

# **Detoxification: The Key to Health in the New Millennium**

By Frank Gemmato, L.Ac.

## **Our Toxic Environment**

The level of toxic chemicals in our environment is staggering and getting worse. The 1989 Kellogg report stated that nearly 1000 newly synthesized compounds are introduced each year. The number of drugs, pesticides, industrial chemicals, food additives, and environmental pollutants now totals around 100,000. The US EPA, Office of Toxic Substances reported in 1989 that over 551 million pounds of industrial chemicals were dumped into public sewage storage, and the total number of air emissions pumped into the atmosphere was over 2.4 billion pounds. In total, EPA estimates for chemical pollutants released into the environment in 1989 totaled 5.7 billion pounds!

Toxic chemicals come into our body through air, food, water, drugs, alcohol and tobacco. Although the body is built to eliminate these toxins, it cannot always handle the overload present in our environment.

Consider pesticides. In the United States, pesticide related illnesses are estimated to occur about 200,000 times a year. Exposure to the organophosphate class of pesticides has been documented to cause severe neurological damage, which in some cases, can be permanent.

In addition, toxins can also be produced within the body (endotoxins). For example, certain intestinal bacteria can release metabolic by-products that have toxic, health-threatening effects. Nutritional imbalances and insufficiencies compromise detoxification pathways, allowing a progressive build-up of toxins that overwhelms the body. And lastly, the detoxification process itself can release free-radicals, which damage cellular tissue.

## **Symptoms of Toxicity**

Toxic overload can manifest itself in a number of ways: muscle and joint pain, fatigue, irritability, depression, confusion, digestive problems, flu-like symptoms, or allergic reactions (hives, stuffy or runny nose, sneezing or coughing). It is also believed that toxic overload may be related to serious diseases like rheumatoid arthritis, Alzheimer's and Parkinson's disease.

## **Intestinal Permeability Factors**

Leaky gut syndrome, or increased intestinal permeability can also contribute significantly to problems relating to toxicity. The prolonged taking of non-steroidal anti-inflammatory drugs (e.g. ibuprofen and aspirin), irritation of the gut lining, nutritional deficiencies, and exposure to toxins are believed to cause leaky gut syndrome. The breakdown of the

gastrointestinal lining allows passage of larger molecules into the systemic circulation. This phenomenon contributes to the development of inflammatory conditions and increased toxic load on the liver. (For a more in-depth discussion of leaky gut syndrome, see "There could be...that old gut feeling" Clackamas Review January 9, 1998. Reprints available on request. Call 771-6826).

### **The Role of the Liver**

The role of the liver in detoxification is central to the overall health of the body. The liver converts fat-soluble substances (the lipid-soluble type) into water soluble compounds that can be eliminated via urination. Detoxification is divided into two phases. In Phase I, a group of enzymes called the Cytochrome P450 System reduce, oxidize or hydrolyze the toxin. In Phase II, the intermediate metabolites are then conjugated by other enzymes to form compounds that can be eliminated in the urine or feces.

Proper detoxification depends on both phases of liver detoxification working properly. The intermediate metabolites of Phase I may be more volatile than the original toxins. Therefore Phase II must be functioning adequately to ensure the toxins' conversion into excretable end-products. Additionally, Phase I produces free radicals which can create endotoxins unless they are properly eliminated.

### **Diet and Detox**

Activation of Cytochrome P450 depends on adequate protein intake. Fasting, which used to be thought of as an ideal method of detoxification, may actually slow down the process. The proper ratio of protein and carbohydrate is crucial in limiting toxic accumulation. Most people consume too much carbohydrate relative to protein, thereby stimulating the release of too much insulin, which leads to an inflammatory, toxic reaction. An effective detoxification program will therefore include a diet high in well-balanced protein.

Dietary sources of essentially fatty acids are also crucial in assisting the liver in the detoxification process. Medium chain triglycerides provide an excellent source of energy to muscles during detoxification. Antioxidants are essential in the modern diet. They protect cell membranes from the damaging effects of oxygen free radicals. Antioxidants like flavonoids, vitamins C, E and selenium assist in liver detoxification by quenching free radicals.

### **Other Nutritional Considerations**

Glutathione and glutamine are amino acids that play significant roles in liver detoxification. Glutathione supplies one of the functional groups

involved in Phase II. Glutamine helps to preserve the integrity of the gut mucosa. Mineral deficiencies (e.g. zinc, copper, magnesium) have been shown to decrease the Cytochrome P450 system. The amino acids cysteine and methionine provide the sulfur needed in Phase II conjugation.

### **All Can Benefit**

Detoxification is a necessity of life on planet earth at the end of the 20th century. No one is immune to the devastating effects of toxins in the air, food, and water. There is tremendous hope in periodic cleansing fasts where a modified diet and nutritional program are followed. These and other nutrients may be consumed in the form of specialized super-beverages designed to provide both the adequate ratio of protein to carbohydrate to fat, as well as the essential micronutrients necessary for adequate detoxification.

Ask your health care practitioner to coach you through the process of detoxification. There is no one among us who hasn't been exposed to toxins. It is an investment in health that will yield excellent returns, greatly enhancing the quality of your life.

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