

# Detoxification System

In order to understand resistance and susceptibility, we need to be familiar with the system designed to protect us and prevent disease. This system is composed of three sequential parts:

1. Identification: The [Immune System](#) carries out this process.
2. Neutralization: The [Detoxification System](#) performs this task
3. Elimination: The [Elimination System](#) colon and kidneys work to remove toxins.

Since the health of the individual is crucial to his or her survival, the body uses these three systems. It also provides a back-up or “fail safe” plan in the event one part fails. The back-up not only assists the individual parts, but allows these parts to assist other systems. We refer to this as “compensation.”

The **Detoxification System**, commonly thought to comprise only the liver, actually exists in some capacity in every cell. Points of entry, such as the gut and lungs, as well as any organs susceptible to damage from toxins (kidney, bladder, prostate, breast), also carry out detoxification. The gut, which controls absorption through a semi-permeable barrier, can selectively absorb nutrients and allow most toxins to exit through the colon. Certain toxins called xenobiotics, however, can mimic the shape of natural molecules and pass through the barrier. In fact, many patients with small intestine disorders (such as leaky gut disorder, celiac disease, and food sensitivity or allergies) may allow toxins to pass through the damaged barrier into the blood stream where they are delivered to the liver.

The liver has several systems and backup systems to insure

toxins do not harm the body. It will even tag and detoxify toxins which won't harm the body but simply don't belong. During Phase I of detoxification, the P450 enzyme "family" activates or prepares toxins for the next stage. During Phase II, several important enzyme systems (glucuronidation, glutathione, methylation, sulfonation, N-Acetylation, TST) chemically and electro-statically attach to toxins. Toxins that are difficult to neutralize generally undergo a series of reactions until the body can safely contain them.

Because the liver processes these toxins, it may suffer damage to its own cells and tissues. In order to protect itself and the body, the organ has the unique ability to regenerate itself. This capacity for regeneration gives rise to the phenomenon called compensation. Compensation is the potential for the liver to assist other organs, such as the pancreas or spleen, to prevent an acute crisis in the body. The capacity for compensation, however, can be a double-edge sword. Although it helps other organs to function, it can provide a false impression regarding the balance and health of the body. As a result, chronic degenerative diseases can progress without detection by laboratory biomarkers. Fortunately, techniques such as acupuncture, developed by the Chinese, can detect and correct these early imbalances. Acupuncture, augmented with cutting edge research, holds the promise of mapping out the early stages of disease (including dental disease). In this manner, a true early diagnostic and preventative model can be developed.

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