

Improving Detoxification Pathways

By Kelly Dorfman, M.S., L.D.N.

As the environment becomes more polluted, those with the strongest capacity to break down poisons will survive the best. The number of people with neurological syndromes, including autism and dementia is skyrocketing and may be the result of natural selection sorting out who is most suited for living in our toxic world. This hypothesis is supported by the research of Dr. Theo Colhoun and others, showing that environmentally damaged areas often have a high density of developmentally delayed children and reproductively impaired adults.

The body breaks down and excretes toxins through a series of steps. First, it identifies an unnecessary or foreign chemical. Then a group of enzymes called cytochrome P450 enzymes act on the substance and prepares it for excretion. Different P450 enzymes act on different chemicals. If a person inherits a weak gene that creates the specific P450 enzyme needed to breakdown a toxin they encounter, the poison will not be processed and excreted properly, causing symptoms.

There are 8 major cytochrome P450 enzymes used to detoxify medications. Many chemicals, drugs and even internally created natural hormones, use the same P450 enzyme. If you are taking medicine, producing normal hormones and exposed to pesticides, you can potentially overload one of these enzymes and develop physical/neurological problems.

After a foreign chemical has been tagged for removal, it needs to be bagged in second stage of detoxification. This stage includes a group of chemical processes with long names such as acetylation, methylation, sulfation and glycation. When it passes efficiently through this step, the substance is excreted safely. Your body, tags, bags and excretes.

Symptoms of an overloaded detoxification system include the following:

- ❖ High levels of food/chemical intolerance
- ❖ Agitated sleep
- ❖ Headaches
- ❖ Foggy thinking or trouble concentrating
- ❖ Itching
- ❖ Large variations in functioning ability
- ❖ Sensory processing problems (such as high sensitivity to light and sounds)
- ❖ High sensitivity to medications
- ❖ Volatile/violent conduct
- ❖ Skin rashes/eruptions

Risk factors contributing to a high toxic burden include:

- ❖ High exposure to environmental toxins/pesticides
- ❖ Receiving vaccinations/flu shots

- ❖ Eating large fish frequently
- ❖ Taking multiple medications
- ❖ History of getting the worst/unusual side effects from drugs
- ❖ Extensive dental work
- ❖ Poor diet

There are two ways to deal with poor detoxification: either lessen the toxic burden and/or increase the efficiency of the pathway. You can lessen the toxic burden both internally and externally. More people are using organically grown foods/cosmetics to take pressure off the P450 system. Artificial colors/flavors also have to be broken down through the detoxification pathways so eliminating these also help. Great Britain is in the process of trying to outlaw the use of some artificial additives in food after a recent study strongly linked them to learning problems in children.

A classic diet designed to reduce toxic load from the most concentrated sources is the Feingold Diet. Developed by the late Dr. Ben Feingold, it outlines simple steps include for eliminate and minimize the most dangerous preservatives and additives. Also, examine external pollutants around your home and yard. Avoid pesticides, scrutinize cleaning solutions. Debra Dodd's book *The Non-Toxic Home and Office* is one of many "green alternative" publications offering safe alternatives. Also check out the Environmental Working Group website: www.ewg.org for which foods have the highest pesticide residue and finding safe cosmetics.

Unfortunately, no amount of intervention on an individual's part can totally unburden cytochrome P450 enzymes. That is why it is critically important to improve the efficiency of the faulty enzyme system while attempting to lessen the load. Several nutrients may help. They include vitamin C, vitamin E, reduced L-glutathione and N-acetyl cysteine. All of the antioxidants (including the mineral, selenium and bioflavonoids) are valuable for detoxification in general.

The most common anti-oxidants (vitamin C and E) are readily available and easy to use. Vitamin C can be purchased as a chewable vitamin. Long term or aggressive use of chewables I do not recommended as the acid is hard on teeth enamel. For those who cannot swallow pills, soluble crystals can be purchased from most health food stores. For children 1-3 years, 250 mg is safe. Larger amounts can be used in older youngsters or when the child is fighting an illness. Adults can use one to two grams per day without ill effect. Too much vitamin C will cause loose stools but it is otherwise nontoxic. Vitamin E is soy or wheat based in a majority of commercial preparations. Be sure to use a natural E complex listed on the bottle as mixed tocopherols. Avoid synthetic vitamin E (dl-alpha tocopherol). Vitamin E is non-toxic but very large levels (over 2000 IUs in adults) can cause mildly thin the blood. If you are using anti-coagulants, talk to your doctor before using vitamin E.

Two lesser-known anti-oxidants that appear to be specific in helping specific steps in stage 2 of detoxification are N-acetyl cysteine (NAC) and reduced L-glutathione. Sulfation requires these sulfur containing amino acids and both NAC and glutathione contain critical sulfur containing molecules. These necessary antioxidants can sometimes irritate children but rarely bother adults in regular dose. If you use these supplements, always start with a small dose and discontinue if you feel agitated. When in doubt, take it

out. The beginning dose (in children over 3) for reduced L-glutathione is 50 mg in a lipocetual form (see www.brainchildnutritionals.com) and for N-acetylcysteine 250-300 mg. Start with ½ dose and work up to the full dose. Adults can use 250-500mg of lipocetual glutathione or 500-1000mg of NAC.

The above information is general. For specific questions or problems, contact a nutritionally trained medical professional.