Conclusion: The FMS emulsion was associated with a marked reduction of plasma cholesterol. If fish oil reduces cholesterol byosintesis or enhances its clearance is unknown in preterm infants. The clinical benefits or lack of benefits of these findings should be assessed in cardiovascular and neurodevelopmental follow up studies.

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OPTIMAL POTASSIUM INTAKE FOR PRETERM INFANTS ON PARENTERAL NUTRITION

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Background and aims: Current guidelines for preterm parenteral nutrition aim to approximate normal foetal growth and avoid postnatal catabolism by achieving an earlier and higher intake of amino acids (AA) and calories (early aggressive parenteral nutrition, EAPN). Few investigations have explored whether electrolytes and water homeostasis could be modified by EAPN, but none have assessed electrolytes needs on EAPN. We performed a prospective observational trial to estimate potassium needs in relation to nutritional approach.

Methods: During 14 months all preemies (≤32 weeks) receiving PN in central or peripheral venous line were eligible. During the first week, we performed daily determination of plasma and urine electrolytes (8-hour collection), we recorded intakes, body weight and calculated potassium balance. For analysis infants were divided into 3 groups: low protein (LP) < 1g/kg/day; medium protein (MP) 1-2g/kg/day; high protein (HP) >2g/kg/day.

Results: 154 infants were entered. In the HP group kaliemia and kaliuria were significantly lower and non-oliguric hyperkaliemia was prevented. Potassium balance differed among groups: LP -3.6 mmol/kg/wk, MP -0.3 mmol/kg/wk and HP +2.6 mmol/kg/wk ($p< 0.001$). AA intake was the main independent factor influencing potassium balance, followed by caloric intake and day of life.

Discussion: Potassium balance and homeostasis are influenced by cellular integrity and function. AA intake is the main determinant for avoiding catabolism after birth. We showed that early AA intake have a strong influence on potassium balance. Our data allow us to calculate the optimal potassium requirements, in relation to AA and caloric intakes and day of life.

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POSTNATAL ENERGY AND PROTEIN DEFICITS ARE ASSOCIATED WITH POOR NEONATAL GROWTH: PRELIMINARY RESULTS FROM A SWEDISH POPULATION-BASED STUDY

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Background: Extremely preterm infants have extraordinarily high nutrient requirements and often show postnatal growth failure. It is still controversial, however, to what extent nutrition affects the weight development during the first weeks of life in these infants.

Aim: To explore possible associations of accumulated intake of macronutrients and weight development during the first 28 days of life. **Methods:** All extremely preterm Swedish infants (< 27 gestational weeks) born between April 2004 and March 2007 (the EXPRESS-study) who survived >24 hours (n=600). Parenteral and enteral nutrition data and anthropometric data for the first 28 days were collected. Data are mean±SD.

Results: Preliminary analyses of data from 152 infants (84 boys, gestational age 25.2±1.0 weeks, birth weight 756±168g, birth length 32.2±2.6 cm and head circumference 23.2±1.5 cm) showed that during the first 28 days of postnatal life, mean fluid intake was 164±17ml/kg/d, energy 97±13kcal/kg/d, protein 2.9±0.5g/kg/d, carbohydrates 11.0±1.1g/kg/d and fat 4.6±1.2g/kg/d. From birth to 28 days, ΔSDS was -2.2 SD for weight, -2.3 SD for length and -1.4 SD for head circumference. There was a significant correlation between ΔSDS for weight and protein intake ($r=+0.50$), energy intake ($r=+0.44$) and fat intake ($r=+0.39$) ($p< 0.001$ for all).

Conclusions: Extremely preterm Swedish infants