Protection Against Common Environmental Toxins

Chris D. Meletis, ND (with permission from cpmedical.net, access pin: 587556)

This is the eighth part in a series addressing the most common health concerns as we age. Previous parts have discussed cardiovascular health, weight loss, blood sugar, cognitive function, gastrointestinal health and maintaining strong bones and joints. In this installment, I will discuss detoxification and explain why undergoing a detoxification regimen is one of the most important steps we can take to maintain our health as we age.

We can take all the right nutritional steps to enhance our health, engage in stress-reduction techniques and other lifestyle modifications, but if we do not protect our bodies from the near-constant exposure to harmful substances, all our other work to enhance longevity and remain active in our senior years will be for naught.

As Carolyn Pierini, CLS (ASCP), CNC, discussed in the July newsletter, one of the most pervasive environmental toxins we are exposed to daily is acetaldehyde. We are exposed to acetaldehyde through alcohol consumption, cigarette smoke, vehicle and factory exhaust, candida overgrowth, synthetic fragrances, drinking from polyethylene plastic bottles—even campfires. Acetaldehyde is classified as a probable human carcinogen linked to nose and throat irritation and cancer as well as a toxicant of the neurological (neurotoxin), respiratory, endocrine and immune systems. Low dose chronic exposure may still be sufficient to gradually damage proteins, enzymes and other cellular structures in the brain and other organs.1 Exposure to acetaldehyde also has been linked to the development of Parkinson’s disease.2-3 Furthermore, our drinking water often is contaminated with toxic substances such as fluoride and chloramines, including arsenic, exposure to which has been linked to cancers of the bladder, lungs, skin, kidneys, nasal passages, liver and the prostate.4

This article will build upon last month’s article, A Health-Destroying Toxin No One Can Avoid, which focused on the destructive health impact of acetaldehyde. Our focus in this discussion will provide an overview of global toxic burden beyond aldehydes and how investing in a detox program can help alleviate unnecessary obstacles to a heightened level of wellness.

The Invisible Threat

Let’s begin with a review of one of the most ominous sources of toxin burden in the form of polluted air. Epidemiological studies have established a strong link between increased ambient air pollution and increased daily hospital admissions.5-6 Research also has established a strong association between premature death and air pollution.7

Pollution is highly destructive to the cardiovascular system.8 In 2004, the first American Heart Association Scientific Statement on Air Pollution and Cardiovascular Disease concluded that exposure to particulate matter (PM) air pollution contributes to cardiovascular morbidity and mortality.9 Pollution can increase morbidity and mortality from cardiovascular disease through a number of mechanisms, including oxidative stress and systemic inflammation, which can lead to endothelial dysfunction (dysfunction of the inner lining of blood vessels), arterial plaque and thrombosis (blood clots).10 Air pollution also is associated with elevated homocysteine, an amino acid linked to heart disease.11 Furthermore, the negative effects of air pollution can occur just hours after exposure.12-13
Shortening Our Lifespan

Telomeres are the end section of chromosomes that protect the chromosomes from degradation and help maintain chromosomal structural integrity. Because telomere length shortens as we age, they are considered to be our internal biological clock. Telomere shortening of blood leukocytes (white blood cells) is linked to increased morbidity and death from cardiovascular disease and cancer.14

Exposure to pollutants from vehicle exhaust has been linked to production of Reactive Oxygen Species (ROS) and activation of inflammatory pathways, which are associated with accelerated telomere shortening.15-17 This association led researchers to conduct what they believe to be the first study of the effect traffic pollution has on telomeres. They measured leukocyte telomere length in 77 traffic officers exposed to high levels of traffic pollutants and 57 office workers. Adjusted mean leukocyte telomere length was shorter in the traffic officers than in the officer workers. The telomere length decreased in association with age in both the traffic officers and office workers, but traffic officers had shorter telomeres within each age category. Among traffic officers, mean telomere length was shorter in individuals working in high compared to low traffic intensity. In the entire study population, telomere length decreased with increasing levels of exposure to benzene and toluene.14

The study authors concluded, “Our results indicate that leukocyte telomere length is shortened in subjects exposed to traffic pollution, suggesting evidence of early biological aging and disease risk.”

The Liver: Our Defense Against Toxins

As discussed in last month’s article, detoxifying harmful compounds is one of the liver’s most important tasks. Yet, it becomes a Catch-22 situation as exposure to toxins impairs the liver’s natural state of balance and thus its ability to help detoxify damaging substances. The liver also is important in helping the body metabolize alcohol, and the high acetaldehyde levels that occur after excessive alcohol consumption can significantly damage the liver.18

Liver cells (hepatocytes) communicate with each other through gap junctional communication. This “cross-talk” between the cells helps maintain liver homeostasis by controlling liver cell proliferation and liver cell death. However, this gap junctional communication is frequently disrupted after the liver is exposed to harmful compounds such as environmental pollutants, biological toxins, organic solvents, pesticides, pharmaceuticals, peroxides, metals and phthalates. The impaired communication between the hepatocytes leaves the liver more vulnerable to damage.19

Detoxifying the Body

In my clinical practice, the first step in determining the extent to which my patients need to undergo detoxification is the Organic Acid Test with Environmental Pollutants. This test provides a road map to determine the extent to which a patient has been exposed to environmental toxins as well as their individualized supplement needs.

