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Burn Off Holiday Weight


Dr. David G. Williams

Once everyone has made it through the holidays, it seems like there's always a big push to start an exercise program to work off any of those extra pounds. If you're headed down that path, you'll be far more successful if you use what's called an interval exercise program rather than strictly aerobic exercises.

Aerobic exercise has its place, and I've talked about the benefits gained from something as simple as walking three times a week. But for maximum weight loss, and particularly fat loss, you'll do best incorporating a program whereby you use interval training instead of a constant, lower-intensity exercise like walking, jogging, or biking.

Studies have found, for example, that an interval exercise program—where individuals exercised for 2 minutes at 97 percent of their maximum heart rate (MHR) followed by a recovery period of 3 minutes of low intensity exercise—burned the same amount of calories as a program using aerobic exercise to stay at 70 percent of MHR for the entire time. The difference in fat-burning, however, was dramatically different with the two forms of exercise.

Most studies have found that the calories burned using the different forms of exercise were about the same, or even less among the interval exercisers. The surprising finding, however, was that interval exercises increased the presence of fat-burning enzymes, fat loss was up to 9 times higher, and the fat-burning effects continued for 24 hours. (*Metabolism 94;43:556–571*)

It's really easy to put this research to practical use in your own life.

If your exercise routine consists of walking, jogging, or biking at a steady pace each day, all you need to do is include short intervals of higher-intensity walking, jogging, or biking in your routine. For example, instead of walking at the same pace for 30 minutes, try walking at your normal pace for about 5 or 6 minutes, then speed up your pace to a full-speed walk for 2½ to 3 minutes, then go back to the normal pace. (Whatever exercise you're doing, the higher-intensity phase should be for about half the time as the normal, slower, "resting" phase.) You'll be surprised at the difference in fat loss that can occur.

For those individuals who choose walking as their form of exercise, the use of walking poles can help you increase your heart rate to the desired level. As you push off with the poles, you're involving upper body muscles as well as those of the lower body. As I wrote in the April issue of *Alternatives*, people who use walking poles can increase their heart rate without any perceived increase in exertion.

In addition to improving fat loss, interval exercise is also better for conditioning the heart and improving overall circulation. Lower-intensity, long-duration aerobic exercises like walking and jogging are generally thought to be the best exercise for protecting or rehabilitating the heart and circulation system. A more effective program, however, is interval training and the anaerobic benefits that accompany it.

In This Issue

You will observe with concern how long a useful truth may be known, and exist, before it is generally received and practiced on. — Benjamin Franklin

"Aerobic" and "anaerobic" refer to the presence and absence of oxygen, respectively. Our cells typically get energy by utilizing oxygen to burn metabolic fuel. During rest or low-intensity exercise, plenty of oxygen and fuel are available for muscle cells. At these times you are in an aerobic state.

During interval training or high-intensity exercise (like weight-lifting) your muscles require more oxygen than is available, and the muscle cells must rely on reactions that don't require oxygen to continue muscle contractions. At this time you are in an anaerobic state.

With interval training you transition back and forth between aerobic and anaerobic states. The research above shows that more fat is used as fuel when you do so.

Boost Your Weight Loss Effort

Another benefit of interval training (or other anaerobic exercises like weight-lifting) is that it raises your overall metabolic rate.

For illustration purposes, your metabolic rate can be compared to your heating thermostat in your home. The higher the temperature is set, the more fuel you burn. Interval training helps reset your body's thermostat higher so it burns more fuel, even when you're at rest. In other words, your body continues to burn fat even after you stop the exercise. That's why in the above studies both groups may have burned the same number of calories during the actual exercise, but those using the interval training continued to burn and lose more fat even after finishing their exercise session.

Keep in mind also that your thyroid gland acts as your body's thermostat. If you have an underactive thyroid, your thermostat will naturally be set lower and it will always be difficult to lose or maintain your proper weight. Exercise will set your "thermostat" higher, but it won't stay at the higher setting if your thyroid is not working properly. For dozens of reasons I've mentioned many times in the past, the majority of individuals in our society seem to have an underactive thyroid. Fortunately, the problem can be corrected simply by giving the thyroid the additional iodine and other nutrients it needs to function properly. I highly recommend that you do the self-check for your thyroid before starting any exercise or fat-loss program. [*Editor's note: The thyroid self-test, and suggestions for keeping your thyroid in top condition, are available in the Subscriber Center of the* Alternatives *Web site,* www.drdavidwilliams.com]

It may seem strange, but just the fact that you read this newsletter may make it more likely that you're deficient in iodine.

