

**An example of nutrigenomics and nutrigenetics in ovine: Stearoyl-CoA Desaturase (SCD)**

L. González-Calvo<sup>1</sup>, E. Dervishi<sup>1</sup>, M. Serrano<sup>2</sup>, G. Ripoll<sup>1</sup>, F. Molino<sup>1</sup>, M. Joy<sup>1</sup> and J.H. Calvo<sup>1,3</sup>

<sup>1</sup>CITA Aragón, Avda. Montaña 930, 50059 Zaragoza, Spain. <sup>2</sup>INIA Ctra. La Coruña, Madrid, Spain.

<sup>3</sup>ARAID, M. Luna, Zaragoza, Spain; lgonzalezc@aragon.es

Two experiments were conducted to study the effect of feeding system and a polymorphism located at SCD promoter on the SCD gene expression. In the first experiment 44 Rasa Aragonesa male lambs were grouped according to the feeding system in grazing alfalfa (ALF, n=22) and indoor concentrate feeding (IND, n=22). In the second experiment 58 Rasa Aragonesa male lambs were allocated in 2 groups: 8 lambs with their dams feed with grazing alfalfa (ALF) and the rest (n=50) feeding commercial concentrate supplemented with 500 mg of dl- $\alpha$ -tocopheryl acetate/kg for different days before slaughter (IND). Lambs were slaughtered at 22-24 kg live-weight, and a piece of Semitendinous (ST) and L. thoracis (LT) muscles from experiment 1 and 2, respectively, were collected to gene expression and SNP genotyping. SCD gene expression levels were determined by real time-PCR, and normalized using 3 housekeeping genes in each tissue: GAPDH, ACTB, and B2M in ST and RPL 19, B2M and YWHAZ in LT. In the first experience IND group showed higher levels (7.7-fold) of SCD expression comparing with the ALF lambs (P=0.03), finding significant differences among the genotypes of the polymorphism located at the SCD promoter. Thus, AA animals (n=1) express 72 fold more than CC animals (n=10) (P=0.02) and CA (n=11) animals express 5 fold more than the CC ones (P=0.04). However, in the second experiment only significant differences were found in relative SCD gene expression in LI between the AA (n=7) and CA (n=25) genotypes in animals feeding concentrate (P=0.03). Results indicate that the feeding system acts as modulator of the effect of the polymorphism located at the SCD promoter over the gene expression in both muscles. In alfalfa lambs the genotype had not effect on gene expression while in lambs feeding concentrate the genotype seems to be implied in the regulation of the gene expression.