**Supplementary Table S2. Prevention of Atopic Dermatitis**

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| **Reference** | **Study Population** | **Study design** | **Intervention** | **Key findings with regard to AD and allergy** |
| Warstedt et al.13 | 95 pregnant women with risk of having an allergic child analysed  breast milk samples (colostrum) were only available of 95/ 145 originally enclosed  intervention group n=42 control group n= 53 | DB RCT | 2,6 g n-3 LCPUFA - 35% EPA (1.6 g/day) + 25% DHA (1.1 g/day) vs 2,7 g soya bean oil - 58% LA (2.5 g/day) and 6% ALA (0.28 g/day)  From 25 weeks gestation until 3rd month of lactation  average of 30.5 weeks (range 15–66 weeks) | In infants: At 24 months lower  frequency of IgE-associated food allergy, IgE-associated AD and any IgE-associated disease in the offspring  No IgE-associated disease before age of 2 years with EPA concentration in colostrum ≥ 0.83 mol% and DHA > 1.5 mol% and an AA/ EPA ratio < 0.60 |
| Palmer et al.14 | mothers participating in DOMInO trial of 706 infants at high hereditary risk of developing allergic disease  intervention group n=368  control group n=338 | Multicentre RCT | 900 mg of n-3 LCPUFA daily - 800 mg of DHA, 100 mg of EPA - vs vegetable oil capsules without n-3 LCPUFA  From 21 weeks gestation until birth | No differences in overall percentage of infants with IgE associated allergic disease  percentage of infants diagnosed as having AD (eczema with associated sensitisation) lower in n-3 LCPUFA group  Fewer infants sensitised to egg in the n-3 LCPUFA group  No difference between groups in IgE associated food allergy |
| Furuhjelm et al.15 | 145 pregnant women, at risk of having an allergic  infant | DB RCT | 2.7 g of n-3 LCPUFA - 1.6 g EPA, 1.1 g DHA vs placebo  Supplementation starting from the 25th gestational week and continuing through  3.5 months of breastfeeding | no obvious preventive effect on prevalence of clinical symptoms of allergic disease  cumulative incidence of IgE-associated disease was lower in fish oil group  higher proportions of DHA  and EPA in maternal and infant plasma phospholipids associated with lower prevalence of IgE associated disease in a dose-dependent manner  of note: during 1st year of life protective effect of maternal DHA and EPA supplementation on skin sensitization, IgE-mediated food reactions and IgE-associated eczema16 |
| Dunstan et al17 | 98 atopic, pregnant  Women  Fish oil group n=52  Control group n=46 | DB RCT | 3.7 g n-3 PUFAs (56% DHA, 27.7% EPA) per day or placebo (2.6 g olive oil)  From 20 weeks’ gestation until delivery | Infants in the fish oil group were 3 times less likely to have a positive skin prick test to egg at 1 year of  age, no difference in the frequency of  AD at 1 year of age, but significantly less severe disease  Of note: study not designed to examine clinical effects |
| Birch et al18 | 89 healthy infants  Supplemented formula: n=38  Control formula=51 | DB RCT in infancy analysis at age 3 years who completed | DHA- and AA-supplemented formula during the first year of life (0.32%-0.36%/0.64%-0.72% of total fatty acids, respectively) versus non-supplemented (control) formulas | In infants: significantly lower odds for developing AD, any allergy and other diseases in the DHA/ AA group  delayed onset and reduced incidence of common allergic diseases up to 3 years of age. |
| D'Vaz et al.**19**  D'Vaz et al.20 | 420 infants of high atopic risk  Fish oil group n=218  Control group n=202 | DB RCT | 650 mg fish oil containing 280 mg DHA and 110 mg EPA vs control oil (olive oil) daily from birth to 6 months | In infants: at 6 months n-3 PUFA levels associated with lower risk of eczema, but  differences in prevalence  of allergic outcomes (including eczema and food allergy) not significant  In a subgroup with fatty acid data measured, higher n-3 LCPUFA levels were associated with reduced risk of subsequent allergic outcomes (not significant after adjustment for  supplementation group)  subgroup analysis  Infants with higher plasma DHA levels were significantly less likely to develop eczema, lower erythrocyte EPA levels also predicted eczema development (independent of supplementation) |

n-3 LCPUFA: omega-3 long-chain poly unsaturated fatty acids, LA: linoleic acid, ALA: alpha-linolenic acid, EPA: eicosapentaenoic acid, DHA: docosahexaenoic acid, AA: arachinonic acid AD: atopic ezema

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