For most people, salt is their primary source of iodine. Junk food and fast foods are loaded with salt, and, as an *Alternatives* reader, you're probably avoiding most of those. In fact, based on most recommendations, you've probably cut back on your salt consumption altogether. And, if you exercise regularly, there's a good chance you lose iodine regularly through sweating. An iodine deficiency and the resulting hypothyroid condition is probably more common nowadays in healthier individuals who take better care of themselves.

Add one or two drops a day of the IoSOL iodine supplement, and turn your current exercise program into an interval training program. The results can truly be amazing…you won't be disappointed.

More Goodness From D

I don't want to sound like a broken record, but if you're not taking additional vitamin D, please start to do so. There's no downside, and taking vitamin D is a good habit to start in the New Year.

Vitamin D deficiencies play a vital role in so many different diseases that it would take a book just to list them all. In fact, a new study directly links lower vitamin D levels to an increased risk of early death from *any* cause.

Researchers at the University of Colorado's Department of Emergency Medicine looked at levels of vitamin D among a group of 3,408 men and women age 65 years and older over an average of 7.3 years. Their findings are amazing.

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Compared to those who had optimal vitamin D levels, those with low vitamin D levels were three times more likely to die from heart disease and 2.5 times more likely to die from any cause. (*J Am Geriatr Soc 09;57:1595–1603*)

One of the greatest dangers to the elderly is falls. Fractures in the hip and other bones that result from a fall are often the start of the downward spiral that can lead to the loss of independence, debilitation, and even an early demise. One study has just shown that individuals 65 years of age and older can reduce their risk of falling by almost 20 percent simply by supplementing with 700 to 1,000 IU of vitamin D daily (an amount far less than what I recommend). As I've mentioned before, very often it is the hip that fractures and causes a fall, and not the fall itself that fractures the hip. Vitamin D is essential to maintain strong bone structure. (*BMJ 09;339:b3692*)

Keep Loading Up on D

Vitamin D is what my dad would call "cheap insurance." Ideally, our bodies would be producing adequate amounts of the vitamin through exposure to sunlight. When sunlight hits our skin, cholesterol is converted into vitamin D. Unfortunately, that's not happening as much as it should anymore.

Over the last several decades the public has been led to believe that both exposure to sunlight and high levels of cholesterol are harmful. We've been told to avoid sunlight and slather on sunscreen every day before any sun exposure. We've been brainwashed into thinking that cholesterol has no benefits and is responsible for the number-one killer in this country, heart disease. Cholesterol-lowering medications have become one of the most-prescribed classes of drugs. And we're constantly warned against eating natural, wholesome foods like eggs and butter because they're high in cholesterol. While many people are now aware that the most popular class of cholesterol-lowering drugs, the statins, depletes heart-essential coenzyme Q10, they may not be aware that a vitamin D deficiency is another of the common side effects of these drugs. It's the drop in vitamin D levels that increases one's susceptibility to developing the muscle pain and dysfunction associated with statin use. (*Transl Res 09;153:11–16*)

The drop in vitamin D levels only worsens as we get older. We tend to become more "house-bound" and avoid sun exposure. Plus, our skin gets thinner and less efficient at converting cholesterol to vitamin D.

When you step back and look at what's happening in our society, it's really not that difficult to see why vitamin D–related heart disease has become the number-one killer in this country.

A reader recently wrote in to ask why I'd increased my recommendation for vitamin D so drastically. The answer is obvious: Evidence continues to mount that supplementing your diet with vitamin D is one of the most important things you can do for your health.

I recommend 2,000 to 5,000 IU a day of the D3 form of the vitamin, and increase that amount to 1,000 IU per day per pound of body weight in the event you fall ill.

As an interesting aside, I read recently that all of the available vitamin D3 is derived from the lanolin from sheep's wool. Some trials have successfully stimulated mushrooms to produce high levels of D3 by bathing them in ultraviolet light, but so far no-one has been able to get that process going on a commercially viable scale.

This means that, for now, vitamin D3 is not vegan. For those individuals who have converted to a wholly vegan diet, they will need to get their vitamin D from the D2 form, which is really a "provitamin"—meaning that it gets converted into the real vitamin in your body. Either that, or move south, where you can get outdoors and make the real thing from sunshine year-round.

