

51. Evaluation of a blend of tannins and saponins for reducing faecal ammonia-N and ammonia emissions in laying hens

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Poultry production contributes to ammonia emissions from the poultry houses, which is a concern for environmental pollution as well as can be detrimental to the welfare and productive performance of the birds and farm workers. Plant bioactives such as tannins and saponins can improve the intestinal health of poultry and contribute to the reduction of the environmental impact from the livestock sector. A field comparison was conducted to evaluate the effects of a blend of hydrolysable and condensed tannins and saponins on the performance, dry excreta characteristics, faecal ammonia-nitrogen, ammonia emissions and faecal microbiota composition in laying hens. 60000 laying hens were placed into two free-range barns and fed a basal diet or a basal diet + 750 g/ton of blend of tannins and saponins for 120 days. The chemical analysis (dry matter, organic matter, total Kjeldhal nitrogen, ammonia-nitrogen) and microbiota composition of dry excreta samples were evaluated on a monthly basis. Additionally, ammonia emissions from excreta were assessed using static chamber at days 60 and 120. Excreta from commercial laying hens supplemented with the blend of tannins and saponins were drier (+6% of DM), with less total nitrogen (-11%), less ammonia-nitrogen (-26%), and emitted less ammonia gas (-32%) as compared with the control group. The analysis of the gut microbiota composition showed that Firmicutes and Bacteroidetes were dominant phyla of bacteria in poultry excreta (>75% of bacterial abundance), with the genus *Lactobacillus* representing approximately 12%. Dietary inclusion of the blend of tannins and saponins reduced faecal ammonia-nitrogen by 26% in poultry and proved to be a promising tool to reduce ammonia emissions in poultry production.

Keywords: tannins, saponins, laying hens, ammonia, microbiota