Metagenics®

UltraClear Plus and AdvaClear for Balanced Detoxification:

How Does the Body Remove Toxic Substances?

In order to remove the toxins, the body has a complex system that converts them into non-toxic molecules for removal. This complex system occurs in two phases: Phase I and Phase II, that together convert a toxic molecule into a non-toxic molecule that can be easily excreted. The majority of detoxification occurs in the liver; however, all tissues have some ability to detoxify, including the intestines, skin, and lungs.

Nutritional Support for Detoxification

Detoxification is an energy-requiring process that puts a metabolic burden on the body. Therefore, water or juice fasts are not beneficial because they deplete the body of the essential nutrients required for healthy detoxification. These fasts can have many adverse health effects, including decreased energy production, breakdown of lean tissue instead of fat, increased oxidative stress, and unbalanced detoxification.[15,16]

UltraClear Plus supports Phase 1 and 2 Detox Pathways:

In Phase I, a functional group is added to the toxic molecule producing an intermediate that needs to be further transformed. Phase II detoxification involves a process called conjugation, in which various enzymes in the liver attach protective compounds to the intermediate, making it less harmful and more readily excretable. Instead of decreasing nutrient support, a focused, high-impact, low-allergy-potential source of macronutrients should be provided.

- High-quality protein provides methionine and cysteine, which are beneficial to Phase II and may help with toxic metal burdens.[17]
- Medium chain triglycerides (MCTs) support energy production,18and olive oil may protect against chemically-induced liver damage.[19]
- Fibre supports fecal excretion of toxins and the integrity of the intestinal barrier, which decreases toxic burden. In particular, rice bran can directly bind some toxins, thereby removing them before they can enter the body and cause damage.[20]
- Antioxidant nutrients protect from oxidative stress include vitamins C and E, zinc, selenium, and copper.[12,13]
- Nutrients that support energy production include vitamin B1 (thiamin), vitamin B2 (riboflavin), niacin, vitamin B5 (pantothenic acid), and magnesium.

AdvaClear is a bifunctional modulator:

Because the products of Phase I can be highly reactive and more harmful than the original compound, achieving and maintaining a balance between the Phase I and Phase II processes is critical. Furthermore, a significant side effect of all this metabolic activity is the production of free radicals as the toxins are transformed, resulting in oxidative stress. Optimal detoxification requires that both Phase I and Phase II pathways function optimally and in balance with each other.

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Bifunctional modulators are phytonutrients that support balanced detoxification by modulating Phase I and promoting Phase II. This minimizes damage by reactive intermediates and free radicals. Fruits and vegetables contain many bifunctional modulators, which is one reason these foods are associated with reduced susceptibilities to cancer and degenerative diseases.[14]

In addition, the following nutrients and phytonutrients provide targeted support for optimal detoxification:

- N-Acetylcysteine and Sodium Sulfate promote generation of glutathione, which is used in Phase II and is a major route for detoxification of heavy metals, and supports Phase II sulfation.[16,21]

- Vitamin B12, Folate, Methionine, and Choline promote balanced detoxification by supporting Phase II methylation and healthy homocysteine recycling. Choline deficiency is causative for liver disease, and is a newly-designated essential nutrient.[22-24] The biologically-active, natural form of folate is 5-methyltetrahydrofolate.[25]

- Ellagic Acid from pomegranate significantly reduces tumors in animals with chemically induced cancers, protects from toxin liver damage, enhances glutathione production, decreases lipid peroxidation, and binds some metals, thus promoting their excretion.[26-29] It is a bifunctional modulator that can bind some toxins directly, rendering them non-toxic, and can directly bind and protect DNA.[30,31]

- Catechins from green tea are bifunctional modulators that are strong antioxidants possessing anticarcinogenic and antimutagenic potential.[32,33] Catechins are associated with lower incidence of Parkinson's disease.[33,34] The National Cancer Institute is currently investigating the chemotherapeutic potential of green tea catechins.[35] Catechins also promote healthy gastrointestinal function.[36]

- Watercress (Nasturtium officinale) contains high levels of glucosinolates, which are precursors to several bioactives that can inhibit chemically-induced cancers in animals, and promote excretion of carcinogens in humans.[37-41] The bifunctional activity of watercress is one of the proposed mechanisms for its chemoprotective effect.[37,42-44]

- Silymarin from milk thistle is a well-known liver-protectant that may improve liver function in patients with liver disease and toxicity.[45-47] Silymarin increases glutathione and is a strong antioxidant.[46-49]

- Artichoke (Cynara scolymus) is also a liver-protectant with a long history of traditional use that provides strong antioxidant protection and may decrease the loss of glutathione after toxic exposure.[50-53]

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