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Anti-Inflammatory Nutrition

A Science-Based Guide

Chronic low-grade inflammation underlies cardiovascular disease, type 2 diabetes, neurodegenerative conditions, and accelerated aging. Diet is one of the most consistently modifiable drivers of inflammatory status. This guide covers the evidence-based dietary patterns and specific compounds with documented anti-inflammatory effects.

Key Biomarkers to Know

— hs-CRP (high-sensitivity C-reactive protein)
Target: < 1.0 mg/L. Produced by the liver in response to inflammation. Dietary changes can reduce hs-CRP by 20–40% within 8–12 weeks.

— IL-6 (Interleukin-6)
A pro-inflammatory cytokine elevated by visceral adiposity, poor sleep, and diets high in refined carbohydrates and seed oils.

— Omega-6:Omega-3 ratio
Optimal range: 4:1 or lower. Most Western diets sit at 15:1 to 20:1, strongly pro-inflammatory. Lowering this ratio is the single highest-leverage dietary change for most people.

Foods That Reduce Inflammation

— Fatty fish (salmon, sardines, mackerel)
2–3 servings per week provides ~2g EPA+DHA daily. A 2021 meta-analysis in Nutrients confirmed significant hs-CRP reduction with consistent omega-3 intake.

— Extra virgin olive oil
Rich in oleocanthal, which inhibits COX-1 and COX-2 enzymes — the same pathway as ibuprofen, at lower intensity. 30–50ml daily associated with reduced IL-6 in Mediterranean diet trials.

— Berries (blueberries, strawberries)
Anthocyanins reduce NF-B activation, a master regulator of inflammatory gene expression. 150g daily for 6 weeks reduced CRP in a 2010 Journal of Nutrition RCT.

— Leafy greens (spinach, kale, arugula)
High in vitamin K, which modulates osteocalcin and has documented anti-inflammatory effects independent of bone metabolism.

Foods That Promote Inflammation

— Refined seed oils (corn, soybean, sunflower)
High omega-6 linoleic acid content skews the omega-6:omega-3 ratio when consumed in quantity. Avoid cooking with these at high heat; oxidized linoleic acid metabolites are particularly inflammatory.

— Ultra-processed foods
The NOVA classification system identifies UPFs by industrial additives absent from home cooking. A 2022 BMJ cohort study found each 10% increase in UPF consumption was associated with a 12% higher inflammatory score.

— Added sugars (sucrose, HFCS)
Fructose drives de novo lipogenesis and visceral fat accumulation, the primary driver of elevated IL-6. The WHO recommendation of <25g/day added sugar is supported by inflammation data, not just metabolic outcomes.

— Trans fats (partially hydrogenated oils)
Strongly pro-inflammatory. Largely removed from commercial food in regulated markets, but still present in some imported and fried foods. Check labels for 'partially hydrogenated' oils.

Daily Anti-Inflammatory Protocol

- [ ] Eat 2+ cups of leafy greens or cruciferous vegetables
- [ ] Include one serving of fatty fish or take 2g EPA+DHA omega-3
- [ ] Use olive oil as primary cooking fat (below smoking point)
- [ ] Consume 150g mixed berries or equivalent polyphenol source
- [ ] Limit added sugar to under 25g total
- [ ] Avoid ultra-processed foods for at least 80% of meals
- [ ] Include 30g walnuts or other ALA-rich nuts
- [ ] Sleep 7–9 hours (sleep deprivation is independently pro-inflammatory)
- [ ] Manage chronic stress — cortisol elevates CRP and IL-6 regardless of diet

Evidence Summary

→ Mediterranean diet: Most studied anti-inflammatory dietary pattern. Reduces hs-CRP by 20–30% in 3 months (PREDIMED trial, NEJM 2013).

→ Omega-3 supplementation: 2g EPA+DHA daily reduces triglycerides by 15–30% and hs-CRP in those with elevated baseline (Calder, BJN 2015).

→ Polyphenol-rich diets: Associated with reduced TNF-alpha and IL-6 in multiple cohort studies. Effect strongest in those with highest baseline inflammatory markers.

→ Caloric restriction: Even modest caloric reduction (10–15%) reduces inflammatory markers independently of specific food choices, via adipose tissue reduction.