Effects of Apple Pomace Soluble Extract on Intestinal Morphology, Functionality, and the Microbiome In Vivo (Gallus gallus)

Cydney Jackson, Nikita Agarwal, Nikolai Kolba, and Elad Tako

Cornell University

Objectives: To assess the effects of apple pomace soluble extract on intestinal morphology, functionality, and the microbiome in vivo (*Gallus gallus*) following intra-amniotic administration.

Methods: We used *Gallus gallus* as our model with three treatment groups: (1) non-injected; (2) 18 Ω H_2O; (3) 6% apple pomace soluble extract (APSE). On day 17 of embryonic incubation, the eggs were treated through intra-amniotic administration. Upon hatch (day 21), blood, tissue, and cecum samples were collected for further analysis. Histomorphology, duodenal mRNA expression, blood glucose, pectoral glycogen, and cecum bacterial population analyses were conducted.

Results: APSE improved villi surface area and goblet cell number. Expression of brush border membrane metabolism and functional proteins varied between treatment groups. Further, significant changes in cecum microbial populations were observed between groups.

Conclusions: Ultimately, these results suggest the potential of apple pomace to improve host intestinal health and the gut microbiome.

Funding Sources: N/A.