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system is working ideally – in short, that all the systems involved in eliminating metabolic byproducts are working efficiently.

Supporting bile production. Once toxins are processed and packaged within the liver, those toxins are effluxed with the bile, released into the upper portion of the small intestine (controlled by the sphincter of Oddi), and excreted in the stool. We want to keep the bile flowing, releasing toxins into the small intestine and eliminating them. To support both bile production and release, patients need to include small amounts of healthy fats in their diet, which may seem counterintuitive in a weight-loss program. My approach has been to follow the metabolic mentors in this field, who train providers that the key to healthy weight loss is to reduce metabolic toxicity through effective diet and exercise-related decisions. Loss of excess adipose tissue continues to be an important aspect of healthy metabolic balance.

Preventing toxin resorption. Patients dealing with sluggish bowel elimination may experience enterohepatic recirculation, placing them at risk of re-toxifying the body if toxins are introduced back into the bloodstream. An effective binding agent, such as bentonite clay or charcoal, will retain toxins in the gastrointestinal tract to support effective elimination in the stool.

Stabilizing the mitochondria. Many patients with fatigue, chronic pain, fibromyalgia, or multiple chemical sensitivities suffer from mitochondrial insufficiency, since the mitochondria play an imperative role in cellular cleansing and overall detox capacity. A naturopathic functional medicine approach helps patients jump-start mitochondrial function – an important step in detox preparation that may be overlooked in the clinical setting. Support for the mitochondria means stabilizing the inner membranes of mitochondria through healthy fats in the diet such as DHA (found in fish oils), coconut oil, and olive oil to balance membrane content and reduce inflammation in the tissues.

Key supplements for cellular energy production. Liver detox relies on the energy capacity of the mitochondria. The efficiency of these energy centers to support cellular detox serves as an essential foundation for a broader systemic detox, and key essential fatty acids are provided to improve mitochondrial energy production. Other important nutrients to support the mitochondria include CoQ10, lipoic acid, and a specific, highly focused B-complex formula designed to support Krebs cycle intermediates of the mitochondria in a rehabilitation program. Adequate magnesium and proper electrolytes should be included, particularly for patients with various fatigue syndromes.

Mitochondrial rehabilitation. These recommendations are customized to the specific health conditions and needs of the patient. For the patient with prediabetes or diabetes we recommend a mitochondrial rehabilitation protocol described by Dr. Stephen Sinatra in his book *Metabolic Cardiology*. This approach supports healing in cardiovascular and metabolically compromised patients, providing specific details and dosages for the rehabilitation of the heart muscle and the myocardial sites.

Supporting detox with nutrients and medical foods. Frequently clinicians use combination detoxification formulas developed to enhance and balance the multiple pathways of the cytochrome P450 enzymes with the conjugating pathways of phase II detox. Both medical and functional foods are increasingly available in the nutraceutical market to fulfill the need for more advanced nutritional support. Many of these combination formulas also integrate key botanicals that can further aid and improve liver or detox function, such as milk thistle, dandelion root, andrographis, rosemary, or turmeric.

Stage 3. Therapeutic Interventions for Detox

In my practice, the preparation and sequencing of a structured, medically supported detox program takes approximately two to three months on average. Very rarely do patients come to our clinic so incredibly healthy that they can go through a ten-day detox and feel great. Most patients need time to prepare: to go shopping, change products, read labels, etc. Patients with more involved chronic conditions often require lower doses of metabolic detox support and a slower-paced detox, enabling them to gradually eliminate various toxic insults from their environment. For patients with more severe conditions, the smallest lifestyle changes frequently have the greatest impact.

Advanced phytonutrient support. After reducing and removing toxins, the emphasis shifts to repletion, replacing nutrients through diet and nutraceutical supplementation. Applying a whole-food approach, naturopaths and functional medicine providers work with patients to increase the array of fruits and vegetables consumed in support of specific detox pathways. Nutrient-rich choices include cruciferous vegetables (glucosinolates such as bok choy, broccoli, broccoli flowers, brussels sprouts, cabbage, cauliflower, collard greens, and kale) which support the sulfation detox pathway. Traditionally we also recommend detoxifying leafy greens such as beet greens, dandelion