index (IO), arterial-alveolar oxygen ratio (a/APO2), alveolar-arterial oxygen gradient (A-a)DO2 and pulmonary function (compliance $C_{dyn}$ and tidal volumen $V_T$) were measured each 30 min during the experiment. Mean±SD, ANOVA, $p< 0.05$.

**Results:** After 90min of treatment, animals in PFC-aerosol group, significantly improved gas exchange in comparison to Control group, being the improvement persistent until the end of the experiment: $P_{aCO2}$ (37±6 vs. 93±12 mmHg), pH (7.41±0.11 vs. 7.15±0.09), IO (9±3 VS. 77±44), a/APO2 (0.29±0.11 vs. 0.04±0.02), (A-a)DO2 (294±133 vs. 572±20). Moreover, the pulmonary function significantly improved after 60 min of treatment in PFC-aerosol group compared to Control group, the improvement was sustained during the experimental period: $C_{dyn}$ (0.53±0.05 vs. 0.27±0.04 ml/cm$H_2O$/kg), $V_T$ (12.5±2.4 vs. 5.2±1.8 ml/kg). During all the experimental period there were not changes on cardiovascular parameters.

**Conclusion:** Our results show that administration of aerosolized PFC improves pulmonary function and gas exchange. FIS07/0733-GV2007111046

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## EXPRESSION OF AENAC IN AIRWAYS CORRELATES WITH ENDOGENOUS CORTISOL IN NEWBORN TERM INFANTS

**C. Janér**, O. Helve, O.M. Pitkänen, S. Andersson

*Hospital for Children and Adolescents, Helsinki University Central Hospital, Helsinki, Finland*

**Objective:** Reabsorption of lung fluid is critical for the adaptation of the newborn infant. Defective reabsorption may result in transient tachypnea of the newborn or contribute to respiratory distress syndrome. Perinatally, epithelial sodium channel (ENaC) is crucial for lung fluid reabsorption. ENaC is composed of 3 homologous subunits, the α-subunit being indispensable to ENaC function. Exogenous glucocorticoids (GC) regulate ENaC gene expression, but little is known whether an association exists between endogenous cortisol and ENaC.

**Subjects and methods:** 69 term infants delivered vaginally (n=22) or by elective cesarean section (CS) (n=47) were included. We collected cord blood and saliva for cortisol analyzes with ELISA. Airway epithelium ENaC mRNA was quantified with real-time RT-PCR and normalized to cytokeratin 18 (CK18). Saliva and airway epithelial sampling was performed < 3h, 24 ± 5 and 48 ± 8 h postnatally. In a subset of infants delivered by elective CS (n = 26) first airway samples were obtained < 30 min postnatally.

**Results:** αENaC mRNA < 30 min postnatally correlated with cord cortisol; r = 0.64, p = 0.001 (n=22). Adjusted for GA the correlation remained significant ; r = 0.59, p = 0.005. At < 3h postnatally αENaC correlated with salivary cortisol; r = 0.52, p = 0.004 (n=29).

**Conclusion:** Cortisol seems to be an important physiologic regulator of ENaC expression at birth. Our finding suggests that lung fluid transport may respond to GC even in the term infant. This underlines the potentials of regulation of perinatal lung fluid reabsorption by GC.

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## THE EFFECT OF ENTERAL SUPPLEMENTATION OF NEUTRAL AND ACIDIC OLIGOSACCHARIDES ON INTESTINAL MICROBIOTA, PH, SCFAS AND SIGA IN PRETERM INFANTS

**E. Westerbeek**[1], H. Lafeber[1], J. Knol[2], W. Fetter[1], R. van Elburg[1]

*[1]Neonatalogy, VU University Medical Center, Amsterdam, [2]Danone Research, Wageningen, The Netherlands*

**Introduction:** We aimed to determine the effects of enteral supplementation of a prebiotic mixture consisting of neutral and acidic oligosaccharides ( $_{SC}$GOS/$_{LC}$FOS/AOS) on faecal microbiota, SCFAs, pH and sIgA in preterm infants. Furthermore, we determined perinatal factors associated with faecal microbiota.

**Methods:** In a RCT, preterm infants with a gestational age < 32weeks and/or birth weight < 1500g received enteral supplementation of $_{SC}$GOS/$_{LC}$FOS/AOS or placebo (maltodextrin) between days 3-30 of life. Faecal microbiota, as measured with FISH, and SCFAs, pH and sIgA was assessed at 4 time points: before start of the study, at day 7, 14 and 30 of life. Data were analysed by generalised estimating equations.

