Effect of formaldehyde inclusion on phytase efficiency in broilers

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SUMMARY

Phytase and formaldehyde-based additives (FBA) are routinely used in broiler nutrition. Phytases hydrolyze phytate, the storage form of P in plants, making organic sources of P more digestible by poultry; FBA are also used to decrease the incidence of Salmonella contamination in feeds. Though phytase activity recovered in the feed is the most common way to measure dietary phytase inclusion, FBA reduce the analyzed phytase activity in the feed. The objective of this trial was to evaluate the effect of a FBA on the efficiency of phytase in broilers. One-day-old chicks (n = 630) were allocated to 14 treatments in a 7 × 2 factorial arrangement of treatments consisting of a positive control formulated to meet nutrient requirements or a negative control with reduced available phosphorus and calcium. The negative control diet was supplemented with 5 different phytases according to supplier recommendations (enhanced Escherichia coli Quantum phytase at 500 U/kg; wild-type E. coli Finase EC at 500 U/kg; fungal Finase P at 500 U/kg; coated fungal Ronozyme NP at 1,500 U/kg; and a coated wild-type E. coli Phyzyme TPT at 500 U/kg) with or without inclusion of an FBA (Salmex, 3 kg/t) with 5 replicates per treatment and 9 birds per replicate. At d 20, animal performance was determined by feed intake and BW gain and mortality-corrected feed conversion was calculated. All birds were euthanized and left tibias were collected and weighed for ash and determination of Ca and P. Analyzed phytase activity of the feeds containing an enhanced E. coli and a wild-type E. coli were reduced with FBA inclusion. Body weight gain and tibia weight, ash, ash concentration, ash Ca and P, and P concentration were reduced when animals were fed a low-available P diet. Phytase supplementation improved all these response variables, regardless of FBA inclusion. In conclusion, FBA inclusion may negatively affect phytase activity recovered in the feed but has no effect on phytase effectiveness in vivo.

Key words

- broiler
- formaldehyde
- phytase

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