

The Role of Mayr Therapy in the Prevention of Antimicrobial Resistance (AMR) via the Gut–Liver Axis – Summary

Overview

Mayr Therapy represents a biologically integrative approach to the prevention of antimicrobial resistance (AMR). It strengthens the mucosal barrier, the microbiome, liver function, and vagal regulation. These mechanisms align with the One Health approach and the WHO Global Strategy for Traditional, Complementary and Integrative Medicine (TCIM) 2025–2034. A stable intestinal microbiota, an intact intestinal mucosa, a well-functioning liver, and a balanced vagal tone constitute central pillars of infection defence. When these systems are disrupted by unhealthy nutrition, stress, or antibiotic use, dysbiosis, loss of barrier integrity, chronic inflammation, and increased susceptibility to infections occur – leading to higher antibiotic consumption and the development of resistance.

Central Mechanisms

Intestinal barrier: The intestinal mucosa integrates several layers of protection: a microbial competitive flora, a mucus and IgA layer, tight junctions of epithelial cells, and the gut-associated lymphoid tissue (GALT). Together, these form an effective defence against pathogens (Frontiers in Immunology, 2023).

Liver as an immune organ: The liver eliminates over 90% of microbial and toxic substances from the portal vein blood. Kupffer cells and complement proteins act as immunological filters. Liver diseases (NAFLD, MASLD, ALD) increase intestinal permeability and promote endotoxin translocation and sepsis risks (Nature Metabolism, 2024).

Gut–liver axis: Bile acids exert anti-inflammatory and barrier-supporting effects through FXR and TGR5 receptors – a central axis for the immune system and metabolism (Frontiers in Physiology, 2024).

Vagus and gut–brain axis: Activation of the vagus nerve counterbalances sympathetic stress dominance and positively modulates the immune system (Frontiers in Neuroscience, 2023).

Principles of Mayr Therapy

Classical Mayr Therapy is based on four pillars: • Relief (resting the digestive system and the entire organism) • Cleansing (removal of burdens, promotion of regular bowel evacuation) • Education through nutritional retraining (anti-inflammatory, easily digestible diet) and manual abdominal treatment (promotion of motility, lymphatic flow, and circulation) • Substitution (targeted micronutrient supplementation) These interventions stabilise the gut–liver axis, promote liver regeneration, improve barrier function, and support autonomous self-regulation.

Evidence Base (2020–2025)

• Nutrition and resistome: A fibre-rich diet correlates with a lower load of antibiotic resistance genes (Nature Microbiology, 2022). • Microbiome strengthening: Microbiome-restorative strategies such as faecal microbiota transplantation (FMT) reduce the colonisation of multidrug-resistant pathogens (Science Translational Medicine, 2023). • Probiotics and antibiotic-associated diarrhoea: Cochrane analyses (2025) demonstrate a significant reduction in the risk of antibiotic-associated diarrhoea (AAD/CDI). • Liver regeneration: Nutritional regulation and digestive relief improve hepatic and mucosal immune function (Hepatology Communications, 2024).

Public Health and Policy Relevance

Mayr Therapy supports the goals of WHO and EU strategies for AMR prevention by strengthening natural colonisation resistance and reducing the need for antibiotics. Its biological plausibility, evidence base, and compatibility with TCIM programmes make it an integrative component of sustainable, One

Health-oriented healthcare (WHO, 2024).

Conclusion

Mayr Therapy offers a scientifically grounded, holistic approach to reducing AMR risks. By strengthening the microbiome, barrier function, liver, and autonomic regulation, it contributes to the stabilisation of key immune and metabolic axes and integrates seamlessly into the global health promotion strategies of the WHO and the EU.

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