, crackers, bread, etc., many times a day, a phenomenon driven by small polypeptides, 4-5 amino acids long, that derive from digestion of the gliadin protein in wheat. Because they act like opiates, they have been labeled “exorphins,” or exogenous morphine-like compounds (Zioudrou 1979). Wheat exorphins bind to the opiate receptors of the human brain but they do not trigger euphoria or provide pain relief like morphine or heroin, but “only” stimulate appetite. And they stimulate appetite for carbohydrates such as chips and cookies, not pork chops or salmon, increasing intake 400 calories per day, every day. (Yes: Wheat exerts an *opiate-like* effect. Interestingly, the effects of wheat-derived exorphins can be blocked with opiate-blocking drugs like naloxone and naltrexone. A drug company, in fact, is planning to release a medication to exploit this effect for weight loss. Of course, a more rational solution is to eliminate the addiction-provoking food, rather than block the addiction with a drug.)

Missing a snack or meal causes distress: shakiness, nervousness, mental “fog,” headache, depression, fatigue, and intense cravings, a form of withdrawal from the gliadin-derived opiates. Cravings occur in approximately two-hour cycles, worsened by the sugar and insulin rollercoaster that results from wheat products. If deprived of wheat for a longer period, a full withdrawal syndrome kicks in that includes all these symptoms and usually lasts two to five days, sometimes longer.

Wheat withdrawal is a benign phenomenon, but it can be quite unpleasant. Beware: If you have a wheat addiction and experience wheat withdrawal, be careful of the temptation that wheat can exert over your impulses. I’ve seen people with this tendency successfully go through withdrawal and remove wheat from their diet until a single cracker, pretzel, or cookie indulgence opens a floodgate of sugar and wheat cravings. The initial 30 pounds lost, for instance, can be

rapidly regained. There is no realistic way to keep this from happening except to be aware of the phenomenon. People with this health issue need to be vigilant and not let a single indulgence trigger uncontrollable impulses.

There are a number of strategies to help you deal with this effect. One is to taper wheat gradually over a week. However, be warned: Some people are so addicted to wheat that they find even this tapering process to be overwhelming, and sometimes going “cold turkey” is necessary to break the addiction, just as the alcoholic has to suffer through his/her withdrawal.

Two: Select a time to begin the process when you don't need to be at your top performance, e.g., a week off from work or a long weekend. Perhaps it won't be the most action-packed weekend, but it will allow you to return to work and life in far better shape.

Three: Be sure to hydrate well and consider adding sea salt to your food, as wheat elimination involves a diuretic effect, i.e., loss of water and salt in the first few days that can result in fatigue and leg cramps. Many people also experience relief from these effects with a magnesium supplement, e.g., magnesium malate, 1200 mg twice per day.

Wheat-Free Testimonials

Here are some testimonials we've received on the effects of removing wheat from the diet:

Barbara W said:

It's true! We've done it. My husband and I stopped eating all grains and sugar in February. At this point, we really don't miss them anymore. It was a huge change, but it's worth the effort. I've lost over 20 pounds (10 to go) and my husband has lost 45 pounds (20 to go). On top of it, our body shapes have changed drastically. It is really amazing. I've got my waist back (and a whole wardrobe of clothes—I'm thrilled.

I'm also very happy to be eating foods that I always loved like eggs, avocados, and meats—without feeling guilty that they're not good for me.

With the extremely hot weather this week in our area, we thought we'd "treat" ourselves to small ice cream cones. To our surprise, it wasn't that much of a treat. Didn't even taste as good as we'd anticipated. I know I would have been much more satisfied with a snack of smoked salmon with fresh dill, capers, chopped onion and drizzled with lemon juice.

Aside from weight changes, we both feel so much better in general—feel much more alert and move around with much greater flexibility, sleep well, never have any indigestion. We're really enjoying this. It's like feeling younger.

It's not a diet for us. This will be the way we eat from now on. Actually, we think our food has become more interesting and varied since giving up all the "white stuff." I guess we felt compelled to get a little more creative.

Eating out (or at other peoples' places) has probably been the hardest part of this adjustment. But now we're getting pretty comfortable saying what we won't eat. I'm starting to enjoy the reactions it produces.

The role of dairy products

While cheese is safe and provides additional vitamin K2, other dairy products are conditional. The suggested limitation of 2 to 4 ounces per day of cheese has nothing to do with the fat content; it relates to the potential for cheese to pose a substantial acid challenge (with implications for bone health) and the potential for the whey fraction of protein to trigger insulin.