**Results:** In total, 55 preterm infants in the $_{SC}$GOS/$_{LC}$FOS/AOS and 58 preterm in the placebo group were included. Baseline patient and nutritional characteristics were not different between both groups. Enteral supplementation of $_{SC}$GOS/$_{LC}$FOS/

AOS increased total bacteria count at day 14 (p=0.02, 95%CI 1.18-13.04), but not at day 30 (p=0.31, 95%CI 0.60-5.03). Enteral supplementation of $_{SC}$GOS/$_{LC}$FOS/AOS decreased faecal pH (p=0.01, 95%CI 0.54-0.93) and increased acetic acid (p=0.03, 95%CI 1.01-1.21). There was no effect on sIgA (p=0.50, 95%CI 0.28-13.27). Antibiotics delay the intestinal colonisation (p< 0.001, 95%CI 0.08-0.22).

**Conclusions:** Enteral supplementation with a prebiotic mixture consisting of neutral and acidic oligosaccharides increases the postnatal intestinal colonisation. However, administration of broad spectrum antibiotics decreased the growth of all intestinal microbiota. We suggest that caution should be given when considering initiation with broad spectrum antibiotics in preterm infants.

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## EFFECT OF DAILY INTAKE OF PREBIOTIC (FRUCTOOLIGOSACCHARIDE) ON WEIGHT GAIN AND REDUCTION DIARRHEA MORBIDITIES AMONG URBAN CHILDREN IN BANGLADESH

S. Nakamura[1], **S.A. Sarker**[2], M.A. Wahed[3], Y. Wagatsuma[4], T. Oku[5], K. Moji[1]

*[1]Graduate School of Human Health Science, Siebold University of Nagasaki, Nagasaki, Japan, [2]Clinical Sciences Division, [3]Laboratory Sciences Division, International Centre for Diarrhoeal Diseases Research, Bangladesh, Dhaka, Bangladesh, [4]University of Tsukuba in Ibaraki, Tsukuba, [5]Faculty of Nursing and Nutrition Department of Nutritional Science, University of Nagasaki, Nagasaki, Japan*

**Background and aims:** Feeding prebiotic agents have been shown to be useful in preventing enteric diseases by selectively stimulating growth of bifidobacteria and lactobacilli in the gut. There is currently insufficient evidence to support their use to prevent diarrhea in children. We evaluated the effect of daily intake of fructooligosaccharide (FOS), a prebiotic agent on diarrhea morbidities and nutritional status in urban children in Bangladesh.

**Methods:** A double-blind randomized controlled clinical trial was conducted on 150 children aged 25-59 months to receive 50-ml of isotonic solution with 2-g of FOS or an identical solution without FOS (Placebo) once daily over six consecutive months. Children´s mothers were interviewed weekly to obtain history of diarrhea, stool consistency, and other morbidities. Anthropometry was also measured.

**Results:** The number of diarrhea episodes was less in FOS group compared to the placebo group. However, the difference was not statistically significant. The total mean days with diarrhea as well as each episodes of diarrhea were significantly shorter in the FOS group (3.3 vs. 6.3 d, *p*=0.039 and 2.5 vs. 3.2 d, *p*=0.008, respectively). The body weight gain during the six-month period in the FOS group (0.86±0.55 kg) and the placebo group (0.89±0.48 kg) was not significantly different, and so were the height and the mid-arm circumference.

**Conclusions:** Daily intake of FOS shortens duration of diarrhea episodes, but is not useful in promoting weight gain or in preventing diarrhea. Further studies with optimizing doses are needed to define better role of FOS in diarrhea in children.

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## CAN POSTNATAL SUPPLEMENTATION WITH PROBIOTICS REDUCE THE RISK FOR ALLERGIC DISEASE IN INFANCY?

**T. Abrahamsson**[1], M. Olofsson[1], J. Ludvigsson[1], R. Korpela[2], M. Jenmalm[3], O. Vaarala[4]

*[1]Department of Clinical and Experimental Medicine, Division of Pediatrics, Linköping University, Linköping, Sweden, [2]Valio Ltd, Helsinki, Finland, [3]Department of Clinical and Experimental Medicine, Division of Inflammation Medicine, Linköping University, Linköping, Sweden, [4]Immune Response Unit, Department of Vaccination and Immune Protection, National Institute for Health and Welfare, Helsinki, Finland*

**Background and aims:** The increasing allergy prevalence may depend on a reduced microbial exposure early in life. Probiotics may prevent eczema in infants. Prenatal maternal supplementation might be crucial for this effect. The mixture of probiotic strains used in the present study reduced eczema when previously supplemented both pre- and postnatally. The aim of this study was to evaluate the effect of only postnatal probiotic supplementation on allergic manifestations during the first two years of life and to explore the impact of environmental factors on allergy development.

**Methods:** In the double-blind placebo-controlled PRODIA study, infants with HLA risk genotype for type 1 diabetes were supplemented from two until