

**P3012 Genome-wide expression profiling in muscle of lambs in response to the intake of concentrate supplemented with vitamin E or alfalfa grazing.** Laura González Calvo (Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA)), Roberto Martín Hernández (IMDEA-Alimentación), Margarita Joy (Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA)), Malena Serrano (INIA), Jose Ordovás (IMDEA-Alimentación) and Jorge Calvo (Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA))

Feeding animals with either concentrates supplemented with vitamin E or alfalfa grazing has been proven to reduce the oxidative process that occurs in meat products. Indoor lambs were fed a commercial concentrate (n=7, C) or concentrate supplemented with 480 mg of dl- $\alpha$ -tocopheryl acetate/kg dry matter (DM) (n=7, VE) for 30

days before slaughtering at 22–24 kg of live weight. Simultaneously, 7 unweaned lambs grazed in alfalfa paddocks (ALF, 154 mg  $\alpha$ -tocopherol/kg DM) with their dams. Using global transcriptomic data of *longissimus thoracis* muscle with the Affymetrix® Ovine Gene 1.1 microarray, 312 genes were identified as differentially expressed in VE compared to C (155 up- and 157 down- regulated), whereas 426 genes were found to be differentially expressed in ALF compared to C (206 up- and 220 down- regulated) (p<0.01). These differentially expressed genes were selected for a functional analysis by using GeneCodis, a web-based tool for the ontological analysis of large lists of genes. Some of the identified significant biological processes were proteasomal ubiquitin-dependent protein catabolic process, collagen fibril organization, cellular response to oxygen levels and skeletal muscle cell differentiation in VE vs. C comparison; whereas terms as regulation of actin filament polymerization, skeletal muscle tissue development and fatty acid metabolic process were significant in ALF vs. C comparison. The KEGG terms revealed that pathways in cancer, focal adhesion, propanoate metabolism, protein processing in endoplasmic reticulum and regulation of actin cytoskeleton pathways were significantly altered in VE vs. C, and ALF vs. C comparisons. Pathways related to infectious diseases were also found in ALF vs. C comparison: pathogenic *Escherichia coli* infection, bacterial invasion of epithelial cells and shigellosis. Further exploration of the links between these pathways and vitamin E will lead to a better understanding of how vitamin E affects the oxidative process that occurs in meat products.



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# ABSTRACT

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