Milk, cottage cheese, and yogurt are sources of only a modest carbohydrate load, but they have the unique capacity to trigger insulin excessively (as much as *3-fold* increased area under the insulin response curve) and contribute to distortions of insulin metabolism. i.e., they are “insulinotropic” (Liljeberg 2001). I therefore advise including dairy products outside of cheese in only small quantities, e.g., 1-2 servings per day. However, if you are among those with extreme carbohydrate sensitivity or difficulty losing weight, avoidance may be necessary. This appears to be true for about 20% of people. These people, often experiencing stalled weight loss, lose weight precipitously with elimination of all dairy. (Contrary to popular advice, sufficient dietary calcium can come from non-dairy sources, such as green vegetables, especially if normalization of vitamin D levels is achieved.)

Substitutes for dairy include coconut milk (carton or canned), unsweetened almond milk, goat’s milk, and unsweetened hemp milk.

Diet Principle #2: Include meat, poultry, fish, and wild game

Avoid cured processed meats like pepperoni, sausage, bratwurst, luncheon meats; look for uncured, unprocessed meats. Include fish at least once per week. There is no restriction on saturated fat intake.

Around 2.4 million years ago, the exclusively herbivorous *Australopithecus* species gave rise to the opportunistically meat-scavenging *Homo* species. Members of the *Homo* species lacked the natural tools of carnivory, such as large canine teeth and claws. They scavenged the remains of the kill of true carnivores, but learned how to use tools, such as rocks, to break open the skull of an animal to consume its brain, or the long bones to consume the marrow. Over hundreds of thousands of years, humans became more adept at using tools to cut, scrape, pierce, and throw as weapons. We began to engage in group hunt that requires vocal apparatus for speech and the use of language to communicate. All the while, the increased consumption of animal flesh and organs provided the omega-3 fatty acids that fueled growth of the human brain, increasing its volume 300%.

We are the only creatures on earth that came to consume animals by virtue of the development of tools/weapons, language, and a need for omega-3 fatty acids. Every human culture that has inhabited the earth has therefore practiced carnivory, reflected in the need for nutrients such as omega-3 fatty acids, vitamin B12, protein, vitamin K2, and others provided by the flesh and

organs of animals. We therefore continue this evolutionary dietary script in our modern dietary practices.

Surely there are modifications of this approach necessary, as most of us no longer rely on the wild game we kill, but on the meat of domesticated animals often grown under uncertain conditions. But we at least try to mimic the situation to which humans have evolutionarily adapted to survive and thrive. It means that, as best we can, we revert to foods that are instinctively regarded as food - the edible leaves, stems, and roots of plants; nuts and seeds; mushrooms; and the flesh and organs of poultry, cows, pigs, lambs, fish, and shellfish. The seeds of grasses, also known as “grains,” are *not* part of this collection of foods to which we are adapted, as they were added only in the last 10,000 years, a mere 0.4% of our time on earth. And, of course, grains have been the most popular recipients of genetic manipulations at the hands of agribusiness over the past 50 years.

When we consume meat, poultry, or fish, we consume the fat, the skin, the liver, as well as the meat. We don't carve off the fat, nor do we count fat grams. We boil the bones for soup or stock and do not skim off the gelatin or fat when it cools. In short, we eat as humans were meant to eat, or least as close as we can approximate in our modern setting.

Time to rethink saturated fats

Following this line of thinking, we come to the thorny issue of saturated fats. Saturated fats have been the subject of scorn over the past 50 years, originating with early observations that cultures with greater intakes of saturated fat experienced higher risk for heart attack. Public health advice to cut all fats, along with saturated, then led to replacement of fat calories with carbohydrate calories, spawning the national movement towards incorporating abundant “healthy whole grains,” as well as the initial push for hydrogenated and polyunsaturated oils to replace saturated. As many of us now know, this shift in caloric composition has tragically backfired on a grand scale, and has played a major role in creating the current epidemic of diabetes and obesity that has shifted world health for the worst.

More recent re-analyses of the original data indicting saturated fat have called these interpretations in question. Some of the data (such as the Seven Countries Study) have been debunked for their flawed analyses. Others have simply given way to clearer interpretation. Specifically:

- Many of the original observations were made using *total* cholesterol, rather than LDL and HDL. While saturated fat undoubtedly increases total cholesterol, about half the effect is due to *increase in HDL*.
- While saturated fats increase total and LDL cholesterol, they increase the *large* LDL fraction, while carbohydrates increase *small* LDL. Small LDL is *five-fold* more atherogenic (atherosclerotic plaque-causing) than large (Lamarche 1999).
- Not all saturated fats are the same, though they have been demonized as a group. The various fatty acids (lauric, myristic, stearic, palmitic, butyric and others) comprising saturated fats differ in their effects on LDL, HDL, coagulation, etc. In particular, lauric (rich in coconut oil)

and stearic acid (rich in cocoa) are essentially neutral, exerting virtually no lipoprotein effects (Mensink 1997).

