
PSVIII-B-5 Dynamic of Accessible Chromatin Regions in Cattle Rumen Epithelial Tissue During Weaning. Clarissa Boschiero¹, Yahui Gao¹, Rannsom Baldwin VI¹, George E. Liu¹, Congjun Li¹, ¹USDA-ARS

Abstract: Weaning in ruminants is characterized by the transition from a milk-based diet to a solid diet which drives a critical gastrointestinal tract transformation. Identifying regulatory control of this transformation during weaning can help identify strategies to improve rumen health. This study aimed to identify regions of accessible chromatin in rumen epithelial tissue in pre- and post-weaning calves and investigate differentially accessible regions (DARs) to uncover regulatory elements in cattle rumen development using the ATAC-seq approach. A total of 126,071 peaks were identified, covering 1.15% of the cattle genome. From these accessible regions, 2,766 DARs were discovered. Gene ontology enrichment resulted in GO terms related to cell adhesion, anchoring junction, growth, cell migration, motility, and morphogenesis. In addition, putative regulatory canonical pathways were identified (TGF β , Integrin-linked kinase, Integrin signaling, and regulation of the epithelial-mesenchymal transition). Canonical pathways integrated with co-expression results showed that TGF β and ILK signaling pathways play essential roles in rumen development through the regulation of cellular adhesions. In this study, DARs during weaning have been identified, revealing enhancers, transcription factors, and candidate target genes that represent potential biomarkers for the bovine rumen development which will serve as a molecular tool for rumen development studies.

Keywords: ATAC-seq, cattle, epithelial tissue, open chromatin, rumen development; weaning

PSVIII-B-7 Effects of Chitosan Supplementation on Growth Performance and Blood Metabolites in Broiler Chicks. Edgar Peña¹, Asahel Benítez-Hernández², ¹Universidad Autónoma del Estado de Quintana Roo, ²Universidad Autónoma de Sinaloa

Abstract: Chitosan is a natural polymer with different bioactive properties that can be used in non-ruminant species as chicks. The objective of the present study was to evaluate the dietary inclusion of 0.55% of chitosan on growth performance and blood metabolites in Rhode Island Red chicks under confinement conditions. A total of 30 chicks with an average weight of 36 g were assigned to randomized design and housed in cages of 5 animals and assigned to one of the following treatments for 21 days: 1) control diet, 2) control diet + chitosan 0.55% (CH55). Initial and final weight, feed intake and feed conversion were analyzed; additionally blood samples were collected at the end of the experiment to analyze glucose, cholesterol, high density lipoproteins, very low density lipoproteins, triglycerides and total protein. The results indicate that supplementation of chitosan improves the final weight in chickens and daily weight gain up to 17% ($P < 0.05$). On the other hand, in blood metabolites, an increase in glucose concentration was found due to the addition of chitosan in the diet ($P < 0.05$). The remaining variables did not show significant changes by chitosan supplementation and were within the reference range, which suggests that the addition of chitosan improved growth parameters but did not alter the health status of chicks.

Keywords: chitosan, chicks, growth performance, blood metabolites