The next step is to support the body’s natural detoxification methods through the use of daily supplementation with AL-Neutralizer™, to control acetaldehyde. AL-Neutralizer is a blend of 12 effective, synergistic nutrients that reduce acetaldehyde toxicity including the metabolically active forms of B1, B2, B6 (R)-lipoic acid and N-acetyl cysteine, along with B3, calcium pantothenate (B5), vitamin C, molybdenum, zinc, magnesium and betaine.
The N-acetyl cysteine and lipoic acid in AL-Neutralizer support natural production of glutathione, a powerful antioxidant and detoxifying agent. Because most toxins are able to pass through fatty membranes, they accumulate inside of cells. When toxins bind with glutathione, the combination becomes water soluble, enabling easier removal from the cell and through the liver for excretion. For glutathione to bind with toxins directly the correct type of matchmaker enzyme must be present; however, approximately 10-30 percent of the population lacks this enzyme.20 In these people, increasing glutathione may help increase the chance that a glutathione molecule will match up with a toxin.21-22

When human breast and human prostate cells were exposed to the pervasive environmental pollutant polychlorinated biphenyls (PCBs), the cells suffered extensive oxidative damage. When the cells were also exposed to the antioxidant NAC, they were significantly protected from PCB toxicity.23 NAC also has protected against the damaging effects of alcohol and the lung damage that occurs after exposure to airborne pollutant particulate matter.24-25

Vitamin B1 and vitamin C are also important nutrients for detoxifying acetaldehyde. In one animal study, vitamin B1, vitamin C and the sulfur-containing amino acid cysteine completely blocked the LD-90 dose of acetaldehyde (the dose that would normally kill 90 percent of the animals).26 In another study, cysteine lowered the amount of acetaldehyde produced by smoking and alcohol consumption in the digestive tract.27

It is important to remember that it is absolutely critical to keep the bowels moving (two to three bowel movements per day) in order to ensure that toxins are expelled from the body. This is easily accomplished by consuming magnesium combined with EZ Fiber™. It is important to remember that fiber can also bind onto medications, so taking fiber at least 2 hours or longer from conventional medications, or as your doctor and pharmacist suggest, is prudent.

For my patients who have a history of even higher levels of toxic exposures in the past or those wishing to delve even deeper into detoxification, they will often look to add select botanicals such as Milk Thistle, artichoke, and Scutellaria baicalensis along with lipoic acid as found in HepatoGen™. Silymarin, the active component in Milk Thistle, is extensively studied for its liver-supporting properties and plays a protective role against the oxidative damage caused by environmental contaminants such as benzo(a)pyrene.28 Other studies have shown that artichoke can protect the liver against free radical (oxidation) damage while lipoic acid is also a potent free radical scavenger, metal chelator and regenerator of other key antioxidants (such as glutathione).29

The botanical Scutellaria baicalensis can work synergistically with the above substances to enhance liver health. The Scutellaria baicalensis component baicalin, when given to rats exposed to toxic, high doses of acetaminophen, prevented many of the toxic effects observed in rats given acetaminophen without baicalin.31 Scutellaria baicalensis also has protected the livers of rats exposed to aflatoxin, a substance that causes cancer in animals and is found in peanuts produced by some strains of mold.32
Conclusion

Daily, we are assaulted by a number of harmful substances. For any healthy aging regimen to be effective, we must give our body the tools necessary to detoxify these damaging substances. Any detoxification program should begin by using the Organic Acid Test with Environmental Pollutants to determine the amount of toxins in the body followed by daily supplementation with AL-Neutralizer and Opti-Mag (if needed for enhanced bowel regularity), EZ Fiber to bind toxins and HepatoGen for those wishing to take the next step when it comes to detoxifying. This regimen will help the liver do its job and help us enjoy enhanced vitality and health.

I always encourage my patients to drink 64 ounces plus of filtered water (via reverse osmosis or distillation with remineralization). The process of detoxification can be compared to cleaning house: dust “toxins” will be stirred up so pacing yourself through the process is essential. I also encourage my patients to avoid grapefruit and grapefruit juice during a detox program as we know it can slow liver detox pathways and has been shown even to increase drug levels in the blood of patients with as little as one glass of grapefruit juice.

References: