Développement fœtal du porcelet en relation avec la survie à la naissance. Axe corticotrope et transcriptome surrénalien

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Foetal development in relationship with piglet survival at birth. Adrenocortical axis and adrenal transcriptome study.

Piglet mortality is a major source of economic loss to European pork production and a social and ethical problem related to animal welfare. The adrenocortical (HPA) axis is a major player in fetal maturation and in the genetic influences on piglet survival. Together with the autonomic nervous system it has a critical role in metabolic adjustments at birth. The aim of our project is to analyze genetic influences on the maturation of the fetus, based on 2 extreme breeds, Meishan (MS, high potential for piglet survival and hyperactive HPA axis) and Large White (LW, high incidence of piglet mortality and low activity of the HPA axis). In order to dissociate maternal and fetal contributions, MS and LW sows were inseminated with mixed sperm. Fetuses were delivered by caesarean section at 2 stages of gestation (90 or 110d). Blood was collected from cord artery and/or vein, and adrenal glands were sampled at necropsy.

Cortisol levels, measured by radioimmunoassay, were higher at 110d than at 90d ($P<0.05$). After normalization and filtering, 43385 of the 61625 transcripts present on the Agilent pangenomic arrays were found to be expressed in the adrenal glands and 207 transcripts (FDR<5%) were significantly regulated with regard to the interaction between genotypes and gestational stages. The next step consists in exploring how the transcriptional regulation of the differentially expressed genes among the two fetal stages and the four genotypes may be related to maturity processes.

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