10 days old using PeaPod. Their total body water was assessed using isotope dilution. Furthermore, PeaPod was used to assess body volume and body weight of 108 healthy fullterm infants at one and 12 weeks of age.

Results: HF was found to be 80.9% with a low biological variability (0.81% of average HF). Values for body fat (%) calculated using the "Butte" model were significantly lower than when using the "Fomon" model at one week ($p < 0.05$) and 12 weeks ($p < 0.01$). The difference between the two models was particularly large at one week, probably due to different HF-values.

Conclusions: Our HF-value is in agreement with that in the "Fomon" model and our results support the conclusion that this model is preferable when calculating body composition from body density in infants.

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VITAMIN A AND ZINC DEFICIENCY IN SCHOOL-AGED CHILDREN IN A DEVELOPING COUNTRY, TURKEY

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Background and aims: Nowadays, asymptomatic micronutrient deficiencies are gaining importance as a public health problem and getting attention of the health authorities. Vitamin A and zinc deficiencies are common micronutrient deficiencies like iron and iodine deficiency. This study was undertaken to investigate the prevalence of asymptomatic vitamin A and zinc deficiency among school-aged children and to evaluate the affecting factors.

Methods: The study was carried out in schools in Ankara Turkey from April to May 2009. 585 girls and 478 boys, a total of 1063 healthy children aged 5-16 years were taken in to the study. Serum retinol, zinc, ferritin, and hs-CRP levels and complete blood count of each case were determined. A questionnaire was developed to collect socio-economic and demographic information of the participants. Data on dietary pattern of the children, illness history for the previous two-week period, vitamin supplementation were questioned. **Results:** Zinc deficiency was observed in 27.8% of the cases where as only 2.2% of the cases had suboptimal vitamin A

levels. There were significant positive correlations between serum retinol and hemoglobin values and statistically significant negative correlation between serum retinol level and ferritin and hs-CRP.

Conclusions: Even though vitamin A deficiency is not an important health problem among school-aged children in Ankara, Turkey, zinc deficiency seems to be still an important problem. Nationwide prevention programmes must be developed in order to prevent the widespread micronutrient deficiencies.

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LIPID METABOLISM IN SMALL FOR GESTATIONAL AGE INFANTS AT BIRTH AND AFTER 72 H OF AGE

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Aims. The aim of our study was to investigate association between birth weight and lipid levels on birth and after 72 h of age.

Methods: 50 term singleton small for gestational age (SGA) and 48 appropriate for gestational age (AGA) newborns were included in study. Groups were matched for gestational age. Concentrations of total cholesterol (t-CHOL), high density lipoprotein (HDL)-cholesterol, low density lipoprotein (LDL)-cholesterol and triglycerides were measured in cord blood and after 72h of age. We compared groups according to ponderal index (PI): below than 10th percentile SGA1 or above than 10th percentile SGA2.

Results: Triglycerides were significantly increased in SGA infants on birth (0.57 ± 0.37 vs. 0.39 ± 0.24 mmol/l, $p < 0.01$). Levels of t-CHOL, HDL and LDL were similar in SGA and AGA infants. Higher levels of t-CHOL and LDL were found in SGA newborns after 72 h of age (2.75 ± 0.74 vs. 2.42 ± 0.51 mmol/l, $p < 0.05$; 1.15 ± 0.54 vs. 0.82 ± 0.45 mmol/l, $p < 0.05$), whereas difference in levels of triglycerides and HDL were not significant. SGA1 infants had also higher values of triglycerides in cord blood than SGA2 group ($p < 0.01$) but in day three triglycerides were statistically less in SGA1 group ($p < 0.05$). Other parameters showed no difference between groups at birth as well as in day three.

Conclusions: Our data suggest that intrauterine growth restriction change fetal lipid metabolism.

This influence persists in early neonatal period and might predispose SGA infants to metabolic syndrome in adulthood.

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DIETARY ARG-GLN DIPEPTIDE OR DHA REDUCES PATHOLOGICAL NEOVASCULARIZATION (NV) AND PROMOTES RETINAL VESSEL RE-GROWTH (VR) IN MOUSE MODEL OF ROP

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Aims: ROP is the leading cause of blindness in children. The most abundant sphingolipid in retinal membranes, sphingomyelin (S), is converted to ceramide (C) by acid sphingomyelinase; C/S ratio indicates inflammation and retinal injury. We compared the effects of Arg-Gln dipeptide, alone or with DHA on NV, VR and C/S ratio in a model of ROP.

Methods: 7-day old pups and their nursing dams were placed in 75% oxygen for five days. Pups were returned to room air on postnatal day 12 (P₁₂) and supplemented by oral gavage twice daily with Arg-Gln (5 g/kg/d), DHA (2.5 g/kg/d), Arg-Gln + DHA, or vehicle through P₁₇. On P₁₇, pups were sacrificed and perfused with FITC-labeled dextran. Retinas were assessed for NV by enumeration of pre-retinal endothelial cells, intra-retinal vascular density (VR) or C/S ratio by MS.

Results: Compared to vehicle, pre-retinal NV was reduced by 61% and 51% with Arg-Gln or DHA ($p < 0.05$ both), with a 69% reduction observed for Arg-Gln + DHA ($p < 0.05$). All treatments reduced vaso-obliteration vs. vehicle (32% vs. 5.2%, $p < 0.05$). Arg-Gln, alone or with DHA, promoted intra-retinal vascular density (VR) vs. vehicle (73-76% vs. 53%). Arg-Gln returned retinal C/S ratio to that of control.

Conclusion: These results demonstrate the dietary supplementation with Arg-Gln, alone or with DHA, reduces pre-retinal NV and promotes VR in a model of ROP, underscoring the importance of nutrition in modulating disease course. In addition, C/S ratio was normalized by Arg-Gln, supporting a key role

for Arg-Gln in reducing acid sphingomyelinase.

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LANGUAGE AND BEHAVIOUR FOLLOW-UP FROM THE DINO (DHA FOR THE IMPROVEMENT OF NEURODEVELOPMENTAL OUTCOME IN PRETERM INFANTS) TRIAL

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Background: Higher-dose docosahexaenoic acid, DHA, (~1% total fats) compared with standard-dose (~0.3%) in infants born < 33 weeks gestation improved the mental development of girls (JAMA, 2009). We aimed to evaluate the effect of higher-DHA milk on behaviour and language development in early childhood.

Method: Follow-up of a subgroup of infants (n=143) enrolled in the DINO trial. DINO was a multicentre randomised controlled trial, n=657, with stratification for sex, birth weight (< 1250g, ≥1250g) and centre. Lactating women took tuna oil capsules (higher-dose DHA) or soy oil capsules (standard); preterm infant formula with matching DHA composition was given if needed.

Language was assessed using the MacArthur Communicative Development Inventory (MCDI) at 26 months corrected age (CA). The Strengths and Difficulties Questionnaire (SDQ) and Short Temperament Scale for Children (STSC) were used to assess behaviour at 3-5 years CA. **Results:** MCDI scores did not differ between groups (Vocabulary Production: higher-DHA (mean±SD) 308±79; control 316±92; $P=0.8$). Overall, there was a higher incidence of behavioural difficulties in these children compared with term-born children. However, the SDQ and STSC composite scores did not differ between groups (SDQ total difficulties: higher-DHA 10.3±6.0; control 9.5±5.5; $P=0.5$; STSC score: higher-DHA 3.1±0.7; control 3.0±0.7; $P=0.3$).

Conclusions: In this subgroup of infants, feeding preterm infants milk containing 3 times the standard DHA level did not result in any clinically meaningful change to language development or behaviour in early childhood.