Relationship between the expression of development-related genes and properties of porcine hind limb muscles

Congenital splay leg in newborn piglets is assumed to be a developmental retardation of skeletal muscle. We have recently investigated the expression of genes with known influence on the development and growth of the skeletal muscle in *M. biceps femoris* of healthy and affected newborn piglets. We identified the gene for MEOX2 (mesenchyme homeobox 2) as being significantly down-regulated in male splay leg piglets compared to healthy males. MEOX2 is involved in the regulation of vertebrate limb myogenesis. The aim of this study was to investigate (1) whether this down-regulation is generally observed in different hind limb muscles and (2) whether there is a relationship between the expression level of the gene and histological and biochemical properties of the respective muscles. To this end, we have isolated total RNA from *Mm. adductores, gracilis* and *sartorius* from each three male healthy and splay leg piglets. After reverse transcription of the mRNA-population with random hexamer primers gene specific primers for MEOX2 were used for Real-time-PCR. The individual expression of the gene for 18S rRNA within each muscle was used for standardization of the values. The expression was not different in *Mm. adductores* and *gracilis* but again, a highly significant down-regulation (3-fold) was observed in *M. sartorius* of male splay leg piglets. A first survey on the structure of the respective muscles revealed no significant relationship between histological parameters (e.g. secondary to primary fiber ratio; fiber density) and the observed expression differences. Further investigations are required to explain the observed differences between different muscles and between both sexes within a muscle.

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