A Double Dose of Diet Trouble

Quite a few readers have let me know that they're confused by all the conflicting information regarding fats and oils. One reader, Martha P. of Amarillo, TX, asked specifically whether it's healthy to use olive oil for cooking and frying.

The use of olive oil in a dip or dressing certainly isn't a problem. Any possible problems that arise stem from the chemical changes that take place when the oil is heated. That's when harmful trans fatty acids are formed.

Most pan-frying or deep-frying takes place somewhere between 300 and 375 degrees F. These temperatures, however, are typically below what's called the "smoke point" of most oils like corn, canola, safflower, and sunflower oil. (The "smoke point" of an oil is the temperature at which it begins to break down and create trans fatty acids and other harmful compounds.)

On the next page is a list of typical smoke points for some common oils and fats. Keep in mind these temperatures can vary greatly depending on the degree and type of processing the oil undergoes and the quality of the oil in the beginning. For example, the highest quality extra-virgin olive oil might have a smoke point as low as 320 degrees F, whereas that of a more refined "light" olive oil might have one of around 470 degrees F.

As a general rule, saturated fats such as butter and lard are pretty stable, as are monounsaturated fats like olive

Fat	Smoke Point °F	Smoke Point °C
Extra-virgin olive oil	320°F	160°C
Hemp seed oil	330°F	165°C
Butter	350°F	177°C
Coconut oil	350°F	177°C
Vegetable shortening	360°F	182°C
Lard	370°F	188°C
Macadamia nut oil	390°F	199°C
Refined canola oil	400°F	204°C
Low-acidity extra-virgin olive oil	405°F	207°C
Sesame oil	410°F	210°C
Cottonseed oil	420°F	216°C
Grapeseed oil	420°F	216°C
Almond oil	420°F	216°C
Hazelnut oil	430°F	221°C
Peanut oil	440°F	227°C
Sunflower oil	440°F	227°C
Soybean oil	495°F	257°C
Safflower oil	510°F	266°C
Avocado oil	520°F	271°C

(data from *www.cookingforengineers.com*)

[*Editor's note: For a more comprehensive list of cooking oils and their smoke points, visit the Subscriber Center of the* Alternatives *Web site,* www.drdavidwilliams.com.]

oil. Polyunsaturated fats, however, are the least stable and unpredictable. I'm speaking strictly from the standpoint of the effect these have on your health when they are consumed in their natural state. When you refine an oil, its whole health profile changes.

Keep in mind, however, that a higher smoke point doesn't necessarily mean an oil or fat is any better or healthier. Motor oil has a high smoke point, but I wouldn't recommend cooking with it. In fact, as it is with most foods, generally it seems the higher the quality of the oil, the more readily it becomes rancid and tends to break down. As a general rule, foods full of "life energy" tend to have shorter shelf lives.

Based on the research I've seen, brief pan-frying is fine when you use olive oil, butter, coconut oil, or lard. (As I've stated before, I love coconut oil and eat a tablespoon or two every day, but the taste it imparts when used to cook food becomes a little too much for my preference.) I try to steer clear of the polyunsaturated oils (the vegetable oils) and deep-frying (except for those very rare occasions my wife, Wendy, makes her fabulous fried shrimp…using peanut oil, which I think is one of the safer oils for deep frying). I wouldn't recommend using the other nut oils for high-heat cooking, but rather to add flavor to cooked dishes, salads, dips, et cetera.

If there's one thing to take from this discussion, it should be that there's no one oil that's perfect for every use. I'd recommend keeping one oil with a higher smoke point on hand for cooking, and let taste and health benefits guide you to an oil for making dressings or other non-heat uses around the kitchen.

It's worth noting, too, that shorter cooking times and lower temperatures result in fewer toxic byproducts and less rancidity. Also, once oil has been heated, its smoke point drops—and with each use the amount of accumulated trans fatty acids, free radicals, and other byproducts increases. This is one of the reasons frying oils from restaurants and fried-food outlets are a problem.

Speaking of fried-food outlets, they seem to have the worst combinations available. When you add high-fructose corn syrup (HFCS) to trans fats, you get a double shot of trouble.

