

Nutritional Support for Optimal Detoxification

Everything that goes in or on our bodies will eventually be absorbed, where it then must be processed and repackaged for timely and safe excretion or elimination. Even our own self-made hormones and neurotransmitters must go through this process to keep our bodies in homeostasis, or balance. This process is called detoxification, and while there are many organs involved, it is mostly the job of our liver, and our nutrition *greatly* impacts it's ability to perform well. If we do not eat a nutrient-rich, whole-foods diet, or if we consume in excess substances that inhibit detoxification, our body's ability to detoxify is reduced and we run the risk of overload and disease.

Below you will find foods, teas, and herbs that help support the various phases of detoxification. Many of these foods crossover into several categories, supporting the whole process. Ensure you are getting *at least two* foods that support phase 1 and phase 2 with every meal. Aim to create variety and don't be afraid to branch out and try new things. There is also a list of foods/substances to avoid or limit, as they are known to overburden the liver and rapidly consume our antioxidant stores. I recommend grabbing a highlighter to identify the foods you think you can incorporate right away with ease, then coming back another day to add new ones in! Make it fun and get creative. And as always – reach out with any questions!

Phase 1 Detoxification – Biotransformation – the first defense employed by the body to transform <u>xenobiotics</u>, steroid hormones, and pharmaceuticals through the addition of a reactive group by oxidation, reduction, or hydrolysis. *This step has the potential to create <u>oxidative damage</u> within cells.⁵ Ample intake of B vitamins and antioxidants are needed to support this step.*

B Vitamin (B2, B3, B6, B9, B12) rich foods -

Animal Sources:

- Meat (beef, pork, chicken)
- Fish (salmon, tuna, mackerel)
- Eggs
- Dairy products (milk, cheese, yogurt)

Plant Sources:

- Legumes (beans, lentils, peas)
- Whole grains (brown rice, oats, wheat)
- Fortified breakfast cereals
- Nuts and seeds (sunflower seeds, almonds, peanuts)
- Leafy green vegetables (spinach, kale, collard greens)
- o Avocado



<u>Antioxidants (Vit C, Vit E, Selenium,</u> <u>Glutathione, CoQ10)/Flavonoids</u> –

Herbs:

- Cloves
- o Oregano
- Ginger
- Cinnamon
- Turmeric
- o Basil
- Mustard Seed
- Curry
- o Paprika
- Chili Powder
- o Black Pepper
- Parsley
- o Rosemary

Nuts/Seeds:

- Walnuts
- o Pecans
- \circ Pistachios
- \circ Flaxseed
- Pumpkin Seeds
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Fruit:

- Blackberries
- Blueberries
- Strawberries
- \circ Raspberries
- \circ Cranberries
- Cherries
- Prunes
- o Kiwi
- Plums
- Apricot
- Elderberry juice

Vegetables:

- Artichokes
- Red Cabbage, cooked
- Red Peppers, cooked
- Spinach, frozen
- Other leafy greens
- Yellow onion
- o Broccoli
- Cauliflower

Other:

- o Dark Chocolate
- Espresso/coffee
- Cooked broad beans
- Molasses
- Currants
- o Moringa Tea
- $\circ \quad \text{Green Tea}$
- Black Tea
- Rooibos Tea

Phase 2 Detoxification – Conjugation – the transfer of hydrophilic compounds (water-loving) to the phase 1 metabolite, enabling enhanced excretion/elimination through bile or urine. *This step makes the metabolite less harmful/reactive and able to be eliminated from the body.*⁵ Overactive phase 1 and/or underactive phase 2 can increase the risk of toxic overload and is associated with disease burden, including the development of several forms of cancer. A diet full of quality amino acids & foods high in magnesium, choline, glucuronic acid, and sulfur are needed to support this phase.

<u>Sulfur-rich Foods</u> –	<u>Glucuronic Acid</u> –
• Garlic	• Bean Sprouts
• Onions	• Cauliflower
o Leeks	o Broccoli
\circ Chives	\circ Cabbage
• Shallots	 Brussel Sprouts
o Broccoli	\circ Apples
• Cauliflower	o Grapefruit
• Cabbage	• Oranges
 Brussel Sprouts 	\circ Apricots
 Legumes (beans, including green 	• Cherries
beans)	• Tomatoes
◦ Eggs	 Dandelion Tea
	 Rooibos Tea
<u>Amino Acids</u> –	
	<u>Choline-rich Foods</u> –
 Meat (fish, poultry, beef, lamb, 	
pork)	\circ Beef liver
\circ Eggs	\circ Eggs
• Dairy	\circ Beef
• Collagen or whey protein powders	• Oranges
	\circ Cauliflower
<u>Magnesium-rich Foods</u> –	• Potato
	o Milk
• Pumpkin Seeds	
• Sesame Seeds	
• Brazil Nuts	
• Almonds	
• Beans, esp. soybeans	
• Whole Grains, esp. Amaranth	

Phase 3 Detoxification – Elimination/Excretion

Bowel movements, urination, & sweat – the ultimate exit. [Very minimally, exhalation].