- Foods containing saturated fats consist of a range of different food choices, from egg yolks to red meats to cured meats (sausage, hot dogs, bacon) that differ in oxidized fat and oxidized cholesterol content, AGE content, and other factors. Grouping this varied mix of foods because of saturated fat is misleading.

Saturated fats have been criticized unfairly and do not need to be feared. There are several issues that we should continue to explore:

Saturated fats occur principally in animal products. In fact, saturated fats may be little more than a *surrogate* for modern meat and animal product intake (“modern” meaning an increasing proportion of factory farm-raised livestock). Epidemiologic data comparing vegetarians to omnivorous populations suggest that vegetarians enjoy longer life with fewer cardiovascular events (Sabaté 2003), but the fundamental difficulty of separating vegetarian nutrition from all the other behaviors unique to vegetarianism (e.g., fewer smokers, more health conscious, more likely to exercise, less likely to drink excessively, etc.) essentially negate the value of these studies as “proof” of the harm of saturated fat or consumption of animal products. Higher intakes of animal products, whether from the saturated fat component or some other component (such as AGEs, iron-containing proteins, or nitrogenous by-products) have been associated with increased risk for prostate, colon, and possibly breast cancers; and increased likelihood of diabetes but, as with data comparing vegetarians with non-vegetarians, the data are likewise tainted by the constellation of behaviors that tend to cluster with a vegetarian lifestyle. Animal fats are the repository for pesticide residues and hormones in factory farm-raised livestock. (This tends not to be an issue in grass fed, organic livestock, nor in wild game.)

Effects of saturated fat are very difficult to separate from that of animal products. Unfortunately, nutritional studies to date have not conclusively separated saturated fat from its animal sources, nor have they separated the effect of saturated fats from other potential problem sources like AGEs.

Critics of standard “cut saturated fat” advice point out that the clinical studies examining adverse effects all failed to reduce carbohydrate intake to low levels. They argue that much of the adverse health effect of saturated fats only becomes an issue in the presence of carbohydrates and that the effects of saturated fats have not been examined in isolation to truly gain an understanding of their real potential for good or bad. The Cureality lipoprotein experience is consistent with this view.

Nutrition is a work in progress, with new evidence continually causing re-examination of the old. For the present, however, our stand on animal products - and saturated fat - from the perspective of the CurealityDiet is:

- We do not restrict saturated fats. We include the fats and organs of animals, whenever possible, as well as eggs, coconut, and palm oil. The only time to consider cutting back on

saturated fat is if LDL values (not calculated LDL cholesterol, but the superior apoprotein B or LDL particle number) are above your target values.

- Because AGEs accompany animal products that are cooked at high temperature (350° F or greater), cooked for prolonged periods (e.g., roasting), deep-fried, barbecued, or cured (see box on AGEs), animal products are best eaten rare or at least not well-done; also, whenever possible boil, bake, steam or sauté your foods, all lower temperature cooking processes.
- Cured meats that contain sodium nitrite, including bacon, sausage, and hot dogs, should be minimized because of their carcinogenic potential suggested across multiple epidemiologic studies. Cured meats are also rich in AGEs. (Uncured bacon, sausage and meats are available) .
- Meats are preferably grass fed, organic, or wild game.

The importance of Advanced Glycation End-products (AGEs)

Just as someone can be wrongly accused and convicted for a crime he didn't commit, so AGEs may be the real culprit behind many, if not all, of the adverse health effects blamed on saturated fat.

AGEs are an emerging group of compounds (and poorly named, since not all AGEs involve glycation) that have been shown to be responsible for many of the processes leading to coronary atherosclerotic plaque formation, as well as diabetes, high blood pressure, and cancer. AGEs also serve as the basis for an actively pursued theory of aging, the "AGE theory of aging."

AGEs are formed via two routes:

Endogenous AGEs: Endogenous AGEs form in the body due to the reaction of blood glucose with various proteins. The higher the blood glucose, the more AGEs are formed, with low-level obligatory AGE formation even occurring with normal blood glucose levels. Endogenous AGEs are responsible for cataracts (AGEs involving lens proteins), kidney disease, atherosclerosis, skin aging, brittle joint cartilage and arthritis, and many of the other manifestations of both aging and disease. AGEs also explain why diabetics experience a collection of phenomena that could be viewed as *accelerated aging*: earlier onset of cataracts, kidney disease, atherosclerosis, skin aging, etc. The *Cureality* strategy of limiting foods that increase blood sugar, especially wheat, leads to reduced formation of AGEs.

Exogenous AGEs: Exogenous AGEs are formed outside the body ("exogenous") in the foods we consume. Our exposure therefore depends on whether or not we eat foods that contain AGEs. AGEs are primarily formed from chemical reactions between fats or proteins and carbohydrates, especially when *high-temperature* (greater than 350° F) cooking for prolonged periods is involved. This means that meats that are broiled, fried, or barbecued are the principal source of exogenous AGEs, while the same meats cooked at lower temperature for shorter periods of time have far lower AGE content (Vlassara 2002). Cured meats, like hot dogs, sausage, and bacon, also contain high levels of AGEs, as do foods cooked with butter or margarine.

Diet Principle #3: Don't limit fats, but choose the right fats

Enjoy these healthy oils in unlimited quantities:

- Olive
- Coconut
- Flaxseed
- Avocado

Include fish at least once per week and supplement omega-3 fatty acids (ideally 3000-3600 mg EPA + DHA per day).

No restriction on saturated fat intake

Avoid hydrogenated and polyunsaturated oils (corn, mixed vegetable, safflower); avoid excessive heating of oils, especially deep-frying

Four healthy (non-marine) oils are advocated in the Cureality Diet:

- Olive: Rich in the monounsaturated, oleic acid (70%), and polyphenols like hydroxytyrosol.
- Coconut oil: Although coconut oil was regarded as a “no no” in past due to high saturated fat content, over 50% of the fatty acids contained are the neutral saturated fat, lauric acid, that yields little to no effect on such factors as LDL cholesterol and postprandial lipoproteins. It's also versatile and delicious.
- Flaxseed: Richest in linolenic acid (51%), the so-called non-fish source of “omega-3” (though it will not substitute for fish oil).
- Avocado: Like avocados, avocado oil is rich in monounsaturates (70%).

All five oils are low in the omega-6 linoleic acid and are neutral with respect to inflammatory patterns or may exert modest anti-inflammatory effects (Zhao 2004). (Omega-6 linoleic acid activates thromboxane and other inflammatory patterns.)

These oils can be consumed *ad libitum*; add as much as you want to salads and other foods.

We've learned plenty of new lessons on gaining metabolic control to improve lipoprotein patterns, improvements that yield control over weight and correct the abnormal metabolic fallout of past dietary mistakes. One of the most important new lessons is that fats and oils have come to play a prominent role in the Cureality Diet.

For many years, fats and oils were demonized based on the fact that any fat or oil, good or bad, contains 9 calories per gram, compared to 4 calories per gram of carbohydrate or protein. It logically led to the belief that caloric density accounted for weight gain: the more fat that was included in diet, the more weight was gained. The logical corollary was that foods with reduced caloric density - read “carbohydrates”— - would help lose weight.

As we now know, the *opposite* happens. Although it seems counterintuitive, calorie-dense fats help lose weight and manage it more effectively. The essential feature of food that triggers appetite vs. induces satiety is driven by *insulin response*, not calorie density. Carbohydrates, of course, trigger insulin galore. A meal that includes whole grain bread, whole wheat crackers, or whole wheat pasta, for instance, causes a large volume of sugar to be released into the blood. The pancreas responds by releasing a large quantity of insulin to hasten the entry of sugar into the body's cells, which is then stored as energy. Gorge on carbohydrate-rich foods, such as fruits, roots, and berries - or, in our modern society, breads, pasta, and snacks - and your body stores the energy in preparation for extended caloric deprivation. Of course, the period of deprivation never comes in a modern world of plenty. Instead, it is followed by continued and virtually unlimited access to even more carbohydrate calories, allowing more and more storage.

The results are evident all around us in the overweight and obese in our society.

The currently popular nutritional mantra of "eat more healthy whole grains" is therefore much of the explanation behind the national epidemic of obesity and diabetes. It also underlies the enormous explosion in small LDL and related patterns of the metabolic syndrome.

In contrast to carbohydrates, fats and oils are the *least* insulin provoking, followed by protein as a close second. Less insulin provocation means less storage as fat. It also means that appetite is not recurrently triggered. Instead, *satiation* ensues. Coincident with the recent re-examination of the role of fat composition of the diet that has led to its "pardon," it's time to talk about adding back fats - plenty of fats - to our diet.

Of course, oils should never be heated to high temperature (e.g., deep-frying), as it triggers formation of unhealthy oxidative byproducts and AGEs. Minimal (e.g., lightly sautéed) or no heating is preferable whenever possible, especially with olive and flaxseed oils, as linolenic acid and polyphenols degrade rapidly with heat. Oils are therefore best added towards the conclusion of cooking, e.g., olive oil added to scrambled eggs just after scrambling, olive oil brushed on asparagus or chicken just before removing from the oven or grill.

But, while fats all share the same capacity to generate satiety, fail to trigger insulin responses, the various fatty acids that comprise fats and oils do indeed differ in other ways.

The fatty acid line-up

Hydrogenated fat is the one fat that we can all agree everyone should avoid. Hydrogenation is the process used to solidify liquid vegetable oils by adding hydrogen groups in an unnatural "trans" (opposite sides of the carbon backbone) configuration ("trans fats"). Common examples are vegetable shortening and margarines.

Manufacturers love to use hydrogenated oils in food processing. You'll find them in baked cookies and cakes, pies, pastries, snack chips, frozen foods, salad dressings and mayonnaise,

and many convenience foods. Hydrogenated “trans” fats not only raise LDL cholesterol, but reduce HDL cholesterol, trigger increase of Lp(a), and divert fatty acids towards inflammation-increasing pathways. To see whether a product contains hydrogenated fats, refer to the label of ingredients. If “hydrogenated” oil or “partially hydrogenated” oil is listed on the label, avoid it. (The FDA now mandates that labels specify the inclusion of trans fats.)

Another group of oils that we would like to minimize are **polyunsaturated oils**. Polyunsaturates are rich in *linoleic acid*, a principal member of the omega-6 family that is an essential fatty acid required for survival, so complete avoidance is not the idea. While polyunsaturates were widely advocated in the 1980s and 1990s because they modestly reduce LDL cholesterol, it has become increasingly clear that linoleic acid-rich oils, when present in excess, trigger an inflammatory cascade, yielding increases in such inflammatory mediators as thromboxane (Calder 2009). Corn, mixed “vegetable,” sunflower, soybean, grapeseed and cottonseed oils contain abundant omega-6 fatty acids. These oils are best used sparingly, if at all. There are better forms of oils to use. Also beware that many processed foods include polyunsaturated oils, in addition to hydrogenated trans fats. The modest quantities of linoleic acid in nuts, seeds, meats, and other foods provides ample quantities.

Monounsaturated fatty acids (lacking one hydrogen) are getting more attention due to the success of the so-called Mediterranean diet in reducing risk of heart attack. The Lyon Heart Study examined the health benefits of a Mediterranean diet rich in olive oil (70% monounsaturated oils), vegetables, and fish, similar to that eaten along the Mediterranean coast in Europe. People following this diet (as compared to an American-like diet) suffered 40% fewer heart attacks (de Lorgeril 1999). While monounsaturated oils reduce LDL cholesterol with approximately the same effectiveness as polyunsaturates, monounsaturates do not trigger abnormal inflammatory responses. The most monounsaturated-rich oil is olive oil (70% monounsaturates), as are meats. Extra-virgin olive oil (often green and cloudy, particularly when cool) also contains high quantities of polyphenols, which may further add to health benefits.

Canola oil, another oil rich in monounsaturates (60%), has been the topic of controversy. The intensive purification process required that involves high-temperature heating and hexane extraction has been shown to increase the relative content of *trans* fats (O’Keefe 1994) and exert a variety of unhealthy effects in laboratory animals (Ohara 2006). Sufficient doubt has been raised that canola is not recommended as part of the Cureality approach.

Raw nuts are another excellent source of monounsaturates and, to a lesser degree, polyunsaturates. Raw nuts are filling, requiring hours to digest. In fact, eating a ¼ cup or more of raw almonds or walnuts every day can reduce total and LDL cholesterol by 20 mg/dl due to the monounsaturated oils and fibers. As long as they are raw, nuts do not cause weight gain.

Because the four healthy oils exert virtually no ill effects, but reduce LDL, induce satiety, and smooth insulin-blood sugar excursions, the Cureality Diet includes plentiful oils. Abundant oils can be included with every meal, including breakfast - *especially* breakfast. An oil compatible with each food can be chosen, e.g., a tablespoon or two of olive oil with scrambled eggs, a teaspoon

or two of flaxseed oil mixed with ground flaxseed. The added oils help smooth insulin and blood sugar responses. Because appetite is suppressed, weight loss is also accelerated.