Fats and Sugars Assault Your Liver

Recent animal studies have demonstrated combining trans fatty acids (in the form of partially hydrogenated vegetable oil) and HFCS in the diet causes severe fatty liver disease (hepatic steatosis) along with obesity, glucose intolerance, elevated liver enzymes, and inflammation. (*Am J Physiol Gastrointest Liver Physiol 08;295:G987–995*) (*Am J Physiol 09;297:G378–384*)

I haven't seen the research to prove it, but I suspect that a high intake of any form of refined sugar (including the carbohydrates from alcohol) can lead to increased liver enzymes. Sugars are converted to fat, which increases liver enzymes. (Elevated liver enzymes typically are the result of inflammation or some other form of damage to liver cells. Clinicians use enzyme levels as a marker of liver health; the higher the enzyme level, the more extensive the damage.)

The diet of most people in this country today seems to be the perfect combination for a continuing epidemic of liver disease. A couple of years or so ago I predicted one of the new, upcoming diseases of our time would be liver disease. Unfortunately, I was right. Non-alcohol related fatty liver disease is now present in about 60 to 75 percent of all obese individuals and in as much as 20 percent of those who are not obese.

Obviously our diets need to change in order to prevent liver disease in the first place, but I did find it interesting that the use of probiotics has been found to be

an effective method of reducing many of the markers of liver disease. It has even been recommended as part of the treatment program. The importance of the regular use of probiotics can't be overstated, in my opinion. Intestinal bacteria truly are the body's "second immune system." A proper balance of bacterial flora in the gut can help reduce inflammation and damage to the liver and fatty liver disease, and help prevent insulin resistance. (*Hepatology 03;37:343–350*)

(I wish I could predict situations in my personal life just as well as I can health matters. But, I guess that's God's way of keeping life interesting…to say the least.)

It seems like weekly I encounter someone with elevated liver enzymes, and they are asking what they can do. Based on the above information, eliminating trans fatty acids and HFCS is one of my first recommendations, but there are other factors that may need to be addressed as well. If you ever have this problem, most doctors don't offer much advice beyond a wait-and-see approach. Instead of waiting for the other shoe to drop, I'd suggest doing a little detective work on your own and seeing if you can eliminate as many causative factors as possible.

Poisoning Your Liver From the Inside Out

Excess alcohol consumption is a primary cause of liver inflammation, but even people who don't drink may have a genetic predisposition to liver inflammation. Doctors will check for most of these genetic markers with blood tests, and supplementing the diet with folic acid and increasing glutathione levels (using N-acetylcysteine) will often help minimize any problems that might arise.

The variety of toxins we're exposed to nowadays is astounding. Particular occupations are associated with increased exposure, including farming, pest control, cosmetology, and dentistry. And keep in mind that while you may have the same exposure as others in these situations, your reaction may be totally different.

One area that's consistently overlooked is the use of medications that stress the liver. The liver toxicity of Tylenol (and other acetaminophen products) has become more publicized lately, but products that contain acetaminophen as one of their ingredients are often overlooked. (For a suggestion on how to protect your liver, see "The Story of U," beginning on page 53.)

Birth-control pills can increase liver enzymes, as can the breast cancer drug tamoxifen. The over-the-counter antifungal drug Lamisil also has that effect. And, if you take any of the antipsychotic medications such as olanzapine (Zyprexa) or risperidone (Risperdal) that have become so popular for treating depression, ADHD, and other behavioral problems, be aware that they, too, can increase liver enzymes.

If you develop liver problems, including fatigue or jaundice, check the possible side effects of any medications you're taking.

One of the liver's primary jobs is to break down and "detoxify" chemicals, hormones, and whatever else gets into your body. An increase in liver enzymes is an indication that it is being overworked or overloaded. When given a break and the right nutritional raw materials, your liver has the amazing ability to regenerate itself.

The Story of U

Genetic testing seems to be pretty high in the public's awareness nowadays. Various companies offer to test you for genetic susceptibility to disease, while consumer watchdog groups worry that this same genetic information can be used to raise rates for health or life insurance, or even to deny someone employment.

The truth is far from that simple, however. While in certain cases a single gene can be responsible for a given disease, more often it's a combination of genes that creates a health issue. To complicate matters further, individual genes can be "turned on" or "turned off" by environmental factors.

Genes are short strings of DNA that control the formation of certain amino acids and proteins—a process known as "expression." This on-or-off scenario is necessary because you have the same gene sequences in all your tissues, but your heart, for example, requires different proteins than, say, your liver. Your heart doesn't need the liver-specific proteins, so in heart muscle tissue the genes that regulate "liver" are switched off.

