Fish oil supplementation from 9 to 18 months of age affects the insulin-like growth factor axis in a sex-specific manner in Danish infants - DTU Orbit (08/11/2017)

Fish oil supplementation from 9 to 18 months of age affects the insulin-like growth factor axis in a sex-specific manner in Danish infants

Several studies have investigated the effects of fish oil (FO) on infant growth, but little is known about the effects of FO and sex on insulin-like growth factor-1 (IGF-1), the main regulator of growth in childhood. We explored whether FO v. sunflower oil (SO) supplementation from 9 to 18 months of age affected IGF-1 and its binding protein-3 (IGFBP-3) and whether the potential effects were sex specific. Danish infants (n 115) were randomly allocated to 5 ml/d FO (1·2 g/d *n*-3 long-chain PUFA (*n*-3 LCPUFA)) or SO. We measured growth, IGF-1, IGFBP-3 and erythrocyte EPA, a biomarker of *n*-3 LCPUFA intake and status, at 9 and 18 months. Erythrocyte EPA increased strongly with FO compared with SO (P <0·001). There were no effects of FO compared with SO on IGF-1 in the total population, but a sex×group interaction (P =0·02). Baseline-adjusted IGF-1 at 18 months was 11·1 μg/l (95 % CI 0·4, 21·8;P=0·04) higher after FO compared with SO supplementation among boys only. The sex×group interaction was borderline significant in the model of IGFBP-3 (P =0·09), with lower IGFBP-3 with FO compared with SO among girls only (P=0·03). The results were supported by sex-specific dose–response associations between changes in erythrocyte EPA and changes in IGF-1 and IGFBP-3 (both P <0·03). Moreover, IGF-1 was sex specifically associated with BMI and length. In conclusion, FO compared with SO resulted in higher IGF-1 among boys and lower IGFBP-3 among girls. The potential long-term implications for growth and body composition should be investigated further.

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