Omega-3 fatty acids, docosahexaenoic acid, or DHA, and eicosapentaenoic acid, or EPA, are in a class by themselves. While biochemically they are polyunsaturates, their unique long-chain structure and biological properties set them apart from other polyunsaturates. Omega-3s are used both as treatment and preventive nutritional strategy.

Fish are the source for omega-3 fatty acids: cod, halibut, trout, menhaden, salmon, mackerel, tuna, and sardines. Eating two servings of fish per month is enough to yield a sharp drop in risk of dying of heart attack. However, fish oil supplements ensure higher intakes of omega-3's for additional cardiovascular benefit. Because the quantity of omega-3s required for maximal protective effect is greater than can be obtained with eating fish occasionally, we use specific supplementation in the Curealityprogram (preferably in the naturally occurring *triglyceride* form, not ethyl esters).

Omega-3 fatty acids are the component of diet in fish-eating cultures responsible for reducing heart attack dramatically. Japanese women have four-fold higher blood levels of EPA and DHA and only 20% of the cardiovascular risk of American women; Japanese men also have four-fold higher levels with 40% of the risk of American men (Iso 1989).

Omega-3's reduce blood pressure, reduce triglycerides, increase HDL and make LDL particles bigger, in addition to reducing risk for heart attack and death. There is evidence that omega-3's can reverse atherosclerosis. When people who've suffered heart attacks eat a diet rich in omega-3's or take fish oil supplements, the risk of dying of heart attack is cut by 35-45% (Marchioli 2001). Evidence suggests that omega-3's have cancer-preventing effects, inhibit Alzheimer's dementia, and help alleviate depression.

Omega-3 fatty acids can also be used to treat specific lipoprotein abnormalities. Triglycerides can be reduced up to 50%; lipoprotein(a) can also be reduced. Higher doses are needed for these purposes. Fish oil also reduces fibrinogen, a blood clotting protein.

Flaxseed, either as the whole seed or as flaxseed oil, is also a source of omega-3's. However, the omega-3's in flaxseed don't occur as DHA or EPA, but as *linolenic acid*. Linolenic acid, along with linoleic acid an essential fatty acid, is also beneficial in its own right. But it *cannot* take the place of the omega-3 fatty acids from fish oil. The conversion of linolenic acid to the active DHA/EPA is inefficient. The quantity of EPA and DHA yielded from flaxseed oil is small, less than 1 part DHA/EPA for every 10 parts linolenic acid taken. Flaxseed oil does not yield the same benefits, particularly those on lipoproteins, as that provided by fish oil. Fish oil is therefore the preferred source of omega-3's.

Linolenic acid nonetheless has been associated with reduction in cardiovascular events and is suspected to be at least one of the important components of the Mediterranean diet (Geleijnse 2010). Linolenic acid provides the building blocks for anti-inflammatory eicosanoid responses, in

contrast to linoleic acid (omega-6) that increases inflammatory responses when present in excess. Flaxseed oil is the most plentiful source of linolenic acid (51%). Walnuts, hazelnuts, and ground flaxseed are also healthy sources of linolenic acid.

Diet Principle #4: Unlimited vegetables, some fruits

Vegetables are easy: Follow the rule of eat vegetables, vegetables, and more vegetables.

Vegetables should serve as your primary source of fiber, phytonutrients (including flavonoids, polyphenols, and carotenoids, the brightly colored substances that confer anti-cancer and heart disease-protecting effects), vitamins, and minerals, but make only a minor contribution to (“net”) carbohydrates and calorie load. Vegetables are the closest we come to a perfect food group.

Vegetables are also a substantial source of potassium and exert an alkalinizing (acid-neutralizing) effect, benefits that are principally important for bone health, but may also provide protection from cancer and heart disease (Lanham-New 2008).

Focus on vegetables over and above all other food sources. Take advantage of the vast variety and versatility of vegetables as the foundation of your nutrition program: eggplant; peppers; alliums like onions, garlic, scallions, shallots; cucumbers; zucchini; leafy plants like red leaf, Boston, Romaine lettuces, cabbage, kale, and spinach; sprouts; roots like radishes and carrots; celery; mushrooms like shiitake and portabella; herbs like basil, oregano, mints, coriander.