Now that the genomes of several species have been completely described, and genetic testing has become commonplace, researchers are using that information to unlock some of the mysteries of health, in two primary ways.

First, the knowledge allows a stronger connection between animal studies and results in humans. Since the beginning of animal experiments, there's always been at least some measure of doubt over whether the results in animals could translate into benefits for humans. Animal studies are a link in the chain, but confirmation in human subjects always seemed necessary. Knowing that similar genetic mechanisms are at work in both animals and humans eases some concerns about translating the results of animal tests into therapies for humans.

(The Story of U *continued on page 55*)

NEWS TO USE FROM AROUND THE WORLD

Hot Tip for Heart Protection

CINCINNATI, OHIO—Researchers at the University of Cincinnati appear to have found a simple technique that could save your life during a heart attack.

Keith Jones, PhD, discovered that applying capsaicin cream to the skin following a heart attack would reduce cardiac cell death by 85 percent. (*Circulation 09;120:S1–9*)

Following a heart attack, the primary goal of physicians is to reopen the blocked blood vessel to the heart, either via surgical intervention or by administering a "clot-busting" drug such as tPa. During the time it takes to do this, heart tissue is dying from a lack of oxygen. Jones found that when he applied capsaicin cream (the same topical cream used for joint and muscle pain) to the skin following heart attacks induced in animals, it triggered events that protected the heart tissue.

Our skin is the largest body organ. Among its other functions, it acts as a giant sensor to protect the body from damage. Chemical changes in the skin's sensory nerves, brought on by the capsaicin cream, cause these nerves to send signals throughout the entire central nervous system. It's as if an alarm has gone off. These signals elicit numerous protective survival mechanisms, some of which we know and some we don't, that instantly start protecting the heart and other organs from damage.

The observation of an 85 percent reduction in cardiac cell death following heart attack makes this the most powerful cardioprotective therapy ever recorded.

The beauty of capsaicin cream is that it has no serious side effects, and it's readily available and relatively inexpensive. It's noninvasive, and since it works remotely from the heart, as a topical agent, it wouldn't require any special skill to apply. Family, friends, ambulance attendants, or any bystander could use it to treat a heart attack victim until they could reach the emergency room.

This same technique would also appear to be useful in preventing brain damage following a stroke, someone going into shock, or individuals waiting for an organ transplant.

To date, the only research that has been done was on mice, but human studies will be getting underway very quickly—and there's no reason to think it won't work the same on humans. Also, the researchers will be trying to determine the best locations to apply the cream for maximum results. Until they have additional information, they're not recommending that individuals use the cream following heart attack, stroke, et cetera.

Personally, I wouldn't hesitate to use capsaicin cream in the event of a heart attack or stroke. Since it provides a form of "remote" protection, I wouldn't use it on the chest or directly over the organ involved, but rather on the hands, feet, or arms. The changes it elicits are systemic in nature.

Capsaicin cream is sold under numerous names over the counter. It's already an effective way to get temporary relief from things such as joint and arthritis pain, psoriasis, itching, and diabetic neuropathy. Now it's worth keeping a couple of extra tubes around for heart attack and stroke treatment.

I'll keep you informed of any additional research that becomes available on this topic.

Toddler Rescue Tip

Here's a little tip that you might find useful one day. Kids have a knack for keeping life very interesting. Thousands of kids each year end up in the emergency room because some object mysteriously gets lodged in one of their nostrils. Extracting the object can be a painful, traumatic, and bloody experience. If you're ever faced with such a situation, try using this simple procedure first.

Pinch shut the *clear* nostril. Then place your mouth over the child's open mouth and blow forcefully. Very often the foreign object will simply pop out. You may get "sprayed" a little, but it can also make you a hero—and possibly save you a trip to the emergency room.

Learn Something New Every Day

OXFORD, ENGLAND—The common perception has always been that you don't grow new brain cells. That isn't the case, however. The technology which allows us to perform brain scans has shown that we may be able to actually increase brain matter through participating in commonplace activities.

Researchers at the University of Oxford studied brain scans of 24 women and men new to juggling and found that after six weeks of juggling training they had actually grown additional white matter in their brains. The growth occurred in the parietal lobe of the brain, which is involved in connecting our movements in relation to what we see. (*Nat Neurosci 09;12:1370–1371*)

It was nice to learn that everyone's brain grew about the same, and the growth didn't vary if one was a better or worse juggler. It was also interesting that even after a month of not juggling the new brain tissue still remained.

