

Dietary fish oil increases IL-4 secretion by murine splenocytes by an effect on accessory cells

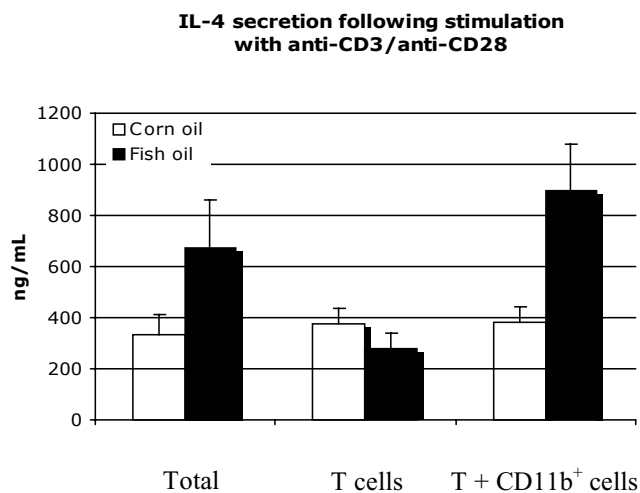
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Dietary fish oil has immunomodulatory effects⁽¹⁾. It decreases T-cell proliferation, reduces macrophage eicosanoid synthesis and has different effects on cytokine secretion by T-cells and macrophages. The present study examined the effects of dietary fish oil on secretion of T-helper (Th) 1 and Th2 type cytokines by splenocytes and the involvement of accessory cells in the effects of dietary fish oil on cytokine secretion.

Mice were fed diets supplemented with (g/kg) 180 fish oil+20 maize oil or 200 maize oil for 6 weeks (*n* 10). Spleen cells, isolated T-cells, and splenocytes depleted of T-cells were stimulated with concanavalin A (ConA), anti-CD3 or anti-CD3/anti-CD28. Secretion of the Th1 and Th2 cytokines interferon- γ (IFN- γ) and IL-4 and the pro- and anti-inflammatory cytokines TNF α and IL-10 were measured by ELISA.

Dietary fish oil decreased ConA-, anti-CD3-, and anti-CD3/anti-CD28-induced secretion of IFN- γ and TNF α by total splenocytes and isolated T-cells ($P < 0.05$). On the other hand, dietary fish oil increased secretion of IL-4 by total splenocytes ($P < 0.05$) without an effect on IL-4 secretion by isolated T-cells (Figure). When isolated T-cells were cultured with CD11b+ cells, T-cells from mice fed the fish oil diet secreted more IL-4 than T-cells from mice fed the maize oil diet ($P < 0.05$; Figure).



The results from the present study demonstrate that dietary fish oil directs the immune response of splenocytes towards a Th2 phenotype and that the effects of dietary fish oil on secretion of Th2 type cytokines are mediated by its effect on CD11b+ accessory cells.

1. Calder PC (1997) *Ann Nutr Metab* 41, 203–234.