ANTI-INFLAMMATORY DIETS

There is growing consensus that systemic inflammation is at the heart of chronic disease. Although research portrays inflammation as the instigator of disease, in reality inflammation is a key feature of the immune system, functioning to defend and preserve tissue integrity and function. Pathogen invasion initiates immune system activation and the resulting complex but integrated metabolic cascades result in pathogen destruction and tissue restoration. The inflammatory mediators released during the immune response, including tumor necrosis factor alpha (TNF-), interleukins 1 and 6 (IL-1 and IL-6), and C-reactive protein (CRP), promote glycogenolysis, insulin resistance, and muscle protein catabolism. These metabolic changes ensure a rapid supply of amino acids and glucose to fuel the immune response and enable rapid immune protein synthesis. In addition, inhibition of fat oxidation by inflammatory mediators leads to a state of hyperlipidemia which serves to neutralize viruses and inhibit pathogen infectivity. Once the pathogen is cleared from tissues, the immune system wanes and the inflammatory mediators dissipate leaving tissues healthy and free of infection. However, factors aside from pathogens also stimulate an immune response such as elevated blood cholesterol or glucose concentrations, cigarette smoke and pollutants, chemical solvents, and even obesity or stress. Since these factors may not disappear or dissipate, inflammatory mediators are chronically stimulated leading to lasting insulin resistance and hyperlipidemia, and ironically, chronic disease. Individuals should focus on strategies to minimize these factors (e.g., smoking cessation, weight loss, and stress management). In addition, there is evidence that the adoption of certain dietary practices can help control chronic inflammation and minimize disease risk. Substantial evidence supports the benefits of regular fish consumption, or fish oil ingestion, and both the American Heart Association and the American Psychiatric Association recommend fish consumption (specifically fatty fish: salmon, tuna, herring, halibut, and mackerel) at least twice weekly to reduce inflammation and risk for heart and psychiatric disease. The long-chain fatty acids unique to marine foods (eicosapentaenoic acid and docosahexaenoic acid) displace the more pervasive long-chain fatty acid, arachidonic acid, in cell membranes disrupting the metabolic cascades that stimulate immune responses; consequently the inflammatory sequel is stifled. Another effective dietary strategy for reducing inflammation is to consume less arachidonic acid by omitting beef, poultry, fish, and eggs from the diet (e.g., adoption of a vegetarian diet). The anti-inflammatory effects of vegetarian diets are nearly identical to the anti-inflammatory effects demonstrated for daily fish oil ingestion. Moreover, nearly each category of vegetarian foods has been demonstrated to independently reduce inflammation. Since oxidative stress plays a prominent role in immune system activation, regular ingestion of ample amounts of fruits and vegetables (8+ servings/d) rich in polyphenols and the antioxidant vitamin C (e.g., citrus, tomatoes, berries, carrots, and greens) lowers inflammatory mediators and risk for chronic disease. Low-fat dairy, whole grains, soy products, and nuts have also been demonstrated in separate studies to effectively reduce inflammatory mediators. Thus, based on the extensive scientific evidence, the **anti-inflammatory diet** encompasses a variety of whole grains, legumes, and nuts; is rich in dark-pigmented fruits and vegetables; and includes modest amounts of fatty fish and low fat dairy. As proclaimed in antiquity: 'let food be thy medicine and medicine be thy food'.
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