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## Role of maternal lipids on neonatal body weight under healthy and gestational diabetic conditions

During early pregnancy, the increase in maternal fat depots is facilitated by insulin, followed by increased adipose tissue breakdown and subsequent hypertriglyceridemia, mainly as a result of insulin resistance (IR) and estrogen effects. Most fatty acids (FAs) in maternal circulation are esterified and associated with lipoproteins which are taken up by the placenta and hydrolyzed by lipases and the released FAs enter fetal circulation. Under control conditions, maternal glucose but not triacylglycerides (TAG) or nonesterified fatty acids (NEFA) correlate with neonatal weight, BMI or fat mass. However in gestational diabetic mellitus (GDM) the fetus does not seem to receive more FAs than in non-GDM pregnancies but whereas maternal glucose doesn't correlate with fetal anthropometric parameters TAG and NEFA show significant correlations. In newborns of GDM mother's serum glucose and consequent insulin levels are high and such hyperinsulinemia would facilitate TAG synthesis, contributing to their increased adipose tissue mass. Long-chain polyunsaturated FAs (PUFA) are essential for fetal development and are obtained from the mother. The proportion of arachidonic, docosahexaenoic and total n-6 and n-3 PUFA are lower in umbilical arterial plasma but not in venous plasma of neonates of GDM vs. controls indicating an altered metabolism of PUFA by the fetus of GDM mothers. In rats a moderate increase in dietary n-3 PUFA during early pregnancy reduces adiposity and the age-dependent insulin resistance in 12 months old male offspring. The increase in body fat in neonates of GDM women is a risk factor for obesity in early childhood and later life.

## Biography

Emilio Herrera received PhD from Complutense University (Madrid), and is an Emeritus Professor of Biochemistry and Molecular Biology at Faculties of Pharmacy and Medicine, University San Pablo-CEU in Madrid, Spain and Doctor Honoris Causa in Medicine by Lund University (Sweden). He carried out his Post-doctoral studies in Harvard University and Northwestern University Medical Schools. He has 282 peer-reviewed papers with IF (total IF by JCR-2009, 755.20) and 77 book chapters, having a h-index of 37 and has directed 49 PhD thesis.

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