

Environment – Quietening Biologic Noise

Content for Website Page or Section

Environment: Removing the Noise That Fuels PMR Inflammation

In PMR, chronic inflammation is not just an immune overreaction—it is amplified by ongoing “biologic noise” from the internal and external environment.

Metaflammation (metabolic inflammation) from high BMI, insulin resistance, dyslipidemia, chronic stress, poor sleep, and nutrient overload activates NF-κB pathways in adipocytes and endothelial cells, generating reactive oxygen species (ROS) and NLRP3 inflammasomes that sustain IL-6 loops. This noise merges with inflammaging (age-related immune senescence) to lower the threshold for resolution, turning transient inflammation into persistent PMR.

Key Interventions in the Environment Pillar

- Eliminate ultra-processed foods and seed oils (pro-inflammatory).
- Adopt a Mediterranean-leaning whole-food diet high in polyphenols (berries, olive oil, turmeric, ginger), omega-3s (sardines, salmon), MUFA (avocados, nuts), soluble fiber/resistant starch (oats, cooled potatoes, beans), and fermented foods PRN.
- Circadian-aligned eating window (10–12 hours, e.g., 08:00–18:00) to reduce nocturnal IL-6 spikes.
- High water intake with morning electrolyte preload to support detoxification and hydration.

Scientific Rationale

- Ultra-processed foods and seed oils increase gut-derived endotoxins (LPS), activating TLR4/NF-κB in macrophages → IL-6 production rises by 20-30%.
- Polyphenols (e.g., EGCG, resveratrol, quercetin) inhibit NF-κB and NLRP3, reducing IL-6/TNF-α by 20-40% in rheumatic models.
- Omega-3s shift macrophages to M2 resolution phenotype, lowering systemic IL-6 by 20-30% (PREDIMED trial).

- Circadian eating aligns insulin/IL-6 rhythms, reducing postprandial inflammation.
- Soluble fiber/resistant starch produces SCFAs (butyrate) that inhibit histone deacetylation, suppressing proinflammatory gene expression.

Outcome

By removing noise, we reduce the inflammatory load on immune and vascular cells, creating the foundation for downstream pillars to restore regulation and resolution.