Fish oil supplementation modulates immune function in healthy infants - DTU Orbit (28/07/2019)

Fish oil supplementation modulates immune function in healthy infants
(n-3) PUFA influence immune function in adults and may also affect immune maturation during development. This randomized trial is, to our knowledge, the first to investigate whether fish oil supplementation in late infancy modifies immune responses. The study was a 2 x 2 intervention in 64 healthy Danish infants, who received cow's milk or infant formula alone or with fish oil (FO) (3.4 +/- 1.1 mL/d) from 9 to 12 mo of age. Before and after the intervention, fatty acid composition of erythrocyte membranes, plasma IgE, C-reactive protein, and soluble IL-2 receptor concentrations were measured. TNF-alpha, INF-gamma, and IL-10 concentrations in whole-blood cultures, stimulated for 22 h with LPS+phytohemagglutinin (PHA) or Lactobacillus paracasei, were also determined. IgA was measured in feces when infants were 10 mo of age. FO supplementation effectively raised erythrocyte (n-3) PUFA (P <0.001), increased L. paracase induced INF-gamma (P= 0.05) and tended to reduce LPS+PHA-induced IL-10 (P = 0.08). The FO intervention did not affect any of the other analyzed immune variables. The erythrocyte content of eicosapentaenoic acid was negatively associated with LPS+PHA-induced IL-10 (r = -0.38, P = 0.02). Feeding milk rather than formula did not affect cytokine production, but plasma soluble IL-2 receptor concentration was greater in the formula group than in the cow's milk group (P = 0.03). Since the capacity to produce INF-gamma has been proposed as a maturation marker for the immune system in early life, this study suggests a faster immune maturation with FO supplementation with no apparent reduction in immune activation. The implications for later health need further investigation.

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