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Feed Manufacturing Processes Affect Poultry Performance
Higher steam conditioning temperatures had a detrimental effect on broiler performance,
according to a new article in *Applied Animal Science*

Philadelphia, PA, June 3, 2019 – Phytate makes up two-thirds of the phosphorus in poultry feed, but poultry cannot effectively utilize this form of phosphorus. Phytase enzymes added to the feed make this otherwise inaccessible phosphorus available to the poultry consuming it. Thermal processing of feed has been shown to reduce the effectiveness of phytase supplements. Scientists at West Virginia University and The Pennsylvania State University recently studied the effects of steam conditioning temperature on nutrient degradation, broiler performance, and bone mineralization.

The West Virginia University's pilot feed mill manufactured poultry feed using three commercial phytase products, plus a control feed without supplementation, at three different steam conditioning temperatures. The feed variants were analyzed by two laboratories and were fed to 960 broiler chicks for 20 days. Although feed pellets produced using higher steam conditioning temperatures were more durable, the feeds exhibited adverse characteristics with increasing temperature.

“Broiler performance, tibia mineralization, and phytase activity suggested that nutrients were degraded as conditioning temperature increased,” senior author J. S. Moritz said. “However, the degree of degradation varied based on the commercial phytase product included. Increasing steam conditioning temperatures had a detrimental effect on broiler performance and tibia mineralization.”

Applied Animal Science Editor-in-Chief David K. Beede said, “Some supplemental phytases are known to enhance the bioavailability of bound phytate phosphorus in feedstuffs. Steam conditioning might render these phytases less effective depending upon their thermal stability. Responses differed among the phytase products tested, but all were affected by steam conditioning temperatures.”

“Nutrient degradation, determined using broiler performance, tibia mineralization, and various commercial phytase products as markers, was apparent as steam conditioning temperatures increased from 82 to 93°C,” Moritz added. “Increased conditioning temperature may have decreased nutrient availability per se and denatured phytase products, or both factors may have contributed to performance detriment.”

A paper detailing the study appears in the June issue of *Applied Animal Science*.

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NOTES FOR EDITORS

“Effects of steam conditioning temperatures on commercial phytases and subsequent broiler performance and tibia mineralization,” by V. B. Homan, J. W. Boney, and J. S. Moritz (DOI: <https://doi.org/10.15232/aas.2019-01845>), *Applied Animal Science*, Volume 35, Issue 3 (June 2019), published by FASS Inc. and Elsevier Inc.

Full text of the article is available to credentialed journalists upon request; contact Brittany Morstatter at +1 217 356 3182 ext. 143 or arpas@assoqh.org to obtain copies. To schedule an interview with the authors, please contact Joseph Moritz at jmoritz@mail.wvu.edu.

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