This tells us that it's never too late to learn or undertake new mental challenges. Our brains thrive and grow from the experience. In fact, in another experiment using juggling as the new activity, researchers found that older participants grew just as much new brain tissue as younger participants, even though the

NEWS TO USE *(CONTINUED)*

older folks in general didn't become as proficient at juggling. (*J Neurosci 08;28:7031–7035*)

On a similar note, American scientists studied brain scans of 22 individuals, all of whom extensively practiced meditation, and compared them to a control group of the same ages.

Those in the meditation group had been meditating anywhere from five to 46 years, and normally did so on a daily basis. The group utilized a variety of different meditation styles, including vipassana, zazen, and samatha.

Magnetic resonance imaging (MRI) indicated increased volume in several parts of the brain, including those that are associated with regulating emotions and areas related to sensory, auditory, visual, and internal perception. These are all areas that are thought to enable an individual to develop positive emotions, maintain emotional stability, and engage in thoughtful behavior. (*Neuroimage 09;45:672–678*)

As we age, it's very important that we keep our minds active. These two examples illustrate just how varied activities can be and yet still result in the actual growth of new nervous tissue in the brain. Try to develop or learn a new skill—it's never too late to begin.

And don't forget the nutritional aspect of developing better brain function. Research continues to support the importance of the B vitamins in maintaining your memory and cognition. You can refer back to the February and March 2009 issues of *Alternatives* in which I wrote about the benefits of niacinamide and vitamin B12 for the brain. For your convenience, I've placed those two issues in the Subscriber Center of the *Alternatives* Web site, *www.drdavidwilliams.com*.

Folic acid and vitamin B6 are also essential for optimal brain function, and are commonly deficient in the elderly. Each of these has been used successfully to treat depression, memory impairment, confusion, and even paranoia. A good multi-vitamin/mineral supplement with a full complement of the B-vitamin family is essential for maintaining overall health, including that of your brain.

I firmly believe the entire process can be improved even more with the addition of RNA and fish oil components (in the form of sardines) and niacin to your diet. These provide much of the raw material for nerve growth and increase the circulation that delivers them.

Before you start your next juggling practice session, take 100 mg of niacin for the niacin "flush," and when you're finished have a tin of sardines as a snack.

(The Story of U *continued from page 53*)

Second, the awareness of the biological mechanism at work gives skeptical doctors some justification for using natural therapies.

The Mice That Lived

Poisoning is one of the leading causes of liver damage. Whether the injury is acute, from eating the wrong mushroom, or chronic, from consuming too much alcohol, liver failure can lead quickly to death. In our society, a prominent liver toxin is the pain reliever acetaminophen (sold as Tylenol). Taking as little as two or three grams of acetaminophen can be enough to injure your liver if the organ is already stressed from exposure to alcohol or other toxins.

The standard treatment for acetaminophen poisoning is the supplement N-acetylcysteine (NAC), which I've written about before. For some reason, however, physicians have never gotten in the habit of recommending NAC to their patients who need liver protection or who have already suffered some liver damage. One common complaint is that, at the doses needed to rescue a severely damaged liver, NAC can cause an unpleasant garlicky odor, plus nausea and other unwanted effects. I suppose it never occurred to the "experts" that a lower daily dose wouldn't create those effects. [*Editor's note: The full story on the benefits of NAC can be found in the Subscriber Center of the* Alternatives *Web site*, www.drdavidwilliams.com.]

Instead, researchers have spent their time looking for others sources of long-term liver protection. It now appears that they've found one.

Researchers at Stanford University suspected that genetic differences make some individuals more susceptible than others to liver damage from acetaminophen. They looked at 58 strains of mice, then selected 15 that appeared to have high susceptibility to acetaminophen and one strain that appeared to be resistant. In the susceptible strains, the equivalent of a 21-gram dose in a human produced signs of liver damage within six hours.

(If 21 grams seems like a lot of acetaminophen, remember that this was a one-time dose—and suicide by acetaminophen is not unheard of. Liver damage is cumulative, so someone who's been taking a low dose for a long time could experience sudden symptoms after taking, for example, a couple extra grams to deal with a hangover. The most obvious symptom of liver damage is nausea and vomiting that lasts for 12 to 24 hours after taking the drug, followed by a day or so in which the individual feels completely better. The next stage is

most quickly diagnosed by blood tests for levels of liver enzymes, but can include extreme fatigue and jaundice.)

