Material and methods: The research included 185 newborns and infants aged 2 -19 weeks. In all the studied children the gestational age, birth weight, body mass index (BMI) and the method of feeding was assessed. In the blood serum the concentrations of triglycerides, total cholesterol and its fractions: LDL, VLDL and HDL as well as apo-AI and apo-B were determined.

Results: Concentrations of triglycerides and VLDL cholesterol were significantly lower ($p < 0.05$) in children with birth weight below 10-th percentile in relation to the gestational age. In children with BMI values over 90-th percentile concentrations of triglycerides, total cholesterol, VLDL cholesterol and apolipoprotein B were significantly higher ($p < 0.05$). The concentrations of the total cholesterol, VLDL cholesterol, apo- AI and apo-B were higher in breast-fed children when compared to the children fed with formula ($p < 0.05$).

Conclusion: The obtained results can suggest that the concentrations of lipids, lipoproteins and apolipoproteins in infants may depend on their intrauterine development, nutritional status and the method of feeding from the birth.

1063

CHANGES IN IMMUNOMODULATORY CONSTITUENTS OF HUMAN MILK IN RESPONSE TO ACTIVE INFECTION IN THE NURSING INFANT

A. Riskin¹, M. Almog², A. Kessel³

¹Neonatology, ²Paediatrics, ³Immunology, Bnai Zion Medical Center Rappaport Faculty of Medicine Technion, Haifa, Israel

Objective: To test the hypothesis that mothers respond to their nursing infants' infection by modulating white blood cells and other immunologic factors in their breast milk.

Methods: Breast milk of mothers to infants, up to 3 months of age, who were admitted to the pediatric department with fever, was sampled twice, during active illness and recovery. Milk from mothers of healthy infants served as controls. Total leukocyte count and differential as well as IL-10, lactoferrin and secretory IgA levels were analyzed.

Results: 29 sick infants and 17 healthy controls were included. Total CD45 leukocyte count dropped from 8949 ± 10702 in the acute phase to 4773 ± 6535 cells/ml milk in recovery ($p < 0.03$) with macrophages

/ monocytes count decreasing from 1801 ± 2015 to 800 ± 1273 cells/ml, respectively ($p < 0.005$). CD4 T lymphocytes dropped from $45.06 \pm 12.03\%$ to $37.58 \pm 12.55\%$ ($p < 0.02$) and CD13/16 neutrophils decreased from $82.33 \pm 10.25\%$ to $75.11 \pm 16.32\%$ ($p < 0.03$). These differences were more pronounced in mothers' milk of babies with proven infection (e.g. urinary tract infection, pneumonia, meningitis). Such differences were not recorded in subsequent samples of the controls. Secretory IgA and lactoferrin levels did not change significantly in the study group. IL-10 levels decreased in the sick infants breast milk after recovery ($p < 0.03$), but also in the healthy controls.

Conclusions: During infection the number of leukocytes, macrophages / monocytes specifically, is increased. These results may support the dynamic nature of immune defense provided by breastfeeding sick infants.

1064

DIETARY FAT QUALITY DURING DEVELOPMENT AFFECTS BODY FAT ACCUMULATION IN ADULT MICE

A. Oosting, G. Boehm, B. van de Heijning, D. Kegler, E. van der Beek

Danone Research, Wageningen, The Netherlands

We previously reported that dietary fat quality of postnatal nutrition, i.e. fatty acid composition, plays an important role in the development of body composition in mice (Oosting et al. 2009). The current study investigates whether another aspect of dietary fat quality in postnatal nutrition, i.e. the physical properties of fat globules, may also affect development of body composition. The production process of infant milk formula (IMF) alters the physical properties of the lipid globules compared to raw milk (RM; Lee et al., 2002). We developed an IMF with a complex lipid matrix (CLM) which more closely resembles the physical properties of lipid globules in RM, like breast milk, and we evaluated the long term effects of CLM versus standard IMF (CTR) on body composition in mice.

Postnatally, between 16 and 42 days of age, male C57Bl/6j mice were subjected to a diet containing either CLM or CTR. Subsequently, a moderate Western style diet (WSD, 10 w% fat) was fed until dissection at 126 days of age. Body composition was monitored by dual x-ray absorptiometry.

