

Signaling: Recalibrating Immune and Cellular Pathways

PMR is driven by unrestricted IL-6/JAK-STAT/NF- κ B signaling in immune cells (macrophages, T cells) and fibroblast-like synoviocytes (FLS), creating amplifying cytokine loops. The signaling pillar targets these pathways to restore balance.

Key Interventions in the Signaling Pillar

- LDN 4.5 mg nightly (TLR4/NF- κ B inhibition).
- Supplements: omega-3, curcumin, boswellia, NAC, CoQ10, astaxanthin, resveratrol, quercetin, Cytokine Suppress with EGCG.
- Peptides: Thymosin Alpha-1, BPC-157, VIP, TB-500, LL-37.
- Red/NIR light and PEMF (daily) for NF- κ B modulation.

Scientific Rationale

- LDN blocks TLR4 on macrophages/microglia, inhibiting MyD88/NF- κ B and reducing IL-6/TNF- α by 20-40%.
- Omega-3s/curcumin/boswellia inhibit NF- κ B and 5-LOX, lowering IL-6 by 20-50%.
- NAC/CoQ10/astaxanthin reduce ROS, inhibiting NLRP3 inflammasome activation.
- Thymosin Alpha-1 enhances Treg function, reducing Th17/IL-6 by 20-30%.
- Red/NIR light and PEMF modulate NF- κ B in immune cells, reducing cytokine expression by 20-40%.

Outcome

Recalibrated signaling breaks cytokine loops, shifts to resolution (M2/Treg dominance), and supports prednisone taper.