- Ensure adequate fiber daily (25-30g for women; 35-40g for men)
 - \circ Wheat bran
 - Oat bran
 - Legumes (beans)
 - Psyllium husk (can be added to smoothies, or taken as a supplement)
 - Apple (skin on)
 - \circ Seaweed
 - Cabbage
 - Flax seeds
 - Nuts and other seeds
 - o Slippery Elm Bark Tea
 - Marshmallow Root Tea
- Ensure adequate hydration (1/2 your body weight in ounces per day, minimum)
 - Consider a whole house water filtration system to ensure water without wanted chemicals or heavy metals
- o Break a sweat daily
 - Exercise
 - o Sauna



Foods/Substances to Avoid, Limit, or Be Aware Of

- Alcohol, illicit drugs, and cigarette smoke (including vaping)
- Non-organic grains, corn, and soy (heavily sprayed with glyphosate)
- Non-organic fruits/vegetables some are safer than others, utilizing the <u>EWG's "Dirty</u> <u>Dozen" and "Clean Fifteen"</u> is a great way to shop!
- Phthalates (and other plasticizers) found in plastics and personal care products
 - $\circ \quad \text{Avoid heating food in plastic}$
 - \circ $\:$ Use stainless steel or glass water bottles and food storage containers
 - Use phthalate-free personal care products
- Sunscreens many sunscreens, particularly sprays, contain hormone-disrupting, xenobiotic chemicals that are harmful to health. Shop <u>here</u> for healthier options.
- If you must work with industrial cleaners, solvents, or pesticides/herbicides, utilize proper personal protective equipment. Otherwise, aim for environmentally friendly home cleaners, garden and yard sprays, etc.
- o Heavy Metals
 - Consider replacing amalgam fillings
 - Filter your water
 - \circ $\;$ Avoid supplements or protein powders that do not provide third part testing
- Pharmaceutical Medications
 - Antibiotics avoid antibiotic overuse your cold does not need an antibiotic!
 - Acetaminophen excess consumption of Tylenol and Tylenol-containing products is known to deplete glutathione and inhibit detoxification.
 - o NSAIDs
 - Pharmaceuticals (CYP Inhibitors)
 - Amiodarone, cimetidine, ciprofloxacin, fluvoxamine, fluconazole, fluoxetine, metronidazole, ritonavir, trimethoprim/sulfamethoxazole, isoniazid, bupropion, duloxetine, paroxetine, quinidine, ritonavir, sertraline, terbinafine, amitriptyline, aprepitant, carvedilol, chloramphenicol, cimetidine, ciprofloxacin, clarithromycin, codeine, donepezil, haloperidol, imatinib, ketoconazole, metoprolol, risperidone, tramadol, verapamil. (***DO NOT self-discontinue medication if you take any of these medications, it is even more important to support your body with nutraceuticals).

A Word About Genetic Polymorphisms: There is genetic variability (SNPs) among the population that can affect the efficiency of the enzymes responsible for phase 1 and phase 2 detoxification, by either slowing it down or speeding it up. These SNPs are not routinely tested for, but in many cases can impact health outcomes across the spectrum – from mental health to hormonal health to the potential for cancer development. To ensure the best enzyme activity for YOU it is imperative to eat a nutritious diet, get consistent physical exercise, manage stress, and get good, quality sleep nightly. For more information, I highly recommend the book, *Dirty Genes*, by Dr. Ben Lynch.

References

- Carlsen MH, Halvorsen BL, Holte K, Bøhn SK, Dragland S, Sampson L, Willey C, Senoo H, Umezono Y, Sanada C, Barikmo I, Berhe N, Willett WC, Phillips KM, Jacobs DR Jr, & Blomhoff R. (2010). The total antioxidant content of more than 3100 foods, beverages, spices, herbs and supplements used worldwide. *Nutr J.*, 9:3. DOI: 10.1186/1475-2891-9-3.
- 2. Gilani, B., & Cassagnol, M. (2023). *Biochemistry, cytochrome p450*. National Library of Medicine. https://www.ncbi.nlm.nih.gov/books/NBK557698/
- 3. Halvorsen, B., Carlsen, M., Philips, K., Bohn, S., Jacobs, D., & Blumhoff, R. (2006). Content of redox-active compounds (ie, antioxidants) in foods consumed in the United States. *Am J Clin Nutr*, 84, p. 95-135.
- 4. Harris R.M., Waring R.H. (2008). Sulfotransferase inhibition: potential impact of diet and environmental chemicals on steroid metabolism and drug detoxification. *Curr Drug Metab.*, *9*(4):269-75. doi: 10.2174/138920008784220637
- 5. Hodges R.E., & Minich D.M. (2015). Modulation of metabolic detoxification pathways using foods and food-derived components: A scientific review with clinical application. *J Nutr Metab*, 2015. DOI: 10.1155/2015/760689
- 6. Lampe, J., Li Shuying, S., Potter, J.D., & King, I.B. (2002). Serum β-glucuronidase activity is inversely associated with plant-food intakes in humans. *The Journal Of Nutrition*, *132*(6), p. 1341-1344.
- 7. Murray, M. Pizzorno, J., & Pizzorno, L. (2005). The encyclopedia of healing foods. Atria Books
- 8. Štefanac T, Grgas D, & Landeka Dragičević T. (2021). Xenobiotics-division and methods of detection: A review. *J Xenobiot.*, *11*(4):130-141. DOI: 10.3390/jox11040009
- 9. U.S. Food and Drug Administration. (2020). *Information for patients about dental amalgam fillings*. https://www.fda.gov/medical-devices/dental-amalgam-fillings/information-patients-about-dental-amalgam-fillings
- 10. Xiaoyu L, BiBi J, Majeed F, Naveed M, Mughal MJ, Korejo NA, Kamboh R, Alagawany M, & Lv H. (2020). Flavonoid-rich foods (FRF): A promising nutraceutical approach against lifespanshortening diseases. *Iran J Basic Med Sci*, 23(2), p. 140-153. DOI: 10.22038/IJBMS.2019.35125.8353.