The 4Rs of Gut Healing

Maintaining digestive health is essential to ensure proper absorption of nutrients and to support the function of other body systems, such as the immune system. The health of the gastrointestinal system, particularly the gut microbiota, even impacts mental health through its connection with the central nervous system, often referred to as the gut-brain axis.

Gut health can be negatively impacted by several mechanisms, such as gut microbiota imbalance (i.e., dysbiosis) and inflammation, leading to increased intestinal permeability. Increased intestinal permeability, commonly referred to as Leaky Gut Syndrome, occurs when the tight junctions between cells of the intestinal lining are altered, enabling potentially harmful substances to pass through the intestinal wall. Various health conditions may be associated with leaky gut, including celiac disease, inflammatory bowel disease (IBD), type 1 diabetes, and multiple sclerosis (MS).

The 4R protocol is a common four-step intervention designed to support gut healing.

The 4R Protocol

The four steps outlined below help to minimize factors associated with inflammation and increased intestinal permeability while introducing food and supplemental nutrients that support gut healing.

1. **Remove**: The first step is to remove pathogens and inflammatory triggers that are associated with increased intestinal permeability.
2. **Replace**: The second step is to replace these factors with nutrients in the diet that help to reduce inflammation and optimize digestive health.
3. **Reinoculate**: The third step is to reinoculate the intestinal microbiota with beneficial bacteria.
4. **Repair**: The final step is to repair the intestinal lining with specific nutrients and medicinal herbs known to decrease intestinal permeability and inflammation.

Remove	Replace
• Alcohol • Gluten, a protein found in certain grains (e.g., wheat, barley, rye) • Food additives (e.g., salt, emulsifiers, solvents) • Refined starches and sugar • Saturated and trans-fatty acids (e.g., vegetable shortening, margarine, certain baked goods, fried foods) • Food sensitivities	• High-fiber foods (e.g., vegetables, fruit, nuts) • Omega-3 fatty acids, found in oily fish (e.g., salmon, mackerel, herring, trout) • Extra virgin olive oil • Mushrooms • Anti-inflammatory herbs and spices (e.g., turmeric, rosemary, garlic)
Reinoculate	**Repair**
Probiotic supplements Fermented foods, such as: • Cultured dairy (e.g., yogurt, kefir, sour cream) • Fermented vegetables (e.g., sauerkraut, kimchi, unpasteurized pickles) • Fermented soy products (e.g., miso, tempeh, natto) • Fermented beverages (e.g., kombucha, kvass, water kefir)	• Zinc • L-glutamine • Vitamin D • Polyphenols (e.g., quercetin, myricetin, curcumin) • Omega-3 fatty acids • Marshmallow root • Aloe vera • Chios mastic gum • Deglycyrrhizinated licorice (DGL)