In the three strains that showed the highest sensitivity, within 48 hours 60 percent of those mice were "moribund." (I think that means "dead.") Mice in the resistant strain showed little liver damage, and all survived the high dose of acetaminophen. (*Genome Res 09 November 18; E-pub ahead of print. PMID: 19923254*)

The researchers then looked at genetic differences between the susceptible mice and the resistant ones, and found one difference that seemed to offer the most protection: a gene called *Bhmt2* that is "turned on" by S-methyl methionine (SMM). This amino acid is found only in plants, especially wheat and cabbage. As it turns out, SMM is also available in supplement form, marketed as "vitamin U."

The fact that humans have a similar gene supports the idea that SMM would provide liver protection for humans as well. Predictably, the lead researcher in the study, Dr. Gary Peltz, has applied for a patent on the use of SMM to reduce acetaminophen-related liver damage. He's also launched a drug discovery company to investigate the therapeutic use of SMM for liver health. If you're taking acetaminophen regularly, though, I wouldn't wait for Dr. Peltz to develop his product.

The More You Know, the Better U Looks

Vitamin U isn't really a vitamin, of course. It was first identified in the 1950s by Dr. Garnett Cheney at the University of California. He was looking into the powers of a traditional therapy: cabbage juice to heal digestive ulcers. In one trial, 100 patients diagnosed with peptic ulcers drank four glasses a day of fresh cabbage juice. Within a week, 81 of the patients showed no signs of their ulcer. In a later trial, 52 of 55 patients saw relief from all symptoms of their ulcer within five days, and on average were completely healed in less than 12 days. (*Calif Med 52;77:248–252*)

Stories vary as to whether Dr. Cheney intended the "U" to stand for "ulcer" or "unknown." Regardless, he believed that ulcers were due to a nutritional deficiency, and that he had discovered the necessary compound, which he named "cabigin." Later investigation of the chemical structure showed that cabigin was in fact SMM. Since those early studies, nearly 60 years of research continues to confirm that Dr. Cheney's "vitamin U" is a powerful healer for digestive ulcers.

(As an aside, Dr. Cheney wasn't being ignorant in his beliefs about "vitamin U." Over the last hundred years of nutritional research, quite a few substances have been believed to be vitamins, but were later shown not to be. The list includes vitamin F [essential fatty acids], vitamin O [carnitine], and vitamin P [bioflavonoids].)

SMM works in the digestive tract by stimulating the production of mucin. This compound is secreted by the stomach lining to protect itself from strong digestive acids. Most often, stomach problems result from a lack of protective mucin, not from the overproduction of acid.

SMM is available in a variety of forms, including homeopathic sprays and Chinese herbal formulas. The spray is called Vitamin U, available from the Brazilian bee products company Uniflora, at *store.uniflora.us* (note there's no *www*). The Chinese formula is known as Fare You, and is available from Blaine Trading, at *www.curingherbs.com* or 360-283-5272.

I understand the concern over buying herbal products from an unknown source, so if you'd rather you can just drink fresh cabbage juice. In his studies Dr. Cheney used only 50 mL of freshly made juice, or about 1½ ounces, four times a day. It's fine to make six to eight ounces of juice at a time and store what you don't drink right away in the refrigerator for the rest of the day.

For the best results, make fresh juice each day. You can experiment to see exactly how much cabbage you'll need to get a day's worth of juice. This is just one more reason to pull your juicer out from the back of the cabinet and begin using it to make fresh juices of all kinds.

Take care,

If you have questions or comments for Dr. Williams, please send them to the mail or e-mail addresses listed to the right. Of course, practical and ethical constraints prevent him from answering personal medical questions by mail or e-mail, but he'll answer as many as he can in the Mailbox section of *Alternatives*. For our part, we'll do our best to direct you to his issues, reports, and products related to the subject of your interest.

Here's how you can reach us:

- For Customer Service matters such as address changes, call **800-527-3044** or write to **custsvc@drdavidwilliams.com**.
- To ask a question or make a comment about this month's issue, send an e-mail to **feedback@drdavidwilliams.com**.
- If you are a licensed health professional and would like to learn how to begin reselling MHN supplements to your patients, please e-mail practitionerinquiries@davidwilliamsmail.com.

Visit the *Alternatives* Subscriber Center at drdavidwilliams.com for more in-depth information about this month's topics.