Nearly all plant-based food sources are beneficial. Among the rare exceptions are modern cultivated starchy legumes such as white and red potatoes, starchy beans, and processed rices (white and brown); while potatoes and rice have some healthy components (e.g., vitamin C and potassium), these vegetables release blood sugar similar to table sugar. These vegetables should therefore be minimized, though not necessarily eliminated (since they generally do not yield the same addictive potential as wheat.) “Vegetables” like French fries and fried rice should virtually never be consumed.

Vegetables are best eaten fresh, when they are most nutrient dense. Frozen vegetables are a good second choice if fresh is unavailable. Canned vegetables (and canned food in general) should be avoided, not just because of reduced nutrient density, but also because of bisphenol A released from the lining, a substance associated with 40% increase in heart disease when ingested habitually (Lang 2008).

Phytonutrients from vegetables, including flavonoids, polyphenols, and carotenoids, such as quercetin, luteolin, catechins, anthocyanidins, and literally thousands of others (more than 4000 at last count) are widely believed to be the factors responsible for the marked reduction in cancer, high blood pressure, and heart disease in populations that include greater quantities of vegetables and fruits in their diet. The means by which these benefits are accomplished is an area of active research, with findings pointing towards anti-oxidant effects (e.g., peroxynitrite

scavenging); endothelial health through enhanced nitric oxide synthesis; improved insulin responses; anti-inflammatory effects, including reduced expression of adhesion molecules, abnormal growth factors, and thromboxane; blood-thinning effects, including reduced activation of clot-forming platelets; decreased LDL cholesterol and increased HDL cholesterol; reduced blood pressure (Mulvihill 2010; Willcox 2009).

Vegetables should be eaten first and in unlimited quantities. Seconds, thirds - as long as it's healthy vegetables, eat them in unrestricted quantities and fill up on them.

Fruits, like vegetables, are rich in phytonutrients and therefore share in providing many of the same beneficial effects. However, fruits are far richer in sugar. Some, like bananas, have as much sugar as processed foods like cookies, candy, or breakfast cereals. Despite the benefits of fruits, eating too much (which happens quite often as people shift from less processed foods to whole foods) can still trigger unhealthy patterns, like higher blood sugar, excessive insulin spikes, and inflammation.

It is therefore advised fruit be limited to no more than two servings per day, with a serving fitting flatly in the palm of your hand. Another way to regulate your sugar exposure in fruit and other foods is to add up the “net” carbohydrate exposure of your food choice: net carbohydrates = total carbohydrates – fiber; try to go no higher than 15 grams net carbohydrates per meal or per 6-hour digestive window. (Exceed this and blood sugar, insulin, and small LDL particles are triggered, small LDL in particular triggered for 7 days or longer). A carb-counter handbook or smartphone apps (e.g., Food Facts for iPhone) are great tools to carry around as a resource.

Favor berries of all varieties (blueberries, raspberries, strawberries, cranberries, blackberries), citrus, melons, apples, peaches, pears, and kiwis. Because of high sugar load (>20 grams per 4 oz. serving), we should minimize bananas, grapes, mango, and any dried fruit (raisins, dried apricots, figs).

Diet Principle #5: Unlimited raw nuts and seeds

Nuts can be consumed in unlimited quantities. Some of the healthiest include:

- Almonds
- Walnuts
- Pecans
- Pistachios
- Filberts
- Brazil nuts
- Hazelnuts

Like vegetables, nuts are rich in vitamins and minerals (especially magnesium), fibers, healthy oils (mostly monounsaturates), and are wonderfully filling. People who eat nuts have been

consistently shown to experience fewer heart attacks (as much as 50% reduction), have lower LDL cholesterol and blood pressure, and reduced incidence of diabetes (Fraser 1992; Jenkins 2002). A quarter-cup or more of nuts per day can reduce LDL cholesterol 20 mg/dl or more (Kendall 2010).

Nuts contain polyunsaturated fats, which makes them less than perfect. But nuts are, on balance, healthy because of their overall composition. Including abundant nuts in the diet should not overload your diet with polyunsaturates, provided you are not adding processed polyunsaturated oils like corn, sunflower, safflower, grapeseed, or other vegetable oils.

Nuts are best eaten raw and not roasted in hydrogenated cottonseed or soybean oils, as roasted nuts usually are. Raw nuts are often sold bulk or in bags; they do not need to be shelled (unless you prefer them that way). They are sometimes labeled “raw,” or simply lack any further description such as “roasted.”

