

Gut–Lung Axis Support Protocol

A Clinical Approach to Optimizing Respiratory Health Through the Microbiome

res
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Health
Foundation

The Gut–Lung Axis in Clinical Practice

The intricate connection between the gut and lungs, known as the Gut–Lung Axis, is increasingly recognized as a key modulator of both respiratory and systemic immune function. This bidirectional communication is mediated by immune signaling pathways, microbial metabolites, and inflammatory signals, highlighting the systemic impact of the gut microbiome¹.

A central player in this cross-talk is the mucosal immune system, which connects the gastrointestinal and respiratory tracts, allowing for cross-talk between immune pathways. Among the most well studied mediators of this connection are short-chain fatty acids (SCFAs), such as acetate, propionate, and butyrate, produced by gut bacteria through the fermentation of dietary fiber. While the lungs do not produce SCFAs in significant amounts, these metabolites enter systemic circulation and directly influence immune cell activity in peripheral tissues, including the lungs².

Advances in microbiome sequencing have significantly expanded our understanding of both the gut and lung microbiomes, consistently linking microbial imbalance (dysbiosis) to the development and progression of chronic respiratory concerns. Dysbiotic patterns, characterized by reduced SCFA production and increased intestinal permeability, have been associated with immune dysregulation, inflammatory responses, and weakened mucosal defense³.

Disruption of the Gut-Lung Axis, often driven by dysbiosis, compromises immune signaling, promoting dysregulation to both the gut microbiome and lungs. One key contributor is the over abundance of *Proteobacteria* and their byproducts like lipopolysaccharides (LPS). When gut barrier integrity is impacted, often due to factors like poor diet, medication use, stress, or environmental toxins (like cigarette smoke and air pollution), LPS can cross into the bloodstream and enter systemic circulation. Once in the lungs, LPS activates TLR4 receptors, upregulating NF-κB signaling and the release of pro-inflammatory cytokines (IL-1, IL-6, and TNF-α), which are key drivers of chronic airway dysfunction and immune dysregulation. Elevated *Proteobacteria* has also been linked to increased neutrophilic infiltration, tissue proteolysis, and the upregulation of matrix metalloproteinase-9 (MMP-9), all of which contribute to progressive lung tissue damage and respiratory stress. Interestingly, individuals with chronic respiratory struggles often report gastrointestinal symptoms and exhibit distinct gut microbiome profiles, further highlighting the bidirectional influence between the gut and lungs⁴⁻⁵.

Core Supplement Recommendations

res B[®]



Lung Support Probiotic

Dosage: 2 capsules daily with or without food

- Features three respiratory-specific probiotic strains
- Includes Turmeric, Holy Basil, and Vasaka
- Supports lung function, immune modulation, and gut barrier integrity via the Gut–Lung Axis*

res G[™]



prebeet[®] ENERGY Prebiotic

Dosage: 1 scoop daily, mixed in 8–10 oz of any liquid (best taken in the morning)

- Resistant starch + beetroot + B12
- Enhances microbial diversity, promotes SCFA production, supports metabolism, and energy without caffeine*

Additional Nutraceutical Support

| Nutraceutical | Role in Respiratory Health |
|---------------------------------------|---|
| Vitamin D3/K2 ⁶⁻⁸ | Supports immune regulation, lung function, and respiratory resilience |
| Omega-3 Fatty Acids ⁹ | Reduces airway inflammation and supports immune balance |
| Magnesium Glycinate ¹⁰ | Relaxes bronchial smooth muscle; supports airway function and reduces inflammation |
| Quercetin ¹¹ | Acts as a natural antihistamine and antioxidant; supports mucosal stability |
| Vitamin C ¹² | Essential for immune defense, antioxidant protection, and maintaining healthy lung tissue |
| NAC (N-acetyl cysteine) ¹³ | Precursor to glutathione; promotes mucolytic activity and lung detoxification |

Lifestyle Recommendations

- ✓ Emphasize a nutrient-dense, anti-inflammatory, whole foods diet¹⁴
- ✓ Encourage an active lifestyle with regular movement and breathwork¹⁵
- ✓ Avoid smoking, vaping, and minimize exposure to environmental toxins¹⁶⁻¹⁷
- ✓ Prioritize stress management¹⁸
- ✓ Stay well-hydrated to support mucus thinning and natural detoxification. Aim for 8–10 glasses of water per day to promote optimal respiratory and systemic function¹⁹

***Disclaimer:** The resbiotic team has created these protocols to help healthcare partners make decisions when building treatment plans. When using this protocol, you understand and accept that the recommendations in the protocol are for educational guidance only. This protocol is not a substitute for medical advice, and is not intended to diagnose, treat or prevent any medical disease. Please consult with your qualified medical professional to determine if this protocol is appropriate for you

References

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