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64 The effect of postweaning fecal egg count EBV on colostrum IgG concentration and color in Katahdin dams.

Kelsey Bentley¹, Andrew R. Weaver²,

Lee L. Wright³, Scott P. Greiner⁴, Scott

A. Bowdridge¹, ¹West Virginia University, ²NC

State University, ³Southwest Virginia Agricultural

Research and Extension Center, ⁴Virginia Tech

Abstract: Selection for postweaning fecal egg count (PFEC) EBV has revealed that low-PFEC sheep have greater resistance to gastrointestinal nematode infection, greater survivability to weaning, and greater anamnestic response to booster clostridial vaccination. Therefore, it can be hypothesized that selection for PFEC may result in improved generalized immunity. It has also been reported that good-quality colostrum has a thick consistency and yellowish color. Thus, the aim of this study was to compare IgG concentration and color of colostrum in Katahdin ewes divergent in their PFEC EBV. All lactating ewes at the SWAREC were analyzed and were sorted into three groups: low-PFEC (PFEC < -50, n = 39), mid-PFEC (-49 < PFEC < +49, n = 38), and high-PFEC (PFEC > +50, n = 23) and sampled within 6-h post-partition. Upon parturition, a 20 mL colostrum sample was sterile collected by milking 10 mL from each udder half of the ewes; all samples were placed into pre-labeled 50 mL tubes and frozen on-site. Colostrum samples were thawed and diluted in 36% ammonium sulfate and centrifuged at 3,000 x g for 20 min at 4°C. The removed whey portion was dialyzed using a 3,000 MW membrane cassette in 1 L of PBS (pH 7.4) at 4°C for 12 h. Total IgG from colostrum was measured using an ovine-specific enzyme-linked immunosorbent assay (ELISA), and color parameters were measured using a Minolta chromameter. To evaluate IgG and color differences, data were analyzed using the General Linear Model (GLM) procedure of SAS with Tukey's HSD test to compare the effects of ewe PFEC genotype on colostrum IgG, Yellowness Index (YI), Whiteness Index (WI), L*, b* and a* values. Main effects of ewe PFEC genotype displayed a stepwise decrease in average colostrum IgG from low-PFEC to high-PFEC groupings (825 ng/mL, 513 ng/mL, and 258 ng/mL, respectively; P < 0.0429). Likewise, a stepwise decrease in b* value, indicating relative yellowness, occurs from low-PFEC to high-PFEC groups (18.97, 16.91, and 15.22, respectively; P < 0.0459). These data suggest low-PFEC Katahdin ewes generate greater antibody concentration and yellowness within colostrum. Therefore, lambs born to these ewes would have a significant advantage in passive immunity from their dams, potentially contributing to lamb survivability.

Keywords: color, colostrum, IgG