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Salmon in pregnancy study (SIPS): increased oily fish intake during pregnancy, cord blood plasma immunoglobulin E (IgE) and interleukin-13 (IL-13) concentrations and clinical outcomes in infants at high risk of atopy

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Epidemiologic data provide a plausible link between dietary changes in pregnancy and infancy and increased incidence of childhood atopic disease[1,2]. Although there have been studies examining the potential benefits of giving *n*–3 polyunsaturated fatty acid (PUFA)-rich fish oil supplements during pregnancy, there are no studies examining the effects of increased consumption of oily fish in pregnancy on neonatal immune responses and subsequent clinical outcomes. Therefore, in the current study, atopic women were randomised to eating oily fish (salmon) during pregnancy or not in order to assess the effects of *n*–3 PUFA in neonates at high risk of atopy.

At 20 weeks gestation, 123 women with high risk of having atopic offspring and low habitual intake of oily fish (≤ 2 times/month) were randomised to consume two portions of salmon per week (each portion provided 2 g of *n*–3 PUFA) or to continue their habitual diet of low oily fish consumption until delivery. All women were asked to record their fish intake during the study. Umbilical cord blood was collected at birth ($n = 101$) and plasma prepared. Plasma total IgE concentrations were measured in the Chemical Pathology Laboratory at Southampton General Hospital. Plasma IL-13 concentrations were measured by enzyme-linked immunosorbent assay (ELISA). Eighty-six infants attended a clinic at 6 months of age for assessment of allergic sensitisation (skin prick testing (SPT) using allergen extracts from house dust mite, mixed tree, grass pollens, cow's milk, hen's egg, cat, dog, salmon, histamine and glycerin) and presence and severity of atopic dermatitis (SCORAD index including the extent, intensity and subjective symptoms).

Cord blood plasma IgE concentrations were not different between groups. IL-13 was not detectable in most samples of cord plasma. At 6 months of age, 7 infants in the control group (8.1%) and 12 in the salmon group (14%) had eczema, but these percentages were not significantly different. At 6 months of age, 5 infants in the control group (5.8%) and 6 in the salmon group (7%) were skin prick test positive.

In conclusion, increased consumption of salmon by pregnant women whose babies are at risk of atopy does not affect incidence of sensitisation to common allergens or eczema in those infants at 6 months of age. However, there were low rates of these outcomes. It will be important to follow-up the infants at later time points.

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