adult life may explain the increased risk of type 2 diabetes and cardiovascular disease in ODM. Differences related to type of maternal diabetes require further investigation.

## PS-041 WITHDRAWN

## PS-042 MYOKINE IRISIN IS DOWN-REGULATED IN FETAL GROWTH RESTRICTION

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**Background/aim** Intrauterine growth restriction (IUGR) causes adaptations that program future propensity to obesity-related metabolic diseases, partly due to mitochondrial dysfunction in skeletal muscle, which is the major site of postprandial glucose disposal. Furthermore, IUGR fetuses present with compromised thermoregulation and susceptibility to hypothermia at birth, due to diminished insulation of subcutaneous adipose tissue. Irisin has recently been introduced as a novel myokine, which induces browning of the subcutaneous adipose tissue and consequent thermogenesis, while improving glucose metabolic parameters, such as insulin sensitivity and signalling. We aimed to prospectively investigate fetal circulating irisin concentrations in IUGR versus normal pregnancies and correlate them with various perinatal factors.

**Subjects and methods** Plasma irisin concentrations were determined by ELISA in 50 mixed arteriovenous cord blood samples from IUGR (n = 30) and appropriate-for-gestational-age (AGA, n = 20) singleton full-term pregnancies.

**Results** Fetal irisin concentrations were lower in IUGR cases, compared to AGA controls (p = 0.031). No association was recorded between cord blood irisin concentrations and maternal age, parity, gestational age, delivery mode or fetal gender in both groups.

**Conclusions** The well-documented impaired skeletal muscle metabolism and mitochondrial dysfunction in IUGR fetuses may account for their irisin deficiency, which may be part of the fetal programming process, leading to increased susceptibility to later development of obesity and related metabolic disorders. Furthermore, irisin down-regulation may represent an additional mechanism underlying the susceptibility of IUGR infants to hypothermia at birth, by inducing less "browning" of their already diminished subcutaneous adipose tissue and consequently less non-shivering thermogenesis at birth.

## PS-042a DOCOSAHEXAENOIC ACID (DHA) IS NEUROPROTECTIVE AFTER NEWBORN ASPHYXIA PROTON-MAGNETIC-RESONANCE-SPECTROSCOPY (H±-MRS) ON HYPOXIC BRAIN TISSUE IN PIGLETS

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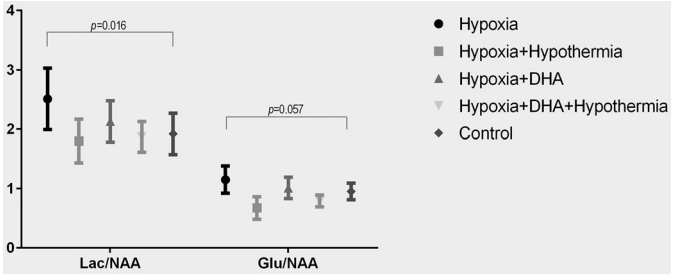


**Abstract PS-042a Figure 1**

**Background** Hypothermia is an established treatment for perinatal asphyxia. Post treatment hypothermia MRI supplemented with H±-MRS is used in clinics as the best predictor for neurodevelopmental outcome. DHA is an omega-3 fatty acid thought to modify apoptosis, inflammation and reduce lipid peroxidation in face of hypoxia. We have previously shown neuroprotective effects of DHA. The current study combines DHA and hypothermia.

**Methods** 54 newborn pigs (age 12–36 h) were randomised to undergo hypoxia (N=48) or not (Control, N=6). Hypoxia was achieved on fully anaesthetised, intubated piglets through FiO2 0.08 until bloodgases reached Base Excess -20 mmol/L or middle arterial blood pressure below 20 mmHg. Piglets were then block randomised to one of four groups: (1) Hypoxia, (2) Hypoxia + Hypothermia, (3) Hypoxia + DHA or (4) Hypoxia +DHA +Hypothermia. Piglets were mechanically ventilated 9,5 h post end hypoxia and then euthanized. Hippocampal brain tissue was immediately snap frozen in liquid nitrogen. H±-MRS measuring lactate (Lac) and glutamate (Glu) in relation to n-acetylaspartate (NAA) was conducted on frozen tissue. Piglets with autolysis of the brain and outliers over 2 standard deviations were removed from the analysis.

**Results** The only Lac/NAA ratio significantly different than control, is the hypoxia group (p = 0.016). Intervention groups show no significant changes vs controls. Group 1 vs group 3 shows a borderline significance (p = 0.073).

**Conclusion** Hypoxia significantly increases the Lac/NAA biomarker and intervention groups are at a pre-hypoxic control level. The pattern consists through the Glutamate group. DHA may be beneficial in neuroprotection after asphyxia.

## PS-042b RESULTS OF THYROID FUNCTION TESTS IN PREMATURE INFANTS

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Thyroid hormones are critical for normal growth and neurodevelopment. Abnormalities of thyroid functions tests (TFT) are frequently seen in premature infants, physiological hypothyroxinemia being the most common (70%). Clinical and subclinical hypothyroidism is common (0.3–2.5%) in woman who are in conceptional age or pregnant. Maternal hypothyroidism is known to have an adverse impact on the developing fetus. In this study we aim to identify the rate of abnormalities of TFT, its association with morbidities and impact on long term neurodevelopment.