

**Effect of *Ovar-DRA* and *Ovar-DRB1* genotype on fecal egg counts in sheep and goat populations infected with *Haemonchus contortus***

Z.M. Estrada-Reyes<sup>1</sup>, Y. Tsukahara<sup>2</sup>, A. L. Goetsch<sup>2</sup>, T. A. Gipson<sup>2</sup>, T. Sahl<sup>2</sup>, R. Puchala<sup>2</sup>, Z. Wang, S. P. Hart, and R. G. Mateescu<sup>1</sup>

<sup>1</sup>Department of Animal Sciences, University of Florida, Gainesville, FL

<sup>2</sup>American Institute for Goat Research, Langston University, Langston, OK

Breeding parasite resistant animals that are less dependent on the use of anthelmintics has received special attention in the 20 last years. The major histocompatibility complex (MHC) has emerged as a potential region containing different DNA polymorphisms associated with resistance to gastrointestinal nematode infections (GNI) in sheep populations. The aim of the present study was to evaluate the effect of *Ovar-DRA* and *Ovar-DRB1* genotypes on fecal egg count (FEC) in sheep and goat populations from the Southeast region of U.S. infected with *Haemonchus contortus*. One hundred and forty three sheep from 3 different breeds (St. Croix, Katahdin and Dorper) and one hundred and fifty goats from three different breeds (Spanish, Boer and Kiko) were used during three years of evaluation. Parasitological (FEC), hematological (packed cell volume) and immunological (IgA, IgG and IgM) parameters were measured. Sheep populations showed a higher FEC and humoral response than goat breeds. Genotypes were determined by High Resolution Melting Assays and by conventional PCR for *Ovar-DRA* and *Ovar-DRB1* respectively. Results indicated that *Ovar-DRA* and *Ovar-DRB1* genotypes had a significant effect on FEC sheep populations ( $p < 0.05$ ), but for goats only *Ovar-DRA* genotype was significant ( $p < 0.05$ ). For *Ovar-DRA*, sheep and goats carrying the AA genotype showed significant lower FEC than AG and GG genotypes. Dominance effect was found to be 682 eggs less per gram of feces for the A allele. For *Ovar-DRB1*, only in sheep the GC genotype was associated to low FEC. Dominance effect was 1503 eggs less per gram of feces for the G allele. The results presented in this study indicate SNP within *Ovar-DRA* and *Ovar-DRB1* could be potential markers to be used in selection programs for improving resistance to *Haemonchus contortus* infection.