Although body weight was not affected, fat accumulation was reduced and lean body mass was increased in adult mice raised on CLM diet compared to CTR diet. Hence, exposure early in life to a diet with an RM-like fat quality prevented excessive fat accumulation when challenged with a moderate WSD during adulthood.

References:

Oosting et al., 2009, *J. DoHaD*, 1(1): S211-212.

Lee et al. 2002. *J. Dairy Research* 69: 555-567.

1065

ADULT BODY FAT ACCUMULATION IS NOT AFFECTED BY ADDING PHOSPHOLIPID-INGREDIENT AND ONLY marginally BY LIPID-DROPLET SIZE IN THE POSTNATAL DIET

L. Schipper, M. Abrahamse, D. Kegler, A. Oosting, E. van der Beek

Danone Research, Wageningen, The Netherlands

Previously, we have shown that postnatal exposure to infant milk formula (IMF) with complex lipid matrix (CLM) prevented excessive diet-induced fat accumulation in adult mice (Oosting et al., 2010). Lipid droplets in CLM have physical properties closer to breast milk, i.e. large in size and coated with phospholipids (PL). We now studied the contribution of both lipid droplet size and the mere presence of dietary PL to this beneficial, protective effect of CLM on adult body composition. Postnatally, between 16 and 42 days of age, male C57Bl/6j mice were subjected to a diet containing either standard IMF (CTR; mode 0.5 µm), CLM (mode 4.3 µm), IMF with large lipid droplet size (IMF-L; mode 4.0 µm), or IMF-L with PL present in free form, not coating the lipid droplets (IMF-PL; mode 5.0 µm). Subsequently, a moderate Western style diet (10 w% fat) was fed until dissection at 98 days of age. Body composition was monitored by dual x-ray absorptiometry. Again body fat accumulation in adulthood was reduced in the CLM diet compared to the CTR diet. Increasing the dietary lipid droplet size only marginally affected body fat accumulation. Moreover, no additional effects of added PL (IMF-PL) were observed. Although increased lipid droplet size in the postnatal diet did slightly affect adult body composition, the mere presence of PL in free form had no additional effect. Evidently other aspects of CLM contribute to the observed prevention of the Western style diet-induced fat accumulation during adulthood.

Oosting et al., 2010, *EARNEST*.

1066

A PILOT TRIAL ON ACCEPTABILITY, TOLERANCE, AND EFFICACY OF A THICKENED EXTENSIVE CASEIN HYDROLYSATE (ALLERNOVA AR[®])

Y. Vandenplas, B. Hauser, T. Devreker

Paediatrics, UZ Brussel, Brussels, Belgium

Rationale: Regurgitation and irritability are common in infants, and occur as manifestation of GER and cow milk allergy (CMA). Thickened formula is effective in (troublesome) regurgitation and mild GERD, and an extensive hydrolysate is recommended in CMA.

Methods: A prospective, open trial was conducted to evaluate the efficacy of an extensive casein-hydrolysate thickened with specifically treated starch in 24 infants with a suspected diagnosis of mild GERD and/or gastro-intestinal manifestations of CMA (all infants regurgitated or vomited > 4 times/day). Previous interventions (at least one dietary change and one drug for GERD) had failed in all infants. **Results.** 6/24 infants (25 %) dropped out because of pyloric stenosis (n:1), urinary tract infection (n:1), severe combined immune deficiency (n:1), no improvement of symptoms (crying and vomiting) (n:3). The formula was well tolerated in 18/24 infants, and administered up to the age of 6 months. In total, "Allernova-AR" was consumed during 2165 trial-days. Objective arguments for CMA were observed in 8/18 infants (eosinophilia (n:3), allergic colitis (n:2), partial atrophy villi (n:2); positive skin prick test (n:2)). The mean duration of feeding was 125 days. Weight and length evolution were normal. Regurgitation at baseline (mean 5.85) decreased after one week by more than 50 % (mean 2.12)(p:< 0.001). The Infant-GER-Questionnaire showed a clinical meaningful improvement of at least 5 points in all 18 infants tolerating the new formula.

Conclusion: Given the frequent simultaneous occurrence in infants of symptoms suggesting CMPA and/or GERD, Allernova-AR provides practitioners an effective and safe therapeutic option.