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Dietary fish oil and flaxseed oil suppress inflammation and immunity in cats.

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Abstract

The modulatory activity of dietary n-3 fatty acids on inflammation and immune response in domestic cats is unknown. Mature female cats (n=14/treatment) were fed control, fish oil or flaxseed oil diets with n-6:n-3 fatty acid ratios of 20:1, 5:1 and 5:1, respectively, for 12 wk. Immune response was assessed on wk 0, 6 and 12, and skin hypersensitivity response on wk 6 and 12. Fish oil increased (P<0.01) eicosapentaenoic and docosahexaenoic acids in plasma and skin, whereas flaxseed oil increased α -linolenic acid. Fish and flaxseed oils decreased (P<0.01) skin inflammatory response to histamine. Cats fed fish but not flaxseed oil had higher (P<0.05) skin leukotriene LTB(5), but not LTB(4). Fish and flaxseed oils lowered B, total T and T(h) subset populations, and leukocyte proliferative response to PWM (P<0.05). In contrast, there was no change in ConA- or PHA-induced lymphocyte proliferation, Tc and MHC II cell populations, DTH response, NK cytotoxicity, IL-2 production, or plasma IgG concentrations. Therefore, fish and flaxseed oil can reduce skin inflammatory responses in cats, however, flaxseed oil appears less immunosuppressive than fish oil.