Dry roasted nuts are fine also, but be sure that your nuts are dry roasted with no other processing introduced, such as roasting in hydrogenated cottonseed or soybean oil, wheat flour, cornstarch, maltodextrin, salt, sugars, etc., all common with roasted nuts. Processed nuts, often known as party mixes, honey roasted, mixed nuts, beer nuts, etc. should be avoided; these contain unhealthy ingredients and do not provide the benefits of raw nuts. In fact, these processed versions of nuts are the reason why nuts acquired a bad reputation in past: They increase LDL cholesterol, reduce HDL, increase resistance to insulin, and make us fat. Avoid them.

Raw cashews, though not as fiber-rich and a bit more carbohydrate-rich, are still a great snack choice. Mix raw cashews with some of the fiber-coated nuts listed above.

Peanuts are not nuts, but legumes, and cannot be eaten raw; dry roasted is preferable, provided they are truly just dry roasted with no other added ingredients. Check the list of ingredients; it should read “dry roasted peanuts” - period. No cornstarch, sucrose, maltodextrin, etc.

In the world of seeds, healthy choices include:

- Pumpkin seeds (pepitas)
- Sunflower seeds
- Pine nuts
- Sesame seeds
- Chia seeds
- Flaxseed

Like nuts, seeds are best consumed raw or at least not roasted in unhealthy oils. Pumpkin seeds in particular provide a substantial quantity of magnesium of approximately 160 mg per quarter cup; sunflower seeds likewise provide plenty of magnesium, approximately 120 mg per quarter cup.

Both raw nuts and seeds can be consumed in unlimited quantities.

Diet Principle #6: Foods Should Be Unprocessed

Unprocessed foods are *whole* foods:

Whole, unprocessed foods are not dried (like oatmeal and instant mashed potatoes), not powdered (gluten-free flours and products, instant soups, sauces thickened with cornstarch or flour), and not a “mix” (pancake and cake mixes, macaroni and cheese). They do not require reconstitution - adding water and heating, or some similar process. Whole, unprocessed foods are not modified by hydrogenation, desiccation, are not sweetened and don't contain artificial flavorings or colorings.

Unprocessed foods tend to look like they occur naturally. You may have to remove an outer shell (nuts) or skin (oranges, avocados) but they remain essentially intact. Of course, you may need to cut whole foods into smaller pieces, but the basic structure remains the same. Unprocessed foods are generally fresh.

When food is left whole, it retains more of its original naturally occurring nutrients. It is also digested more slowly, causing a natural slow, gradual rise in blood sugar or none at all. Diabetics who switch to a diet of unprocessed foods commonly witness dramatic drops in blood sugar, often sufficient to reduce their requirements for medication or insulin.

Unprocessed foods are colorful foods. Look at the wonderfully deep colors of plums, eggplant, oranges, tomatoes, and kale. Colorful foods are rich in flavonoids, naturally-occurring substances that lower LDL cholesterol and raise HDL, lower blood pressure, block abnormal clotting by platelets, block the adhesion of inflammatory blood cells to plaque, and reduce risk of heart attack.

Whole unprocessed foods cultivate healthy bowel flora, improved even further by eliminating the foods (sugars, grains, seed oils) that distort the species, number, and location of these essential microorganisms.

Processing destroys good food!

Processing is not simply heating or drying. Processing frequently involves the addition of undesirable additives to improve taste, consistency, or extend shelf-life - hydrogenated oils, food colorings, unhealthy sweeteners like high-fructose corn syrup and sugar, thickeners like cornstarch, and synthetics. They make food look prettier, last longer, and maintain texture and consistency during storage, but do health little or no good. High-fructose corn syrup is a sweetener that kids love and is found in everything from fruit drinks to spaghetti sauce that increases triglycerides and contributes to undesirable lipoprotein patterns like small LDL and VLDL, and even increases the likelihood of diabetes.

Processed foods are a major culprit behind the national epidemic of metabolic syndrome. Processed foods are all around us. Shelf after shelf, aisle after aisle of eye-catching, colorful, enticing processed foods. Not one or two kinds of cookies or cupcakes to choose from, but hundreds. The temptations are tremendous.

Many people struggle when forced to part with the glitz and glamour of processed foods. Marketing people who create these ads are very clever. They know that advertising can make you feel good about eating certain foods. They want you to feel proud to feed your family a “healthy” dish, sexy if you drink a certain drink (think Coca Cola), successful if you can whip up a dinner of convenience foods in five minutes.

You'll get *none* of this reinforcement when you restrict yourself to the world of unprocessed foods. Unprocessed foods are not glamorous. They don't have fancy labels or packaging. You might even have to buy them “bulk.” Yet it's the unprocessed, unrefined foods that are powerful tools for health. Whole, unprocessed foods are more filling, take longer to digest, and keep you satisfied longer.



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