What are Endotoxins?

Endotoxins are toxins that are produced by us and within us. How is it possible, you might say, that the human system can produce its own toxic by-products? Well, it is all down to timing. If a substance is not eliminated or converted into a harmless form in a timely manner, it will create a toxic situation in the body. The best example of this is constipation: when constipated, the waste materials in stool (including dangerous heavy metals) stay too long in the gut, and can leach through the mucosa of intestine wall into the entire system via the interstitial fluids, ending up in the liver. Urine is considered sterile when it directly issues from the body, but if either a malfunctioning kidney or bladder back up and some urine enters the blood, we have uremia, which is a highly dangerous condition. The principal organ that clears us of internal toxins is the liver: the liver consistently performs this function for us by conjugating metabolic by products which would otherwise poison us. Conjugation is the liver's way of detoxing us.

So it is all about timing: toxins are inevitably generated within us as a result of what we eat, drink and breathe, and the bits of bad stuff this generates need to be either eliminated through the feces, sweat, urine or via pulmonary exhalation, or else they need to be conjugated by the liver, and thus rendered harmless. Cancer cells, for that matter, are always being produced somewhere in the body, but with an alert and well functioning immune system, these cells are swiftly identified and eliminated. It is all about timing and timeliness.

However, our innate conjugation and elimination systems are not up to the task of dealing with all the massive toxic overload we face today. As a corollary of intoxication, our adaptive autonomic neuro-mechanisms become unbalanced, leading to further toxic accumulations in a vicious cycle. Here we will focus mainly on one, very dangerous endotoxin that is estimated to be elevated in approximately 30% of the American population. That endotoxin is homocysteine.

What is Homocysteine?

Homocysteine is not inherently toxic. It is a completely natural substance synthesized by the human body at a certain stage of the methylation process. This process involves the conversion of the essential amino acid methionine into cysteine and glutathione, (plus its recycling back to form new methionine). Homocysteine appears at a necessary juncture of these pathways, and as long as it does not accumulate, no endotoxins are generated from this site. Cysteine is a precursor for both glutathione and taurine. Glutathione protects our cells from oxidative damage – in particular, our brain cells, preventing oxidized fats from causing neurological degeneration - and is also a vital part of our immune system, governing the activation of cytotoxic T lymphocytes. Taurine is vital for overall brain balance - the organ where it is mostly concentrated - and plays a major role as a neurotransmitter, ensuring the balanced flow of synaptic potential in the brain.

Back to homocysteine. Let's recall that this substance is a necessary and otherwise healthful phase product of the methionine pathway. It is a sort of intermediary helper on the way, a low profile guy
performing an essential if unglamorous task. But if synergistic conversion nutrients are lacking or blocked, this ordinary guy can become corrupted into a violent criminal. The synergistic nutrients involved in the conversion process include vitamins B6 and B12, vitamin B9 (folic acid), B3 (niacinamide) choline, molybdenum and magnesium. If these are present, homocysteine will be converted into other substances supporting bone and cartilage repair, neurotransmitter synthesis, adrenal support and liver health. If they are not present and homocysteine accumulates, it can lead to blood clotting, inflammation, increased cellular oxidation, heart attack and stroke. The connections between elevated homocysteine levels and heart disease have long been recognized, but more recently elevated homocysteine has been seen to influence many degenerative conditions including MS, rheumatoid arthritis, type II diabetes, vascular rupture, spontaneous abortion, kidney failure, osteoporosis and neuropsychiatric disorders. Homocysteine, by increasing harmful oxidation, increases the inflammatory process and structurally weakens the walls of blood vessels.

What Causes Elevated Homocysteine?

Many people today have disruptions of the methylation pathways. This is partly due to severe deficiencies in folic acid and in vitamins B12 and B6. Other deficiencies in trace minerals molybdenum and other key nutrients are rampant due to severely demineralized soils, synthetic food processing, pesticides and other environmental pollutants. Heavy metal toxicity is also a contributor, as mercury binds with both methionine and cysteine, depleting glutathione reservoirs, and negatively influencing B12 and folate metabolism. (Please refer to our EHA article on the dangers of mercury).

How Can We Remove Excess Homocysteine?

We recommend a strong protocol of detoxification, nutraceutical supplementation plus additional specific supplementation with methylated B12 for those persons with elevated homocysteine levels. The products for these protocols have been designed by Garry Gordon, MD, who has over fifty years experience in the field. At this point, we feel that the detoxification products and protocols produced by www.gordonresearch.com are optimal for health restoration. We carry a range of specific products manufactured by www.longevityplus.com, designed by Dr. Gordon. Please contact Eclectic Healing Arts for details, or visit the aforementioned sites for more information regarding these protocols for homocysteine reduction, and general detoxification protocols.

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